



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

REQUEST FOR PROPOSALS

Item Description: SITE IMPROVEMENTS AT BILLY TAYLOR PARK

Procurement/MinuteTraq #: 52472

Date to be opened: 4/20/2026

Issuing Department: Parks

QUESTIONS

- Please direct questions related to the process, how to fill out forms, and how to submit an application(Pages 1-8) to the Purchasing Department.
 - Email: 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 10-11) to the MBE/WBE Outreach Director for the City of Providence, Grace Diaz
 - Email: gdiaz@providenceri.gov
 - Please use subject line “**MBE WBE Forms**”
- Please direct questions relative to the specifications outlined (beginning on page 15) to the issuing department’s subject matter expert:
 - Name: Nicole Modi
 - Title: Landscape Designer
 - Email Address: nmodi@providenceri.gov

Pre-submission Conference

There will be a Non-Mandatory Pre-Bid Conference

Date of Pre-Bid Conference: 4/7/2026 Time: 10:00 AM

Other details: **Billy Taylor Park – 64 Camp Street, Providence, RI**

Deadline for questions submissions: 4/13/2026

INSTRUCTIONS FOR SUBMISSION

Meeting Date: 4/20/2026

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 3rd 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.

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/ 1st page (*see page 6 of this document*)
- **Bid Form 2:** Certification of Bidder as 2nd 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 10-11) or on:*

<https://www.providenceri.gov/purchasing/minority-women-owned-business-mbewbe-procurement-program/>

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

- **Supplemental Bid Form:** 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.***

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.)

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.

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

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

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

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) through 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):

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):

Signed under the pains and penalties of perjury.

Position

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 here. Please visit, the City's MBE/WBE page for details of the program (e.g. instructions and requirements).</p> <ul style="list-style-type: none"> Nonprofit organizations are not required to complete the rest of this form. 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 				
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.				
Prime Contractor/Vendor Signature		Title		Date
Subcontractor/Supplier Signature		Title		Date

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

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, 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

FOR CONSTRUCTION PROJECTS

APPRENTICE REQUIREMENTS (Construction Projects Valued at \$100,000 or More).

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**

SUPPLEMENTAL BID FORM

To whom it may concern:

1. The undersigned, having familiarized (himself) (themselves) (itself) with the **Improvements at ____ 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 3rd 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 ____ 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.

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**

BID PACKAGE SPECIFICATIONS

Project Description:

Billy Taylor Park, named in honor of a community member beloved for his youth advocacy, is a very active East Side park in the Summit Neighborhood. The park sits along a hill near the Mount Hope Community Center, several local Providence shops, and MLK Elementary School. The upper park, entered from Camp Street, features a splash pad, the Billy Taylor Playground, and a seating terrace overlooking the lower park and the city of Providence. The lower park features basketball courts, the Mount Hope Sharing Garden, the Billy Taylor Skate Area, open space, a connection to the lower Mount Hope Community Garden and an artistic pedestrian bridge connecting the park to neighbors across busy Cypress Street. The park plays host to local families, nearby day care centers and the Vincent Brown Recreation Center, as well as the Annual Billy Taylor Day festival. Park users will benefit from upgrades to the existing playgrounds, site furnishings, plantings, play surfaces and walk surfaces, and the waterpark, to better serve this vibrant community.

BASE BID: The Base Bid scope of work for this project shall include but not be limited to the following: improvements to the existing playground, new playground features, upgraded and new site furnishings, improved plantings, upgraded play surfaces and walk surfaces, and upgrades to the waterpark.

ADD ALTERNATES include:

- 1) Additional upgrades to swings
- 2) Additional upgrades to the terrace, entry walkway and furnishings
- 3) Additional playground features
- 4) Additional splash pad furnishings

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: \$40,000.00

BASE BID W/ ALLOWANCE: \$ _____

ABBREVIATIONS

R&S	Remove & Stockpile	EA	Each
R&D	Remove & Dispose	LF	Linear Foot
D&I	Deliver & Install, owner provided	SF	Square Foot
F&I	Furnish & Install	CY	Cubic Yard
LS	Lump Sum	TN	Ton

UNIT PRICES – BASE BID:

1. F&I Temporary Tree Protection, complete. – Per Linear Foot		
_____	LF	\$ _____
<i>price in writing</i>		
2. F&I Compost Filter Silt Sock, complete. – Per Linear Foot		
_____	LF	\$ _____
<i>price in writing</i>		
3. F&I Catch Basin Silt Sack, complete. – Per Each		
_____	EA	\$ _____
<i>price in writing</i>		
4. R&D Asphalt, complete. – Per Square Yard		
_____	SY	\$ _____
<i>price in writing</i>		
5. R&D Concrete, complete. – Per Square Yard		
_____	SY	\$ _____
<i>price in writing</i>		
6. R&D Poured in Place Surface – Per Square Foot		
_____	SF	\$ _____
<i>price in writing</i>		
7. R&D Concrete bollard, complete. – Per Each		
_____	EA	\$ _____
<i>price in writing</i>		
8. R&D EWF Mulch, complete. – Per Cubic Yard		
_____	CY	\$ _____
<i>price in writing</i>		
9. R&D Shade Fabric – Per Each		
_____	EA	\$ _____
<i>price in writing</i>		
10. Rough Grading, complete. – Per Cubic Yard		
_____	CY	\$ _____
<i>price in writing</i>		
11. Fine Grading, complete. – Per Cubic Yard		
_____	CY	\$ _____
<i>price in writing</i>		

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: _____

12. R&S/R&D Selective Features of Existing Splash Pad, see plans – Per Lump Sum

_____ LS \$ _____
price in writing

13. F&I 4” Concrete Paving- Broom Finish, complete. – Per Square Foot

_____ SF \$ _____
price in writing

14. F&I Landscape Boulders – Per Each

_____ EA \$ _____
price in writing

15. F&I 55 Gallon Trash Receptacle, surface mount – Per Each

_____ EA \$ _____
price in writing

16. F&I Collapsible Bollard, Traffic Guard Model #2436 – Per Each

_____ EA \$ _____
price in writing

17. F&I Artificial Turf & Attenuation Layer, complete – Per Square Foot

_____ SF \$ _____
price in writing

18. D&I Rubber half spheres – Per Lump Sum

_____ LS \$ _____
price in writing

19. F&I EWF Mulch, complete. – Per Cubic Yard

_____ CY \$ _____
price in writing

20. Install Wear Mats from Stockpile – Per Lump Sum

_____ LS \$ _____
price in writing

21. F&I 6’ TMR Bench, w/ Back, surface mount – Per Each

_____ EA \$ _____
price in writing

22. F&I 6’ TMR Bench, Backless, surface mount – 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: _____

23. F&I 6' TMR Picnic Table, surface mount – Per Each

_____ EA \$ _____
price in writing

24. F&I 8' TMR ADA Picnic Table, surface mount – Per Each

_____ EA \$ _____
price in writing

25. F&I Kompan Loop Cone (#TPP 29540) , surface mount with 28" Top (#TPP29545) – Lump Sum

_____ LS \$ _____
price in writing

26. F&I Kompan Loop Arc Bench (#TPP 29510), surface mount, complete – Per Each

_____ EA \$ _____
price in writing

27. F&I Burke Castra Playfort (# 580-1424), complete – Per Each

_____ EA \$ _____
price in writing

28. F&I Burke Inclusive Orbit Spinner (#560-0075), complete – Per Each

_____ EA \$ _____
price in writing

29. F&I Shade Systems 25' Cantilevered Shade (# SC252510), complete – Per Each

_____ EA \$ _____
price in writing

30. F&I Shade Systems 12' Offset Single Post Pyramid Shade (#OSP121210), complete – Per Each

_____ EA \$ _____
price in writing

31. F&I Vortex system as specified per plans, complete – Lump Sum

_____ LS \$ _____
price in writing

32. F&I Clamped Railing Retrofit, complete – Per Linear Foot

_____ LF \$ _____
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: _____

33. F&I Deciduous Tree – 2-2.5” Cal. B&B, complete. – Per Each

_____ EA \$ _____
price in writing

34. F&I Ornamental Tree – 6-7’ Ht. B&B, complete. – Per Each

_____ EA \$ _____
price in writing

35. Loam & Hydroseed w/ Parks Mix, complete. – Per Square Foot

_____ SF \$ _____
price in writing

36. Loam & Hydroseed w/ Low-Mow Mix, complete. – Per Square Foot

_____ SF \$ _____
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: _____

UNIT PRICES – ADD / ALT

Forthcoming in Addendum

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: _____



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ADDITIONAL BID DOCUMENTS

The complete set of Bid Documents includes the pages above & the following:

- **PREVAILING WAGE DECISION**
- **TECHNICAL SPECIFICATIONS:**
 - **01 00 00 GENERAL REQUIREMENTS**
 - **01 56 39 TEMPORARY TREE AND PLANT PROTECTION**
 - **02 41 19 SELECTIVE DEMOLITION**
 - **03 30 00 CAST-IN-PLACE CONCRETE**
 - **11 68 00 PLAY FIELD EQUIPMENT AND STRUCTURES**
 - **11 68 40 SPLASHPAD PLAY EQUIPMENT**
 - **13 28 10 SPECIALTY TIMBER SITE FEATURES**
 - **133123 TENSIONED FABRIC STRUCTURES**
 - **31 20 00 EARTH MOVING**
 - **31 22 13 ROUGH GRADING**
 - **31 25 00 EROSION AND SEDIMENTATION CONTROLS**
 - **32 12 16 ASPHALT PAVING**
 - **32 13 13 CONCRETE PAVING**
 - **32 16 13 PRECAST CONCRETE CURBS AND GUTTERS**
 - **32 18 13 SYNTHETIC GRASS SURFACING**
 - **32 18 16.13 PLAYGROUND PROTECTIVE SURFACING**
 - **32 33 00 SITE FURNISHINGS**
 - **32 91 13 SOIL PREPARATION**
 - **32 91 19 LANDSCAPE GRADING**
 - **32 92 00 TURF AND GRASSES**
 - **32 93 00 PLANTS**
- **DRAWINGS:**
 - **L-1 COVER**
 - **L-2.1 EXIST CONDITIONS/DEMO PLAN – BASE BID**
 - **L-2.2 EXIST CONDITIONS/DEMO PLAN – ADD / ALT**
 - **L-3.1 GRADING PLAN – BASE BID**
 - **L-3.2 GRADING PLAN – ADD / ALT**
 - **L-4.1 MATERIALS – BASE BID**
 - **L-4.2 MATERIALS – ADD / ALT**
 - **L-5.1 LAYOUT PLAN – BASE BID**
 - **L-5.2 LAYOUT PLAN – ADD / ALT**
 - **L-6.1 SPLASHPAD PLAN – BASE BID**
 - **L-6.2 SPLASHPAD PLAN – ADD / ALT**
 - **L-7.1 PLANTING PLAN – BASE BID**
 - **L-7.2 PLANTING PLAN – ADD / ALT**
 - **L-8 CONSTRUCTION DETAILS**
 - **L-9 CONSTRUCTION DETAILS**
 - **L-10 CONSTRUCTION DETAILS**
 - **L-11 ADD / ALTERNATE DETAILS**
 - **--- VORTEX PLANS**

ADDITIONAL INFORMATION REQUIRED WITH BID:

- Qualifications to Perform Work – See Form Below for Information Required
- Addenda (If Any) - Must Be Acknowledged on Bid Form (Page 14)
- Product Information for Items Submitted as ‘Or Equal’ to Specified Materials

PROVISIONS OF THIS PROJECT:

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

CLOSE OUT DOCUMENTS:

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

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 and Nicole Modi, Landscape Designer at nmodi@providenceri.gov, no later than five (5) working days before the bid opening

date.

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.



**BOARD OF CONTRACT AND SUPPLY
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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. 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.
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



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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.



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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 or 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, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of



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



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- (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 age determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the



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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 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,



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

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.

"General Decision Number: RI20260001 01/30/2026

Superseded General Decision Number: RI20250001

State: Rhode Island

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

Counties: Rhode Island Statewide.

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

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

ASBE0006-006 09/01/2024

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

ASBE0006-008 09/01/2024

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

BOIL0029-001 01/01/2025

Rates	Fringes
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BOILERMAKER.....\$ 50.62 28.82

BRII0003-001 06/01/2022

Rates Fringes

Bricklayer, Stonemason,
Pointer, Caulker & Cleaner.....\$ 46.86 29.14

BRII0003-002 09/01/2022

Rates Fringes

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

BRII0003-003 09/01/2022

Rates Fringes

Marble, Tile & Terrazzo
Finisher.....\$ 38.78 29.61

CARP0330-001 06/02/2025

Rates Fringes

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

FOOTNOTES:

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

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

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

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

CARP1121-002 04/21/2025

	Rates	Fringes
MILLWRIGHT.....	\$ 45.72	31.50

ELEC0099-002 06/01/2025

	Rates	Fringes
ELECTRICIAN.....	\$ 56.11	44.10%
Teledata System Installer.....	\$ 42.09	10.45%+15.31

FOOTNOTES:

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

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

ELEV0039-001 01/01/2025

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 64.52	38.435+a+b

FOOTNOTES:

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

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

ENGI0057-001 12/01/2025

	Rates	Fringes
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Operating Engineer: (power plants, sewer treatment

plants, pumping stations,
tunnels, caissons, piers,
docks, bridges, wind
turbines, subterranean &
other marine and heavy
construction work)

GROUP 1.....	\$ 51.30	29.95
GROUP 2.....	\$ 49.30	29.95
GROUP 3.....	\$ 44.92	29.95
GROUP 4.....	\$ 42.07	29.95
GROUP 5.....	\$ 48.35	29.95
GROUP 6.....	\$ 39.15	29.95
GROUP 7.....	\$ 33.15	29.95
GROUP 8.....	\$ 45.00	29.95
GROUP 9.....	\$ 48.92	29.95

a. BOOM LENGTHS, INCLUDING JIBS:

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

a. PAID HOLIDAYS:

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

a. FOOTNOTES:

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

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Cranes, lighters, boom trucks and derricks

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

GROUP 3: Oilers on cranes.

GROUP 4: Oiler on crawler backhoe.

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

GROUP 6: Well-point installation crew.

GROUP 7: Utility Engineers and Signal Persons

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

GROUP 9: Boat & tug operator.

ENGI0057-003 12/01/2025

BUILDING CONSTRUCTION

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

a. BOOM 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

ENGI0057-005 12/01/2025

	Rates	Fringes
Power Equipment Operator (highway construction projects; water and sewerline projects which are incidental to highway construction projects; and bridge projects that do not span water)		
GROUP 1.....	\$ 46.45	29.95
GROUP 2.....	\$ 44.45	29.95
GROUP 3.....	\$ 39.15	29.95
GROUP 4.....	\$ 25.75	29.95

GROUP 5.....	\$ 33.15	29.95
GROUP 6.....	\$ 39.73	29.95
GROUP 7.....	\$ 43.43	29.95
GROUP 8.....	\$ 38.70	29.95

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

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

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Cranes, pile drivers, lighters, boom trucks, hoists, derricks

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

GROUP 3: Wellpoint installation and drill/boring machine assistants

GROUP 4: Utility engineers

GROUP 5: Signal persons

GROUP 6: Oilers on cranes and deckhands

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

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

IRON0037-001 09/16/2025

	Rates	Fringes
IRONWORKER.....	\$ 43.03	33.53

LABO0271-001 12/03/2023

BUILDING CONSTRUCTION

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

LABORERS CLASSIFICATIONS

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

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

GROUP 3: Pre-Cast Floor & Roof Plank Erectors

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

GROUP 5: Toxic Waste Remover

LABORERS CLASSIFICATIONS

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

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

GROUP 3: Pre-Cast Floor & Roof Plank Erectors

GROUP 4: Air Track Operator, Hydraulic & Similar Self-Powered

Drill, Block Paver, Rammer, Curb Setter, Powderman & Blaster

GROUP 5: Toxic Waste Remover

LABO0271-002 11/27/2022

HEAVY AND HIGHWAY CONSTRUCTION

	Rates	Fringes
LABORER		
COMPRESSED AIR		
Group 1.....	\$ 55.40	24.15
Group 2.....	\$ 52.93	24.15
Group 3.....	\$ 42.45	24.15
FREE AIR		
Group 1.....	\$ 46.00	24.15
Group 2.....	\$ 45.00	24.15
Group 3.....	\$ 42.45	24.15
LABORER		
Group 1.....	\$ 33.05	24.05
Group 2.....	\$ 35.75	24.85
Group 3.....	\$ 36.50	24.85
Group 4.....	\$ 29.00	24.85
Group 5.....	\$ 37.50	24.85
OPEN AIR CAISSON, UNDERPINNING WORK AND BORING CREW		
Bottom Man.....	\$ 41.50	24.15
Top Man & Laborer.....	\$ 35.60	24.15
TEST BORING		
Driller.....	\$ 41.95	24.15
Laborer.....	\$ 41.95	24.15

LABORER CLASSIFICATIONS

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

GROUP 2: Adzeperson; Asphalt raker; Barcotype jumping tamper; Chain saw operators; Concrete and power buggy operator; Concrete saw operator; Demolition burner; Fence and guard rail erector; Highway stone spreader; Laser beam operator; Mechanical grinder operator; Mason tender; Mortar mixer; Pneumatic tool operator; Riprap and dry stonewall builder; Scaffold erector; Setter of metal forms for roadways; Wagon drill operator; Wood chipper operator; Pipelayer; Pipe trench bracer

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

GROUP 4: Flagger & signaler

GROUP 5: Toxic waste remover

LABORER - COMPRESSED AIR CLASSIFICATIONS

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

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

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

LABORER - FREE AIR CLASSIFICATIONS

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

GROUP 2: Change house attendant, powder watchperson

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

LABORER CLASSIFICATIONS

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

GROUP 2: Adzeperson; Asphalt raker; Barcotype jumping tamper; Chain saw operators; Concrete and power buggy operator; Concrete saw operator; Demolition burner; Fence and guard rail erector; Highway stone spreader; Laser beam operator; Mechanical grinder operator; Mason tender; Mortar mixer; Pneumatic tool operator; Riprap and dry stonewall builder; Scaffold erector; Setter of metal forms for roadways; Wagon drill operator; Wood chipper operator;

Pipelayer; Pipe trench bracer

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

GROUP 4: Flagger & signaler

GROUP 5: Toxic waste remover

LABORER - COMPRESSED AIR CLASSIFICATIONS

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

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

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

LABORER - FREE AIR CLASSIFICATIONS

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

GROUP 2: Change house attendant, powder watchperson

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

PAIN0011-005 06/01/2025

	Rates	Fringes
PAINTER		
Brush and Roller.....	\$ 39.57	26.60
Epoxy, Tanks, Towers, Swing Stage & Structural		
Steel.....	\$ 41.57	26.60

Spray, Sand & Water		
Blasting.....	\$ 42.57	26.60
Taper.....	\$ 38.82	25.80
Wall Coverer.....	\$ 38.57	25.80

PAIN0011-006 06/01/2024

	Rates	Fringes
GLAZIER.....	\$ 41.63	26.15

FOOTNOTES:

SWING STAGE: \$1.00 per hour additional.

PAID HOLIDAYS: Labor Day & Christmas Day.

PAIN0011-011 06/01/2024

	Rates	Fringes
Painter (Bridge Work).....	\$ 57.85	26.40

PAIN0035-008 06/01/2011

	Rates	Fringes
Sign Painter.....	\$ 24.79	13.72

PLAS0040-001 01/01/2025

BUILDING CONSTRUCTION

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 44.75	29.10

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

PLAS0040-002 01/01/2025

HEAVY AND HIGHWAY CONSTRUCTION

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 44.75	29.10

PLAS0040-003 01/01/2025

	Rates	Fringes
PLASTERER.....	\$ 45.52	29.43

PLUM0051-002 08/25/2025

	Rates	Fringes
Plumbers and Pipefitters.....	\$ 54.34	34.50

* ROOF0033-004 12/01/2025

	Rates	Fringes
ROOFER.....	\$ 47.49	31.44

SFRI0669-001 04/01/2025

	Rates	Fringes
SPRINKLER FITTER.....	\$ 53.76	33.44

SHEE0017-002 06/01/2025

	Rates	Fringes
Sheet Metal Worker.....	\$ 44.42	41.94

TEAM0251-001 05/01/2025

HEAVY AND HIGHWAY CONSTRUCTION

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

FOOTNOTES:

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

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

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

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

TRUCK DRIVER CLASSIFICATIONS

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

GROUP 2: Two-axle on low beds

GROUP 3: Two-axle dump truck

GROUP 4: Three-axle dump truck

GROUP 5: Four- and five-axle equipment

GROUP 6: Low-bed or boom trailer.

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

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

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

GROUP 10: Tractor trailer

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

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

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

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

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular

rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

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

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

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

Survey Rate Identifiers

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

prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

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

State Adopted Rate Identifiers

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

WAGE DETERMINATION APPEALS PROCESS

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

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

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

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

Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

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

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

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

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

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

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

=====
END OF GENERAL DECISION"

DOCUMENT 000110
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END OF SECTION

SECTION 010000
GENERAL REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

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. Nicole Modi
Landscape Designer
nmodi@providenceri.gov
401-489-2051

1.2 PROJECT LOCATION

- A. Billy Taylor Park
140 Camp Street
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 site furnishings, playground equipment, buildings, concrete walkways, fences, railings, 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's Representative.
- B. Restoration of the site to pre-existing condition shall be the sole responsibility of the Contractor.

2.5 MATERIALS AND EQUIPMENT:

- A. Materials to be Removed and Stockpiled.
 - 1. Materials directed to be removed and stockpiled shall be removed, transported to and stacked in a location directed by the Owner's Representative. All materials shall be neatly stacked as directed.
 - 2. If the Owner's Representative determines that any part of the materials identified to be stockpiled are unsuitable for re use on the site or by the Owner elsewhere, such materials shall be evaluated for legal disposal by Owner's Representative and Contractor.
- B. Signs: Conform to requirements of Temporary Facilities and Controls.
- C. Temporary Site Protection: Temporary chain-link fence, if so desired shall be furnished, installed and maintained at no additional cost to the Owner. At the completion of all work at the site, the Contractor shall remove all temporary fencing and restore the site to its original condition at no additional cost to the Owner.

2.6 TEMPORARY CONSTRUCTION FACILITIES AND UTILITIES

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

2.7 SITE MAINTENANCE

- A. Control dust from Contractor operations in accordance with specified dust control measures.
- B. Maintain the Site during construction in a manner that will not obstruct use on neighborhood streets. Proceed with the work in an orderly manner, maintaining the construction site free of

debris and unnecessary equipment or materials.

- C. Legally dispose of all debris, rubbish, hazardous materials, oil, and grease in accordance with local ordinances.
- D. Maintain safety and security of the construction site and any stockpiled or staged materials or equipment if left on site.

2.8 TRAFFIC CONTROL

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

2.9 DEMOBILIZATION

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

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

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

3.2 CHANGE ORDER PROCEDURE

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

3.3 CHANGE SUBMITTALS

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

4. Time extension statement with justification if any time extension is requested.

3.4 COMPLIANCE

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

3.5 PROCESSING CHANGES INITIATED BY THE OWNER'S REPRESENTATIVE

- A. The Owner's Representative will initiate changes only in writing. The Owner will sign any Request for Proposal (RFP). This will establish an Extra Work Order (EWO) number, by which the change will be identified until such time as it may be incorporated into the contract by formal Change Order (CO).
- B. The Contractor may or may not be authorized to proceed with the changed work pending resolution of changes in the contract price or time of performance. If the work described in the RFP becomes critical to the timely performance of the Contractor's work, a written request for a Notice to Proceed must be forwarded to the Owner immediately. The Owner will issue any Notice to Proceed. This unilateral modification to the contract may be subject to further negotiation regarding price and time for completion.
- C. Payment for changed work, covered by an authorized modification, will not be made until a notice to proceed covering the changed work has been executed.
- D. The Contractor shall prepare and submit its proposal for change to include at a minimum:
 1. A cover letter referencing the EWO number and citing the attachments, if any, which constitute the Contractor's total proposal.
 2. A detailed price proposal showing labor, construction equipment, and material quantities and prices at the lowest practical level of each element of the work.
 3. Any drawings, sketches, catalog cuts, samples, certifications, or other data required to be submitted by the Owner's Representative that is required to fully document.
 4. A statement of the proposed change in the time of completion of the contract, together with all required justification for such a change.
 5. A statement to the effect that there is "no change in price and/or time of completion of the work under this contract as a result of this proposed change", if that is the case.
- E. The Owner may accept the Contractor's proposal without negotiation. Alternatively, upon receipt of a proposal which is satisfactory in form, the Owner's Representative may require

negotiation with the Contractor to arrive at a fair and equitable change in the contract price and time of completion. Upon agreement, a contract modification will be issued by the Owner for Contractor's execution.

3.6 PROCESSING CHANGES INITIATED BY THE CONTRACTOR

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

3.7 EXECUTING CHANGED WORK

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

3.8 TERMINATIONS AND DELAYS

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

3.22 MANUFACTURER'S FIELD SERVICES

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

3.23 AUTHORITY OF OWNER'S REPRESENTATIVE

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

3.24 COORDINATION OF DRAWINGS AND SPECIFICATIONS

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

3.25 COOPERATION WITH UTILITIES

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

3.26 INDEPENDENT TESTING AND INSPECTION (NIC)

- A. Not Applicable under this Contract.

3.27 REQUIREMENTS

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

3.28 MATERIAL AND EQUIPMENT

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

3.29 MANUFACTURER REQUIREMENTS

- A. In general, the Contractor shall receive, handle, and store materials and equipment in accordance with manufacturer's recommendations and in a manner which will protect such

items from damage or deterioration.

B. GENERAL.

- C. Products include the material, equipment, and systems used on this Project. Comply with the Specifications, Drawings and referenced standards as minimum requirements.

3.30 TRANSPORTATION AND HANDLING

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

3.31 STORAGE AND PROTECTION

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

3.32 SUBSTITUTIONS

- A. Substitutions will be considered only when a product becomes unavailable due to no fault of the Contractor or when deemed appropriate by the Owner's Representative.
- B. Document each request with complete data substantiating the compliance of the proposed substitution with the Contract Documents.
- C. The requested substitution proposed constitutes a representation that the Contractor:
1. Has investigated the proposed product and determined that it meets or exceeds, in all respects, the specified product.
 2. Will provide the same warranty for substitution as for the specified product.
 3. Will coordinate installation and make other changes which may be required for the Work to be complete in all respects.

4. Waives claims for additional costs which may subsequently become apparent.
- D. Substitutions will be considered when they are indicated or implied on shop drawings or product data submittals without separate written request, or when acceptance will require substantial revision of the Contract Documents.
- E. The Owner's Representative will determine acceptability of the proposed substitution, and will notify the Contractor of acceptance or rejection in writing within a reasonable time. Only one request for the substitution will be considered for each product. When substitution is not accepted, the Contractor shall provide the specified product.

3.33 REJECTED MATERIALS AND DEFECTIVE WORK

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

3.34 PROJECT CLOSEOUT

- A. DESCRIPTION.
 1. This Section specifies administrative and procedural requirements for the project closeout including, but not limited to:
 - a. Project record document (As-Built drawings) submittal. Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
 - b. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each

- set. Upon completion of work, submit record drawings to the Owner's Representative.
2. Record Specifications.
 - a. Maintain one complete copy of the Project Manual, including addenda. Mark these documents to show substantial variations in actual Work performed in comparison with the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data. Upon completion of the Work, submit record Specifications.
 3. Test Results.
 - a. Not Applicable this project.
 4. REMOVAL OF PROTECTION.
 - a. Remove temporary protection and facilities installed for protection of the Work during construction. Fencing and erosion and sediment control measures and best management practices can be removed after permanent measures have been established.

3.35 WARRANTIES

A. DESCRIPTION.

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

B. DEFINITIONS.

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

provide greater rights for the Owner.

C. WARRANTY REQUIREMENTS.

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

D. WARRANTY PERIOD.

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

END OF SECTION

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 312213 - Rough Grading.

1.3 DEFINITIONS

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

1.4 PRE-CONSTRUCTION MEETINGS

- A. Pre-construction Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:

- a. Tree-service firm's personnel, and equipment needed to make progress and avoid delays.
- b. Arborist's responsibilities.
- c. Coordination of Work and equipment movement with the locations of protection zones.
- d. Trenching by hand or with air spade within protection zones.
- e. Field quality control and maintenance.
- f. Coordination by Parks Department City Forester and Forestry crews.

1.5 ACTION SUBMITTALS

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

1.6 QUALITY ASSURANCE

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

1.7 FIELD CONDITIONS

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

PART 2 PRODUCTS

2.1 MATERIALS

- A. Backfill Soil: Stockpiled soil mixed with planting soil of suitable moisture content and granular texture for placing around tree; free of stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth.
 - 1. Mixture: Well-blended mix of two parts stockpiled soil to one part planting soil.
- B. Protection-Zone Fencing: Fencing fixed in position and meeting the following requirements:
 - 1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch maximum opening in pattern and weighing a minimum of 0.4 lb/ft.; remaining flexible from minus 60 to plus 200 deg F; inert to most chemicals and acids; minimum tensile yield strength of 2000 psi and ultimate tensile strength of 2680 psi; secured with plastic bands or galvanized-steel or stainless-steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than 96 inches apart.
 - a. Height: 72 inches.
 - b. Color: High-visibility orange, nonfading.

PART 3 EXECUTION

3.1 PREPARATION

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

3.2 PROTECTION ZONES

- A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people from easily entering protected areas except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.
- B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Owner's Representative. Install one sign on protection-zone fencing. Sign

to read "Tree Protection Zone - Do not Disturb". Sign to be printed on 24"x 36" white panel with black lettering at a minimum of 3" height lettering.

- C. Maintain protection zones free of trash.
- D. Maintain protection-zone fencing in good condition as acceptable by Owner's Representative and remove when construction operations are complete and equipment has been removed from the site.
 - 1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
 - 2. Temporary access is permitted subject to preapproval in writing by Owner's Representative if a root buffer effective against soil compaction is constructed as directed by Owner's Representative. Maintain root buffer so long as access is permitted.

3.3 EXCAVATION

- A. General: Excavate at edge of protection zones and for trenches indicated within protection zones according to requirements in Section 312000 "Earth Moving" unless otherwise indicated.
- B. Trenching within Protection Zones: Where utility trenches are required within protection zones, excavate under or around tree roots by hand or with air spade, or tunnel under the roots as directed by Owner's Representative. Do not cut main lateral tree roots or taproots larger than 2" without direction from Owner's Representative; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots.
- C. 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.
- D. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover and wrap with dampened burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil or as directed by Owner's Representative.

3.4 ROOT PRUNING

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

3.5 REGRADING

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

3.6 REPAIR AND REPLACEMENT

- A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or to be relocated that are damaged by construction operations, in a manner approved by Owner's Representative.
 - 1. Submit details of proposed pruning and repairs.
 - 2. Perform repairs of damaged trunks, branches, and roots within 24 hours according to

- arborist's written instructions.
3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Owner's Representative. Replacement trees to be equal to the total diameter of mature tree by multiple equal diameter specimens.
- B. Trees: Remove and replace trees that 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. 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

SECTION 024119
SELECTIVE DEMOLITION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Demolition and removal of selected site elements.
 - 2. Salvage of existing items to be reused or recycled.
- B. Related Requirements:
 - 1. Section 015639 "Temporary Tree and Plant Protection" for temporary protection of existing trees and plants that are affected by selective demolition.

1.3 DEFINITIONS

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

1.4 MATERIALS OWNERSHIP

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

1.5 PRE-CONSTRUCTION MEETINGS

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

1.6 INFORMATIONAL SUBMITTALS

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

1.7 FIELD CONDITIONS

- A. Owner will occupy portions of the site immediately adjacent to selective demolition area. Conduct selective demolition so Owner's use will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
 - 1. Before selective demolition, Owner will remove the items specifically indicated on the drawings.
- C. Notify Owner's Representative of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Historic Areas: Demolition and hauling equipment and other materials shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, including temporary protection.
- F. Storage or sale of removed items or materials on-site is not permitted.
- G. 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. 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.
 - 2. Before selective demolition or removal of existing elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.

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

3.3 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of the site.
 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.
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 1. Strengthen or add new supports when required during progress of selective demolition.
- C. Remove temporary barricades and protections where hazards no longer exist.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 - 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 - 4. Maintain adequate ventilation when using cutting torches.
 - 5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 - 6. Dispose of demolished items and materials promptly and legally off site.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Work in Historic Areas: Selective demolition may be performed only in areas of Project that are not designated as historic. In historic spaces, areas, and rooms, or on historic surfaces, the terms "demolish" or "remove" shall mean historic "removal" or "dismantling."
- D. Removed and Salvaged Items:
 - 1. Clean salvaged items.
 - 2. Store items in a secure area until delivery to Owner.
 - 3. Transport items to location designated by Owner's Representative.
 - 4. Protect items from damage during transport and storage.
- E. Removed and Reinstalled Items:
 - 1. Clean and repair items to functional condition adequate for intended reuse.
 - 2. Protect items from damage during transport and storage.
 - 3. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- F. 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.

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

3.6 DISPOSAL OF DEMOLISHED MATERIALS

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

3.7 CLEANING

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

END OF SECTION

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.
- B. Related Requirements:
 - 1. Section 321313 "Concrete Paving" for concrete pavement and walks.

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 restraighthen 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 Landscape 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

SECTION 116800

PLAY FIELD EQUIPMENT AND STRUCTURES

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 playground equipment as follows:
 - 1. Freestanding play ground equipment.

1.3 DEFINITIONS

- A. Definitions in ASTM F1487 apply to Work of this Section.
- B. IPEMA: International Play Equipment Manufacturers Association.

1.4 PREINSTALLATION MEETINGS

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

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For each type of playground equipment.
 - 1. Include plans, elevations, sections, and attachment details.
 - 2. Include fall heights and use zones for fitness equipment, coordinated with the critical-height values of protective surfacing specified in Section 321816.13 "Playground Protective Surfacing."

- C. Samples for Verification: For each type of exposed finish on the following products:
 - 1. Include Samples of accessories to verify color and finish selection.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer, and Manufacturer.
- B. Product Certificates: For each type of playground equipment.
- C. Material Certificates: For the following items:
 - 1. Shop finishes.
- D. Sample Warranty: For manufacturer's special warranties.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For playground equipment and finishes to include in maintenance manuals.

1.8 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of playground equipment that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
 - 2. Warranty Period: from date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. The following playground equipment and components shall have the IPEMA Certification Seal:
- B. Burke Inc., Vendor Rep: Colin Drury, 413.221.1485, Colin@benshaffer.com.
 - 1. Castra Playfort , Item #580-149
 - 2. Inclusive Orbit Spinner, Item # 560-0075

- C. Kompan Inc., Vendor Rep: Jeffrey Hochwarter, 508-821-8715, JefHoc@kompan.com.
 - 1. Two Bay Swing w/ Belt Seats & Nest, Item #KSW992009.

2.2 PERFORMANCE REQUIREMENTS

- A. Safety Standard: Provide playground equipment according to ASTM F1487 & ASTM F3101-15.

2.3 MATERIALS

- A. Steel: Material types, alloys, and forms recommended by manufacturer for type of use and finish indicated, hot-dip galvanized.
- B. Opaque Plastics: Color impregnated, UV stabilized, and mold resistant.
- C. Suspension Cable: Manufacturer's standard hot-dip galvanized zinc-plated cable; with commercial-quality, hot-dip galvanized or zinc-plated steel connectors and swing or ring hangers.
- D. Post Caps: Cast aluminum or color-impregnated, UV-stabilized, mold-resistant polyethylene or polypropylene; color to match posts.
- E. Platform Clamps and Hangers: Cast aluminum or zinc-plated steel, not less than 0.105-inch-nominal thickness.
- F. Hardware: Manufacturer's standard; commercial-quality; corrosion-resistant; hot-dip galvanized steel and iron, stainless steel, or aluminum; of a vandal-resistant design.
- G. Fasteners: Manufacturer's standard; corrosion-resistant; hot-dip galvanized or zinc-plated steel and iron, or stainless steel; permanently capped; and theft resistant.

2.4 CAST-IN-PLACE CONCRETE

- A. Concrete Materials and Properties: Comply with requirements in Section 033000 "Cast-in-Place Concrete" for normal-weight, air-entrained concrete with minimum 28-day compressive strength of 4000 psi, 3-inch slump, and 1-inch- maximum-size aggregate.
- B. Concrete Materials and Properties: Ready Mixed concrete or dry-packaged concrete mix complying with ASTM C387/C387M and mixed at site with potable water, according to manufacturer's written instructions, for normal-weight concrete with minimum 28-day compressive strength of 4000 psi, 3-inch slump, and 1-inch- maximum-size aggregate.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for earthwork, subgrade elevations, surface and subgrade drainage, and other conditions affecting performance of the Work.
 - 1. Do not begin installation before final grading required for placing playground equipment and protective surfacing is completed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written installation instructions for each equipment type unless more stringent requirements are indicated. Anchor playground equipment securely, positioned at locations and elevations indicated.
 - 1. **Maximum Equipment Height:** Coordinate installed fall heights of equipment with finished elevations and critical-height values of protective surfacing. Set equipment so fall heights and elevation requirements for age group use and accessibility are within required limits. Verify that playground equipment elevations comply with requirements for each type and component of equipment.
- B. **Post and Footing Excavation:** Excavate holes for posts and footings as indicated in firm, undisturbed or compacted subgrade.
- C. **Post Set with Concrete Footing:** Comply with Section 033000 "Cast-in-Place Concrete" ACI 301 for measuring, batching, mixing, transporting, forming, and placing concrete.
 - 1. Set equipment posts in concrete footing. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at the correct angle, alignment, height, and spacing.
 - a. Place concrete around posts and vibrate or tamp for consolidation. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.
 - 2. **Embedded Items:** Follow equipment manufacturer's written instructions and drawings to ensure correct installation of anchorages for equipment.
 - 3. **Finishing Footings:** Smooth top, and shape to shed water.

END OF SECTION

SECTION 116840
SPLASHPAD PLAY EQUIPMENT

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. Splash pad features.
 - 2. Splash pad command center.
 - 3. Splash pad controller.
- B. Related Sections:
 - 1. Section 312213 - Rough Grading.
 - 2. Section 321313 - Concrete Paving.

1.3 ACTION SUBMITTALS

- A. Manufacturer's Literature: Submit copies of each of manufacturer's material descriptions, dimensions, details, and installation instructions for all products.

1.4 INFORMATIONAL SUBMITTALS

- A. Manufacturer's P&E Plan (if any adjustments are made to Splash Pad layout or design after the bidding process).

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For splash pad fixtures 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 116840, Splashpad Play Equipment, 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 SPLASH PAD FEATURES

A. Vortex Water Play Structures

Aqualien Flower No3	VOR 7389
Lilium Flower Twist	VOR 7287

B. Vortex Splash Pad Accessories:

1. Smartflow Command Center, Wall-Mounted Manifold (2-tier) with single 2" inlet
2. MaestroPRO Controller 24 out/ 12 in, Model # VOR-33907.3200
3. MaestroPRO Power Box, Model # VOR-33907.3200
4. 2" Pressure Regulator
5. 2" Backflow Preventer
6. (QTY 9) 1" Solenoid Valve with Ball Valve & Union
7. (1) AT&T LTE Cell Module

2.2 VORTEX SMARTFLOW™ COMMAND CENTER WALL MOUNT

A. WALL MOUNTED COMMAND CENTER.

1. The Wall-Mounted Manifold Command Center shall be a pre-fabricated water distribution system containing piping, valves and electrical wiring. They shall be factory assembled, water pressure tested, and shall be delivered from the Splashpad equipment manufacturers facilities. They shall be equipped with slip-on connections for the water inlet and slip-on for water outlets. The solenoid valves shall be pre-wired to the controller or to a junction box (when the controller is placed in a remote location). The installer shall provide the plumbing equipment required from the water source to the water inlet or backflow device and Pressure regulator if so configured.
2. The installer shall provide the plumbing equipment required from the water outlets to the Splashpad Play Products, as well as adequate drainage ball valves at the low point of each of the Play Product's water distribution lines (if applicable). Should the controller be located remotely, Vortex shall supply 10 feet of wire on the controller and 10 feet of wire on the junction box; if more than 20 feet of wire is required, the installer shall supply the rest of the electrical equipment. The grounding of the junction box shall be done by the installer.

B. GENERAL MATERIALS SPECIFICATIONS.

1. Manifold shall be constructed of 3 ½" outside diameter Stainless Steel 304/304L pipes powder coat painted finish with no sharp edges and buffed welding. Each water distribution port shall be an NPT connection of 1-1/2" or 1" depending on the selection. The manifold shall be equipped with a pressure gauge. All welded joints shall be watertight and pressure rated to 150 psi.
2. Piping and fitting shall be constructed of SCH 40 PVC, 150 PSI pressure rated.
3. Solenoid valves (different possible combinations of sizes) shall be constructed of PVC or Brass with or without ball valve, all with water resistant solenoid, all rated up to 150 PSI. There shall be one (1) solenoid valve installed on each of the water distribution ports for the Play Products. They shall be a normally closed 24 VAC 50/60 cycle solenoid actuated globe/angle pattern design. The valve body and bonnet shall be constructed of PVC with stainless steel fasteners. The valve shall have a manual override capability (manual open/close control). It shall house a fully encapsulated, one-piece solenoid. Each Solenoid valve shall have an integrated flow control adjustment valve stem for fine tuning of spray effects.
4. Gate valves (different possible combinations of sizes) shall be constructed of brass rated up to 150 PSI.
5. Inlets (different possible combinations of sizes) shall be constructed of PVC or PVC and Brass unions, all rated up to 150 PSI.
6. Electrical Enclosures, Conduit, Wiring and Connections: All electrical wiring shall be # 18 AWG with a 600V rating. All electrical connections, enclosures, and conduit shall be Nema 4x watertight.
7. Controllers: see controllers specification sheet for detailed information.

C. INSTALLATION CHARACTERISTICS.

1. Electrical Connections: All main power electrical connections to the Splashpad Controller are to be performed per local codes.
2. Drawings and Instructions: Product drawings and installation manuals shall be supplied by the manufacturer for ease of installation.

2.3 VORTEX MAESTROPRO™

A. GENERAL MATERIALS SPECIFICATIONS.

1. Equipment Enclosures: Shall be made from corrosion resistant hot compression moulded fiberglass reinforced polyester which does not contain halogens. Enclosures shall be UL listed per UL Standard 508A, NEMA 4X; CSA Certified per Standard C22.2-0, 0.4, 0.7, 0.6, 94 Type 3, 3R, 4, 4X, 12 and 13.
2. Operating temperature: MaestroPRO™ shall be operating in an ambient temperature range of 32°F (0°C) to 131°F (55°C).

B. MAESTROPRO™ CONTROLLER MAIN - 33907.12B2.

1. The MaestroPRO™ control panel shall be made from corrosion resistant hot compression moulded fiberglass reinforced polyester which does not contain halogen.
2. The MaestroPRO™ control panel is a Water Playground Controller cULus and FCC Certified and Marked product. MaestroPRO™ Controller is designed in a compliance to the CE Standards requirements.
3. The MaestroPRO™ control panel shall be supplied with a 10.4” touch screen user interface with controls for each output, activation device(s), and operation hours. These selector settings allow the user to select the operational mode of the components (i.e. Manual, Off and Automatic).
4. The MaestroPRO™ control panel shall be supplied by power through a MaestroPRO™ Power Box: providing power through two 100VA transformers 120 VAC primary / 24 VAC secondary OR 240 VAC primary / 24 VAC secondary, depending on MaestroPRO™ Power Box associated, with built-in electrostatic shield protection, and by a power supply 120/240 VAC primary to 24 VDC secondary and 100 VA.
5. The MaestroPRO™ control panel shall integrate 24 digital outputs with 24 VAC (per output : max 1.6 Amp inrush, max 0.3 Amp nominal) and 12 digital inputs with selectable 5 or 24 VDC (1A max over all inputs).
6. The MaestroPRO™ control panel shall surge at any time a maximum of 4 Amp over each of its two “12 digital outputs” sets.
7. The MaestroPRO™ control panel shall have the capacity to receive digital signals from activation devices or sensors, operating on 5 or 24VDC. (Activator, Rain Sensor.).
8. The MaestroPRO™ control panel shall have the ability to provide a 24VAC auxiliary signal. This signal can be used to trigger a relay for Pumps, Chemical, UV system, or any other item following electrical specification. All outputs are electrically protected against over consumption with resettable fuses.
9. The MaestroPRO™ control panel shall have the capacity to operate a Rain Diverter Valve

with a 24V AC max 1.6 Amp signal to prevent rainwater to go into the sewer network when the Splashpad® is not in function. That requires 2 outputs from MaestroPRO™ control panel.

10. The MaestroPRO™ main control panel shall have the ability to control Fast Acting Valves supplied by 24 VAC max 1.6 Amp inrush each.
 11. MaestroPRO™ control panel shall have the capacity to receive pulse signal from items compatible with 24 VDC (Paddle wheel water meter, Anemometer.).
 12. The MaestroPRO™ control panel shall have capability to be interconnected with any MaestroPRO™ Expansion (33907.22B2) using a dedicated RJ45 connector (located on I/O board).
 13. The MaestroPRO™ control panel shall have capability to be interconnected with max 1 Ethernet based item like the Maestro Light Controller (33908.0xxx) by using an Ethernet RJ45 Cat5 cable. If more than 1 Ethernet based items need to be connected, an Ethernet switch junction box (44900.0011) must be used.
 14. MaestroPRO™ control panel shall have removable terminal blocks for easy wiring.
 15. The MaestroPRO™ firmware shall be factory programmed with spray and light sequences designed according to the requirements of the project. Users shall have the flexibility to modify sequence duration specifically to each operation schedule directly through the interface. New sequences (created by Vortex) shall be added into the program using either a transportable USB Key or with an internet connection. A 24hr/7day user programmable Agenda, which shall allow the user to set the operational hours of the facility. Sequence quantity is not limited. For any further details about user interface, please refer to the MaestroPRO™ Manual provided by Vortex.
 16. Operation schedule shall be set by weekday or by specific date (month and day number). For both cases, schedule is set by hours in the day (start/end time). Operation schedule quantity is not limited, and all different schedules will be displayed in a paginated style.
 17. The MaestroPRO™ firmware operates in English, French and Spanish.
 18. The MaestroPRO™ firmware shall have the ability to soft start ramp up the Splashpad® to minimize potential water hammer.
 19. The MaestroPRO™ firmware shall have the ability to automatically purge all water lines based on the user selected time and duration (i.e. every day at 5 am). It shall also be configured to purge all lines after a user defined period of inactivity (i.e. after 4 hours of inactivity).
 20. The MaestroPRO™ firmware in the interface lets the user modify easily the water consumption while keeping the sequence capability.
 21. The MaestroPRO™ firmware shall have the ability to handle automatic Backwash process once connected to a multi positions valves.
- C. MAESTROPRO™ POWER BOX - 33907.13BX.
1. The MaestroPRO™ Power Box shall be housed in a fiberglass corrosion resistant NEMA 4X rated enclosure.
 2. Power consumption: Maximum power fully loaded forced manually is 200W. Power while in standard sequence in operation hours shall be approx. 100W, Power while in idle mode shall be approx. 10W - i.e. out of operation hours or without sequence running.

3. MaestroPRO™ control panel shall be protected by fuses sized according to voltage and transformer size.
4. In case of emergency, pushing the Red Emergency Button will power down the associated controller.
5. The MaestroPRO™ Power Box shall be powered using whether a 120VAC 60Hz or 240VAC 50Hz power input with a maximum of 5Amps.

D. REMOTE CONNECTION.

1. If remote connection ability is required, the operating system shall be connected to internet.
2. A hard connection to an existing network can be set. MaestroPRO™ control panel integrates a LAN port set by default as DHCP client with RJ45 physical connector.
3. MaestroPRO™ control panel shall include a built-in LTE/4G cellular module. In order to connect to internet, a NANO-SIM card previously activated by carrier must be inserted into the control panel on the Main board.

2.4 PRODUCT CONSTRUCTION

- A. The aquatic play products shall be suitable for installation in municipal and commercial aquatic facilities and public play areas.
- B. Products shall be specifically designed for the use by children and adults and follow the ASTM F2461-09 norm. In addition, products shall be manufactured by a company that has at least five (5) years of experience in the design and engineering of children's aquatic play areas.
- C. Any aquatic play product belonging to a new product line or series should demonstrate meeting the effective norm or show the conformity and resistance of the prescribed materials if it is proposed equivalency. The contractor or manufacturer must demonstrate meeting specifications by providing technical documents and drawings to be included in their bid proposal.
- D. Play Products: All aquatic play products installed above and below grade shall be manufactured from 304/304L stainless steel. The anchoring system and associated fastening hardware shall be manufactured from 304/304L stainless steel. Rigid centricast fiber reinforced (FRP) and/or molded fiberglass, PVC, filament wound tubing, Galvanized Steel, or Aluminum shall not be utilized for any above or below grade play product structures.
- E. Mounting and Assembly Hardware: All hardware and anchoring systems shall be 304/304L stainless steel. All Play Products and Ground Spay systems shall include an integrated anchoring and leveling system facilitating installation and a flush surface finish. Exposed and accessible hardware shall be tamper resistant, requiring a special tool for removal to deter vandalism and theft.

- F. Spray nozzles, caps and heads: Shall be manufactured from C360 brass and shall use tamper resistant tools for installation and removal. PVC, Nylon, and Delrin™, shall not be utilized. All grade level play products are to be furnished with appropriate winterization caps.
- G. Polished Finish: All stainless steel above ground features shall have a high- luster polished finish.
- H. Material for Paneling, Signage, Water Deflection, and Toe Guards: All Polyethylene, Polyurethane, Elastomers, and Seeflow Polymers used for paneling, signage or water deflection shall be resistant to chlorinated water and be ultraviolet stabilized to inhibit sunlight fading.
- I. Safety & Craftsmanship: All accessible edges shall be machined to a rounded finish. All welds shall be watertight, buffed smooth, or polished to a non-visible finish and factory pressure tested. Accessible nozzles and spray heads shall be recessed to ensure a completely safe play environment with no pinch points, head entrapments or protrusion hazards. All products shall be designed in accordance with ASTM F1487, ASTM F-2461 and CSA Z614-98 regulations for public playgrounds.

PART 3 EXECUTION

3.1 EXECUTION

- A. Should the bidder wish to substitute products other than the products specified herein, the bidder shall list products and submit a written Substitution Form of Proposal at least 10 calendar days prior to the date of receipt of bids. The bidder shall submit specifications, cut sheets, and performance data, along with an itemization listing each and every deviation from the specifications herein.
- B. The manufacturer shall furnish the purchaser with at least two sets of complete installation and operating manuals. The installation manual will illustrate the installation of the entire system. It shall describe the start-up procedure and day-to-day operation of the system.

3.2 PLAY PRODUCT INSTALLATION

- A. When applicable, templates shall be supplied to facilitate the installation of embedded anchoring equipment.
- B. All play products shall have electrical grounding studs incorporated into their associated anchoring equipment. All play products shall be grounded by the installer per local codes.
- C. Controller and/or LED power panels and/or any other electrical equipment must be hard-wired

to a ground fault circuit interrupter (GFCI) from the input power source. All electrical work should be performed by a licensed electrician in accordance to local electrical construction and safety codes.

- D. All installation conduit wiring including electrical supply panel, PVC connections, piping, elbows, tees, play product assembly if required and other items relating to the installation shall be supplied by the general contractor.
- E. Drawings and Instructions: Product drawings and installation manuals shall be supplied by the manufacturer for ease of installation.

3.3 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. All aquatic play products and associated equipment must be properly wrapped and secured in place while in transport to the project site. Care shall be observed during offloading and handling to prevent excessive stress and abrasions.
- B. At the site, the play products and associated equipment are to be stored in safe areas, out of the way of traffic and other construction activities, until the actual time of installation. If required, safety barricades or other like precautions must be taken for the protection of public and adjacent property.
- C. Protective wrapping on the aquatic play features must be left in place until construction work for the Splashpad is complete.

3.4 COMMISSIONING OF THE SPLASHPAD

- A. Upon completion of construction, the general contractor shall provide the owner/operator adequate training on facility operations and maintenance. The contractor may request that the equipment manufacturer and/or manufacturer's representative provide on-site start-up and training for the owner/operator.

3.5 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 shutdown at end of first full season, with training.

3.6 SPLASHPAD QUALITY ASSURANCE

- A. Provide evidence of commitment of quality craftsmanship as demonstrated by the following manufacturer qualifications:
- B. The products shall be designed and produced at a facility owned and directly supervised by the supplier.
- C. All products shall be shipped from a single source.
- D. A full time quality control manager must be on-staff.

3.7 EQUIVALENCIES CLAUSES

- A. To enable all bids to be judged equitably, they shall be based on the specified products in this document and shown on the drawings.
- B. A. The proposal for any substitute products must be attached to the bid separately, identifying the substitute product by its trade name along with any savings it may represent for the client.
- C. B. Following the opening of the bid, only those substitutes proposed by the lowest bidder of the specified products, will be considered.
- D. C. All substitute approval requests shall be accompanied by manufacturing drawings, including spray zones, sequencing, plumbing and electrical schematics and complete salt spray resisting testing data produced by an independent laboratory for coatings and a written warranty from the manufacturer.
- E. No substitution or equivalency submitted will be considered if products to be considered are not part of manufacturer standard existing product line or a written proof that product has manufactured previously by the substitute manufacturer. Please refer to General Clauses 1.1.
- F. D. Each substitute sample must be presented to the owner/consultant within seven days following the opening of bids. The sample must be completely operational. After this time period, the bidder will be required to supply the original specified product.
- G. E. The owner/consultant reserves the right to grant or deny approval for proposed substitutions without prejudice to his rights and his decision shall be final. The above conditions apply to this section independently of any other clauses on the subject found in this document.
- H. F. If applicable the products must be interchangeable and of equivalent quality to the materials already installed.

3.8 SPLASHPAD EQUIPMENT WARRANTIES

- A. Minimum Warranty periods.
- B. Splashpad Play Events/Products & Skid Mounted Water Quality Management System Equipment.
- C. A 25 Year Warranty on stainless steel Play Events/Products, stainless steel anchoring systems and aluminum spheres.
- D. A 10 Year Warranty on the reinforced fiberglass skid, sand filter fiberglass tank and cartridge filter fiberglass tank.
- E. A 5 Year Warranty on brass components including; spray nozzles, spray caps and spray heads. High-density polyethylene components, polyurethane components, and ultra high molecular weight polyethylene components. The Subterranean vault (enclosure and access hatches), stainless steel automated water distribution manifold, drain boxes, strainers, electrical enclosures, and chemical controllers.
- F. A 2 Year Warranty on color coatings, stainless steel hardware & moving parts, fiberglass products, Seeflow Polymers, Soft Touch Elastomers (Toe Guards), subterranean water containments system, circulation pumps, chemical injection pumps, chlorinator systems, acid feed systems, polyvinyl chloride (PVC); piping, fittings, ball valves, check valves, cartridge elements, pressure gauges, chemical sensing probes, motor starters, electrical relays, terminal blocks, actuated valves, programmable logic controller (PLC controller), time switches, manual switches, transformers, breakers, electrical wiring and connections.
- G. All warranties are to be managed by the equipment supplier.

END OF SECTION

SECTION 132810

SPECIALTY TIMBER SITE FEATURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DESCRIPTION OF WORK

- A. Provide all labor, materials, and equipment necessary to furnish and install the custom fabricated specialty timber site features, as indicated on the Drawings, and as specified herein.
 - 1. Hardwood log stumps.
 - 2. Natural play timbers.
- B. Provide manufacturer's standard components, accessories, and complete structure to conform to landscape architectural design appearance shown and to specified performance requirements and design criteria.

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 033001, CAST-IN-PLACE CONCRETE SITEWORK.

1.4 REQUIREMENTS AND STANDARDS

- A. Any material or operation specified by reference to published specifications of manufacturer, ASTM, AISC, AWS, IFI, SSPC, ANSI, MBMA, and other published standards shall comply with standards listed. In case of conflict between referenced specifications, etc., and Contract Documents, Contract Documents shall govern.

1.5 QUALITY ASSURANCE

- A. Design Loads: Basic design loads stated in applicable state and national building codes and indicated on Drawings, as well as auxiliary and collateral loads, as indicated on drawings.
 - 1. Basic design loads include dead load, live load, wind load and seismic load.
 - 2. Auxiliary loads include dynamic live loads such as loads generated by materials handling equipment.

1.6 PRE CONSTRUCTION MEETINGS

- A. A. Pre-construction Conference: Conduct conference at Project site.

1.7 SUBMITTALS

- A. Shop Drawings: Submit complete fabrication and erection drawings showing anchor bolt settings, anchoring systems, connections, fasteners, and accessory installation details to clearly indicate proper installation and assembly of all specialty play feature components.
- B. Product Data: Submit manufacturer's product information, specifications and installation instructions for specialty play feature components and accessories.
- C. Samples: Submit samples of the following. Landscape Architect's review will be for color and texture only. Compliance with other requirements is responsibility of Contractor.
 - 1. Each material specified, with required finishes as requested by the Landscape Architect.
 - 2. Fasteners for application of specialty play feature components.
 - 3. Sealants and closures.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store prefabricated specialty play feature components, and other manufactured Items so they will not be damaged or deformed.
- B. Stack materials on platforms or pallets. Cover with tarpaulins or other suitable weathertight ventilated covering. Store so that water accumulations will drain freely. Do not store specialty play feature materials in contact with other materials which might cause staining.
- C. Do not damage materials or finishes during handling.

PART 2 PRODUCTS

2.1 SPECIALTY SITE FEATURES

- A. Specialty Play Features include the following:
 - 1. Hardwood log steps.
 - 2. Natural play timbers.

2.2 HARDWOOD LOG STEPS

- A. Black locust, Red Oak or Black Oak logs for round wood steps. Logs shall be of various sizes and heights. Provide hardwood logs, debark and sand smooth, embed in-grade, set in dense graded crushed stone. Log steps shall be between 12-36" diameter and shall be 3-18" above finish grade. Provide in dimensions as indicated on the Drawings.
- B. Provide logs from one of the following or other local source approved by the Landscape Architect.
 - 1. Windy Hill Tree Farm (aka RI Sawmill), Coventry, RI; Tel. 1-401-265-0455.
 - 2. Jim Aaron Sawmill, New Salem, MA 413-259-1668.
 - 3. A Black Locust Connection - Blue Sky, Colrain, MA 413-624-3645.
 - 4. Black Locust Wood, 812 State Highway 29, Broadalbin, NY 12010; Tel. 518-396-0215.

2.3 NATURAL PLAY TIMBERS

- A. Black locust timber structures: Provide timber structures of black locust, stacked. Secure timbers to one another through threaded rebar. Black locust timbers will be 18-30" diameter and 15-25' in length. Debark and sand smooth all logs. Provide anchor for climbing structure, to be rebar embedded in sonotube footing to frost depth.
- B. Provide timbers from one of the following or other Architect approved source:
 - 1. Windy Hill Tree Farm (aka RI Sawmill), Coventry, RI; Tel. 1-401-265-0455.
 - 2. Jim Aaron Sawmill, New Salem, MA 413-259-1668.
 - 3. A Black Locust Connection - Blue Sky, Colrain, MA 413-624-3645.
 - 4. Black Locust Wood, 812 State Highway 29, Broadalbin, NY 12010; Tel. 518-396-0215.

2.4 HARDWARE

- A. Provide stainless steel hardware required to complete this work and to attach this work in a secure and rigid manner to work of this and other trades, including all hinges, glides, handles, pulls, brackets, anchors, anchor bolts, thru bolts, washers, nuts, nails, and other hardware. Assist other trades as necessary in the placement of brackets and anchor bolts in concrete and furnish full instructions regarding locations, sizes, and other requirements of the items in order that they may properly prepare their work to receive same. Rough hardware shall comply in all respects with requirements of the governing laws and codes.
 - 1. Tubing: ASTM A 554, Grade MT 301, MT 302, or MT 304, as standard with manufacturer.
 - 2. Pipe: ASTM A 312, Grade TP 304.
 - 3. Castings: ASTM A 743, Grade CF 8 or CF 20.
 - 4. Plate: ASTM A 167, Type 301, 302, or 304.
 - 5. Satin, Directional Polish: AISI No. 6 Finish.
- B. Provide exposed fastenings of same material and finish as metal to which applied, unless otherwise noted.

PART 3 EXECUTION

3.1 FABRICATION - GENERAL

- A. Refer to Drawings to determine the major extent of the rough, naturalized wood work required.
 - 1. The Contractor shall be responsible for structural integrity, connections, and anchorage of naturalized timber feature work.
- B. Verify that all surfaces to receive rockwork are satisfactory for the installation,
- C. Work Exposed to View: For work exposed to view, select materials with special care. Provide metal materials which are smooth and free of blemishes such as splinters, scale and roughness.

3.2 ERECTION

- A. Install specialty site features as indicated on the Drawings and at the direction of the Landscape Architect.
- B. Bracing: Provide bracing as indicated.

3.3 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions, unless more stringent requirements are indicated. Anchor playground equipment securely, positioned at locations and elevations indicated.
 - 1. Maximum Equipment Height: Coordinate installed heights of equipment and components with finished elevations of protective surfacing. Set equipment so fall heights and elevation requirements for age group use and accessibility are within required limits. Verify that playground equipment elevations comply with requirements for each type and component of equipment.
- B. Post and Footing Excavation: Excavate holes for posts and footings as indicated in firm, undisturbed or compacted subgrade soil.
- C. Post Set with Concrete Footing: Comply with ACI 301 for measuring, batching, mixing, transporting, forming, and placing concrete.
 - 1. Set equipment posts in concrete footing as required by play equipment manufacturer. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at the correct angle, alignment, height, and spacing.
 - 2. Place concrete around posts and vibrate or tamp for consolidation. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.
 - 3. Embedded Items: Use setting drawings and manufacturer's written instructions to ensure correct installation of anchorages for equipment.
 - 4. Concrete Footings: Smooth top, and shape to shed water.

3.4 TIMBER FEATURES

- A. Timber work required shall include all work, regardless of whether or not each and every item is specifically called for. Refer to Drawings to determine the major extent of the timber feature work required.
- B. The Contractor shall be responsible for structural integrity, connections, and anchorage of timber features.
- C. Discard units of material which are unsound, warped, bowed, twisted, improperly treated, or not adequately seasoned. Structural members shall be full-length without splices.

3.5 FASTENING OF TIMBER MEMBERS

- A. Timber features shall be secured to support framing as indicated on the Drawings.
 - 1. Exposed wood surfaces shall be secured to wood or steel backup by means of stainless steel screws, bolts and nuts unless otherwise indicated on the Drawings.

END OF SECTION

SECTION 133123

TENSIONED FABRIC STRUCTURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Section includes a tensioned fabric canopy system as shown on Drawings and specified in this Section.
 - 2. Landscape Architect's drawings indicate design intent with respect to sizes, shapes, and configurations of the tensioned fabric canopy. Provide all components and accessories required for complete tensioned fabric canopy system, whether or not specifically shown or specified.
 - 3. The tensioned fabric structure will assume bolted/pinned connections for field assembly. No field welding will be permitted.
- B. The tensioned fabric structure Subcontractor shall be responsible for the structural design, detailing, fabrication, supply, and installation of the Work specified herein. The intent of this specification is to establish in the first instance an undivided, single-source responsibility of the Subcontractor for all of the foregoing functions.
- C. All element sizes, material strengths, forces and quantities shown on the contract documents are to be taken as a developed concept. Final structural analysis and design are the responsibility of the subcontractor. The subcontractor is responsible at the time of bid to determine any additional costs related to their design and member sizing for the fabric roof.
- D. Subcontractor's Work shall include the structural design, supply, fabrication, shipment, and erection of the following items:
 - 1. The architectural membrane as indicated on the drawings and in these specifications.
 - 2. Cables and fittings.
 - 3. Perimeter, catenary, and sectionalized aluminum clamping system.
 - 4. Structural steel, including masts, trusses, struts, and beams as indicated on the drawings.
 - 5. Fasteners and gasketing.
- E. Related Requirements:
 - 1. Related Documents: Drawings and general provisions of the Contract, including General Requirements, apply to this Section.
 - 2. Section 033000 - Cast-in-Place Concrete for concrete footings for posts of tensioned

fabric structure.

1.2 REFERENCES

- A. Definitions:
 - 1. Tensioned Fabric Structure: Cable and/or frame supported tensioned membrane-covered fabric structure; incorporating a fabric with low elongation characteristics under tension and capable of an anticlastic configuration. Fabric structures in which fabric is applied as flat or mono-axially curved configurations are not acceptable.
- B. Reference Standards: Except as otherwise shown or noted, all work shall comply with the requirements of the following codes and standards:
- C. American Institute of Steel Construction (AISC).
 - 1. Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings.
 - 2. Code of Standard Practice for Steel Buildings and Bridges.
 - 3. Specification for Structural Steel Buildings - Allowable Stress Design and Plastic Design.
 - 4. Specification for Allowable Stress Design of Single-angle Members.
- D. American Society of Civil Engineers.
 - 1. ASCE 19: Structural Applications of Steel Cables for Buildings.
- E. American Society of Testing and Materials (ASTM).
 - 1. ASTM A586: Standard Specifications for Zinc-Coated Steel Structural Strand.
 - 2. ASTM A603: Standard Specifications for Zinc-Coated Steel Structural Wire Rope.
 - 3. ASTM D4851-88: Standard Test Methods for Coated and Laminated Fabrics for Architectural Use.
 - 4. ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 5. ASTM E108: Standard Test Methods for Fire Test and Roof Coverings.
 - 6. ASTM E136: Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.
 - 7. ASTM C423: Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
 - 8. ASTM E424: Standard Test Method for Solar Energy Transmittance and Reflectance of Sheet Materials.
- F. American Welding Society (AWS).
 - 1. AWS D1.1: Structural Welding Code.
 - 2. AWS 2.4: Symbols for Welding and Nondestructive Testing.
- G. National Fire Protection Association (NFPA).
 - 1. NFPA 701: Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.

- H. Steel Structures Painting Council (SSPC).
 - 1. Steel Structures Painting Manual, Volumes 1 and 2.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include styles, material descriptions, construction details, fabrication details, dimensions of individual components and profiles, hardware, fittings, mounting accessories, features, and finishes for tensioned fabric structures.
 - 2. Include rated capacities, light transmissions, and operating characteristics of furnished specialties and accessories.
- B. Design Drawings:
 - 1. Include plans, elevations, sections, mounting heights, and frame assembly details.
 - 2. Preliminary member sizes with wall thickness.
 - 3. Preliminary footing layout and foundation design with final depth.
 - 4. Show intended fabric attachment hardware and details.
 - 5. Identify direction, details and locations of fabric seams.
 - 6. Show details of fabric membrane dimensions including length of spans, sag in curvature and actual shaded area.
- C. Engineered Drawings (submit after Design Drawings have been approved):
 - 1. Calculations with Wet Stamp seal of a Professional Engineer with a license in the same state as the project location.
 - 2. Engineering Drawings with Wet Stamp seal of a Professional Engineer with a license in the same state as the project location.
 - 3. Include plans, elevations, sections, mounting heights, and frame assembly details.
 - 4. Provide frame member sizes and required wall thicknesses.
 - 5. Identify all welding requirements.
 - 6. Detail all bolted and/or pin connections for frame assembly.
 - 7. Identify required sizes of bolts, pins, plates and tubing.
 - 8. Verify the fabric meets minimum engineering requirements.
 - 9. Detail fabric attachment methods and identify thickness of all membrane plates, clamps and other attachment components.
 - 10. Call out all cable sizes and pretension requirements.
 - 11. Submit anchor-bolt plans before foundation work begins. Include location, diameter, and projection of anchor bolts required to attach the tensioned fabric structures to foundation. Indicate column reactions at each location.
- D. Samples for Initial Selection: Electronic file of available frame finish colors.

- E. Samples for Verification: For the following:
 - 1. Fabric: Qty (3) 8 ½” x 11” samples of fabric as selected by the landscape architect.
 - 2. Frame Finish: Qty (3) Sample chips, not less than 2” x 3” in size.
- F. Provide a Schedule of Values within (2) weeks of project award.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer, Subcontractor, and professional engineer.
- B. Welding certificates.
- C. Sample Warranty: For fabric warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For tensioned fabric structures to include in operation and maintenance manuals.
 - 1. Include the following:
 - a. Methods for maintaining tensioned fabric structure fabrics and finishes.
 - b. Precautions about cleaning materials and methods that could be detrimental to fabrics, finishes, and performance.

1.6 QUALITY ASSURANCE

- A. Subcontractor Qualifications: Shop that employs skilled workers who custom-fabricate tensioned fabric structures similar to those required for this Project and whose products have a record of successful in-service performance.
 - 1. Subcontractor must be an active member of Industrial Fabric Association International (IFAI) and Fabric Structures Association (FSA).
 - 2. Subcontractor’s responsibilities include fabricating and installing tensioned fabric structures and providing professional engineering services needed to assume engineering responsibility.
 - 3. Subcontractor’s engineering services must utilize Finite Element Analysis software that performs fabric form finding and takes into account fabric material properties and prestress characteristics.
 - 4. Subcontractor must have proven record of at least (10) successful projects of similar size and similar specified fabric material.
 - 5. Subcontractor must have been in continuous operation as a professional tensioned fabric structure manufacturer for minimum of (15) years prior to contract.
 - 6. Subcontractor must be an American owned company.
 - 7. Subcontractor must have an in-house Made-in-America manufacturing facility for both

- frame and fabric membrane components.
- 8. Subcontractor must be a Los Angeles approved certified welder.
- 9. Subcontractor must have a Green rating with Dunn & Bradstreet for timely payment to vendors.
- 10. Subcontractor must have in-house installers with 10-hour OSHA training certificates.

B. Installer Qualifications: Fabricator of products.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

- 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.7 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit installation of tensioned fabric structure in exterior locations to be performed according to Subcontractors' written instructions and warranty requirements.

B. Field Measurements: Where tensioned fabric structure installation is indicated to fit to other work, verify dimensions of other work by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for fenestration operation throughout the entire operating range. Notify Architect of discrepancies. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.8 WARRANTY

A. Special Warranty: Manufacturer and Subcontractor agree to repair or replace components of tensioned fabric structures that fail in materials or workmanship within specified warranty period of one year from the date of Substantial Completion.

B. Failures include, but are not limited to, the following:

- 1. Structural failures including framework.
- 2. Deterioration of fabric including seam failure.
- 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

C. Warranty Period, Fabric: Reference the manufacturer's limited warranty for the specified fabric manufacturer and product.

D. Warranty Period, Cables, Securement Devices and Accessories: One year from date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design:
 - 1. Model SC252510 Single Cantilevered Shade with 10' Eave Height.
 - 2. Model OSP121210 Offset Single Post Pyramid Shade with 10' Eave Height.
 - 3. Model U2510 Single Post Umbrella with 10' Eave Height.
- B. Acceptable Manufacturer: Shade Systems, Inc. 4150 SW 19th Street Ocala, FL 34474.
- C. Or approved equal. Subcontractor must meet all minimum requirements as outlined in item 1.6 QUALITY ASSURANCE of this section and show written proof for each item listed to become an approved equal.
- D. Applicant for approved equal must submit engineering analysis along with pricing. Analysis must include:
 - 1. Finite Element Analysis under various load cases.
 - 2. Fabric form finding of membrane.
 - 3. Adequate membrane gradient under load displacement to allow water runoff.
 - 4. Frame member and cable sizing.
 - 5. Footing reaction loads.
- E. Source Limitations: Obtain tensioned fabric structures from single source from single Subcontractor.

2.2 DESCRIPTION

- A. General: Provide a tensioned fabric structure system that complies with requirements specified herein by testing the Subcontractor's corresponding membrane system in accordance with the indicated test methods.
- B. Regulatory Requirements: Provide tensioned fabric canopy system complying with requirements and limitations of authorities having jurisdiction that are within Contractor's control.
- C. Building Code Criteria: The tensioned fabric structure shall comply with the International Building Code, latest edition.
- D. Comply with local building codes and respective loading criteria for Snow Loads, Live Loads, Dead Loads, Wind Speed, and Seismic Loads.

- E. Life Safety: Tensioned fabric structure shall be detailed so that no life safety issue is created in the event of a loss of a part of the membrane. The tensioned fabric structure shall not rely on the membrane for structural stability.

2.3 PERFORMANCE / DESIGN CRITERIA

- A. Delegated Design: Engage a qualified professional engineer to design tensioned fabric canopy system. Delegated design engineering requirements include, but are not limited to, the following:
 - 1. Prepare structural design drawings defining the precise interface geometry determination, reaction loads imposed on structural steel framing, anchoring loads, connection details, interfaces, and seam layouts.
- B. Structural calculations for the tensioned fabric canopy system shall include:
 - 1. Large deflection numerical shape generation that will insure a stable, uniformly stressed, three dimensionally curved shape that is in static equilibrium with the internal prestress forces and is suitable to resist all applied loads.
 - 2. Large deflection finite element method structural analysis of the membrane system under all applicable wind and seismic loads.
 - 3. Connection design including bolt, weld and ancillary member sizing.
 - 4. Biaxial fabric test specification, interpretation and fabric compensation determination.
 - 5. Accurate generation of the two-dimensional compensated fabric templates required to generate the three-dimensional equilibrium shape.
- C. In engineering tensioned fabric canopy system fittings and accessories to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:
 - 1. Steel: 72 percent of minimum yield strength.
 - 2. Stainless Steel: 60 percent of minimum yield strength.
 - 3. Aluminum: The lesser of minimum yield strength divided by 1.65 or minimum ultimate tensile strength divided by 1.95.
- D. Structural Performance: Tensioned fabric canopy system shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7:
 - 1. Wind Loads:
 - a. Frame Only: 165 mph.
 - b. Frame with Canopy: 90 mph.
 - 2. Snow Loads: none.
- E. General: In engineering railings to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:
 - 1. Aluminum: The lesser of minimum yield strength divided by 1.65 or minimum ultimate

- tensile strength divided by 1.95.
 - 2. Copper Alloys: 60 percent of minimum yield strength.
 - 3. Stainless Steel: 60 percent of minimum yield strength.
 - 4. Steel: 72 percent of minimum yield strength.
- F. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
- 1. Temperature Change: 120 degrees F, ambient; 180 degrees F, material surfaces.
- G. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

2.4 CANOPY FABRIC MATERIALS

- A. Product: Subject to compliance with requirements, provide fabric as called out and specified by the Owner in the bid drawings.
- B. Fire-Test-Response Characteristics: Provide canopy fabric with the fire-test-response characteristics indicated, as determined by testing identical products according to test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
- 1. Flame-Resistance Ratings: Passes NFPA 701.
 - 2. Noncombustible: Passes ASTM E-136 and E-108.
 - 3. Flame Spread: ASTM E-84 Class A.
- C. Fabric properties:
- 1. Material: HDPE.
 - 2. Fabric thickness and tensile strength: Must meet engineering requirements with a safety factor of five.
 - 3. Color: to be determined
 - 4. Porosity: 20% open Mesh.

2.5 CANOPY FRAME, CABLES, FITTINGS AND ACCESSORIES

- A. General: Provide accessories as standard with tensioned fabric canopy system Subcontractor and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by Subcontractor's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.
- B. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

- C. Frame material shall be constructed of cold rolled carbon steel unless otherwise specified by the landscape architect in the bid drawings.
 - 1. Steel and Iron:
 - a. Tubing: ASTM A 500 (cold formed) or ASTM A 513.
 - b. Bars: Hot-rolled, carbon steel complying with ASTM A 29/A 29M, Grade 1010.
 - c. Plates, Shapes, and Bars: ASTM A 36 or ASTM A 572 per engineering requirements.
 - 2. Stainless Steel (when applicable);
 - a. Tubing: ASTM A 554, Grade MT 316L.
 - b. Pipe: ASTM A 312/A 312M, Grade TP 316L.
 - c. Castings: ASTM A 743/A 743M, Grade CF 8M or CF 3M.
 - d. Sheet, Strip, Plate, and Flat Bar: ASTM A 666, Type 316L.
 - e. Bars and Shapes: ASTM A 276, Type 316L.
- D. Cables and Fittings shall be constructed of galvanized steel unless otherwise specified by the architect in the bid drawings:
 - 1. Any cable in contact with HDPE fabric shall never have PVC coating.
- E. Galvanized Cables:
 - 1. Cable: 1-by-19 galvanized steel structural wire rope made from wire complying with ASTM A 603.
 - 2. Cable Fittings: Connectors of types indicated or required, fabricated from hot dip galvanized steel, and with capability to sustain, without failure, a load equal to minimum breaking strength of cable with which they are used.
- F. Stainless Steel Cables:
 - 1. Cable: 1-by-19 wire rope made from wire complying with ASTM A 492, Type 316.
 - 2. Cable Fittings: Connectors of types indicated or required, fabricated from stainless steel, and with capability to sustain, without failure, a load equal to minimum breaking strength of cable with which they are used.
- G. Accessories.
 - 1. Base Plates and Anchor Bolts.
 - a. Base plates supported on concrete shall be furnished and set on shims, leveling plates or leveling nuts. Grouting shall be by the General Contractor.
 - b. Anchor bolt locations shall be furnished by the Subcontractor and used by the General Contractor to set the bolts. The General Contractor is to carefully check the setting of the bolts to their proper position prior to placing of concrete. Anchor bolts, provided by the General Contractor, shall have two (2) nuts and washers. Damaged threads shall be repaired or be cut to permit full tightening of nuts.
 - c. Anchor bolts will have adequate thread length above concrete for the leveling nut, the base plate, the top nut, the washers and at least two full threads exposed on top. Any concrete that impedes the required thread length will be chipped away by the General Contractor prior to the installation of the frame.
 - 2. Metal Battens for Securing Canopy Fabric to Structural Steel Frame: Extruded aluminum.

2.6 CANOPY FRAME FINISH

- A. Frame Finish shall be polyester powder painted unless otherwise specified by the architect in the bid drawings.
- B. Powder Coat Finish:
 - 1. Commercial blast clean surface in accordance with SSPC-SP 10.
 - 2. Apply primer and polyester powder coat paint to a minimum of 3 mils thick.
 - 3. Color: to be determined

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine structural steel framing and other substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ERECTION

- A. Proceed with installation of tensioned fabric structure only when existing and forecasted weather conditions will permit work to be performed in accordance with Subcontractor's recommendations.
- B. Erect frame and fabric in accordance with the procedures of the approved Subcontractor.
- C. Adequate prestress shall be applied to eliminate fabric wrinkles and excess cable sag. Membranes with extreme twist and/or shallow catenary curves may be more prone to wrinkles. The wrinkles should be minimized with adjustments and should not be a distraction when looking at the project as a whole.

3.3 FIELD QUALITY CONTROL

- A. Subcontractor's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- B. Prepare test and inspection reports.

3.4 MEMBRANE PATCHING

- A. Any and all patching must be done by trained and authorized personnel.
- B. Minor repairs are defined as:
 - 1. A patch, no larger than 1% of the area of the fabric panel.
 - 2. Sewn or sealed reinforcement at corners or joints, sewing and sealing no greater than 12 inches in length.
- C. A maximum of one patch per membrane will be permissible.
- D. No more than two patches will be allowed for the entire project.
- E. Sewn or sealed reinforcement is allowed at all corners when necessary.

3.5 ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to one visit to Project during other-than-normal occupancy hours for this purpose.

3.6 CLOSEOUT ACTIVITIES

- A. Demonstration: Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust cable and fabric tension and to clean and maintain canopy fabric.

END OF SECTION

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 playground protective surfacing and turf and grasses.
- B. Related Requirements:
 - 1. Section 312213 - Rough Grading.
 - 2. Section 329119 - Landscape Grading.

1.3 DEFINITIONS

- A. 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 Owner's Representative. 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 300 in length.
 - 3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Owner's Representative. Unauthorized excavation, as well as remedial work directed by Owner's Representative, shall be without additional compensation.
- B. Fill: Soil materials used to raise existing grades.
- C. 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.

- D. 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.
- E. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

1.4 PRE CONSTRUCTION MEETINGS

- A. Pre Construction Meeting: Conduct meeting 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 trenching 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 "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 Section 010000 General Requirements in and Section 311000 "Site Clearing" are in place.
- D. 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.
- E. Do not direct vehicle or equipment exhaust towards protection zones.
- F. 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.
- B. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- C. 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.
- D. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and zero to 5 percent passing a No. 8 sieve.
- E. Sand: ASTM C33/C33M; fine aggregate.

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 Owner's Representative when excavations have reached required subgrade.
- B. If Owner's Representative 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 Landscape 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. Testing and inspecting underground utilities.
 - 3. 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.

- B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:
 - 1. Turf or Unpaved Areas: Plus or minus 1 inch.

3.11 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.

3.12 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION

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 312000 - Earth Moving.
 - 2. Section 329119 - Landscape Grading.

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/ft³ (600 kN-m/m³)).
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).

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. Subsoil Materials.
 1. Type S2.
 - a. Excavated and re-used material: shall be screened with 1/2" sieve. After screening, it should be inspected and any glass, metal, plastic or other foreign materials over 1/4" in size (in any dimension) shall be removed.
- B. Topsoil Materials.
 1. Type S4.
 - a. Imported material, see Section 329119 for more info.

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

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. Section Includes:
 - 1. Compost Filter Sock.
- C. Related Sections:
 - 1. Section 312000 - Earth Moving.
 - 2. Section 312213 - Rough Grading.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

1.3 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.

1.4 SUBMITTALS

- A. Submit, in accordance with Division 01 10 00 - General Requirements: Submittal Procedures ten (10) days after award of Contract, technical product literature for all commercial products to be used for erosion and sedimentation control.
- B. If a NPDES General Permit is required, Contractor shall, prior to the start of construction:
 - 1. 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.
 - 2. 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.

1.5 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 312323, Section 312316, Section 312323,.
- D. Perform Work according to Municipality of Department 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.
 - 1. Machine produced.
 - 2. Straw filled tubes of compacted straw of rice, wheat or barley.
 - 3. Compost filter sock to be certified as weed free.
 - 4. Netting for tubes to be seamless, high density polyethylene with ultra violet inhibitors.
 - 5. Roll length to be 10.0 feet to 25.0 feet.
 - 6. Weight per linear foot, 12-inch: 2.5 lbs. minimum 9-inch: 1.5 lbs. minimum.
 - 7. 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. Staging areas and stabilized construction entrance shall be surfaced with a minimum depth of 6 inches of crushed stone (if so directed by the Landscape Architect. Stabilized construction entrances shall be installed as shown on the Plans.

3.2 MAINTENANCE AND INSPECTION

- A. Inspections.
 - 1. 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.

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.

3.4 SITE STABILIZATION

- A. Incorporate erosion control devices indicated on the Drawings into the Project at the earliest practicable time.
- B. Construct, stabilize and activate erosion controls before site disturbance within tributary areas of those controls.
- C. Stockpile and waste pile heights shall not exceed 35 feet. Slope stockpile sides at 2: 1 or flatter.
- D. Stabilize any disturbed area of affected erosion control devices on which activity has ceased and which will remain exposed for more than 20 days.
 - 1. During non-germinating periods, apply mulch at recommended rates.
 - 2. Stabilize disturbed areas which are either at finished grade or will not be disturbed within one year in accordance with Section 329219 permanent seeding specifications.
- E. Stabilize diversion channels, sediment traps, and stockpiles immediately.

END OF SECTION

SECTION 321216

ASPHALT PAVING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Hot-mix asphalt paving.
- B. Related Requirements:
 - 1. Section 024119 - Selective Demolition for demolition and removal of existing asphalt pavement.
 - 2. Section 312000 - Earth Moving for subgrade preparation, fill material, separation geotextiles, unbound-aggregate subbase and base courses, and aggregate pavement shoulders.
 - 3. Section 321313 - Concrete Paving for concrete pavement and for separate concrete curbs, gutters, and driveway aprons.

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. Tack Coat: Minimum surface temperature of 60 deg F.
 - 2. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
 - 3. 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. Tack Coat: ASTM D 977 emulsified asphalt, or ASTM D 2397/D 2397M or cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.
- F. 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.
- G. Water: Potable.
- H. 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: 12.5 HMA.
 - 3. Surface Course: 9.5 HMA.

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 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.

3.4 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.

3.5 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.

3.6 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.

3.7 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.

3.8 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.

3.9 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

SECTION 321313
CONCRETE PAVING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Sections:
 - 1. Section 312213 - Rough Grading.
 - 2. Section 321216 - Asphalt Paving.
 - 3. Section 323300 - Site Furnishings.

1.2 SUMMARY

- A. Section Includes Concrete Paving Including the Following:
 - 1. Sidewalks.
 - 2. Pads for trash receptacles.

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

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to concrete paving, including but not limited to, the following:
 - a. Concrete mixture design.
 - b. Quality control of concrete materials and concrete paving construction practices.
 - c. Best practices for concrete installation in hot/cold temperatures.
 - 2. Require representatives of each entity directly concerned with concrete paving to attend,

including the following:

- a. Contractor's superintendent.
- b. Ready-mix concrete manufacturer's representative (only for larger projects).
- c. Concrete paving Subcontractor.

1.5 PRODUCT SUBMITTALS

- A. Product Data: For each type of product.
- B. Sustainable Design Submittals:
 1. Ground Granulated Blast Furnace Slag (GGBFS).
- C. Samples for Initial Selection: For each type of product, ingredient, or admixture requiring color selection.
- 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. Provide confirmation of mix design with each delivery of concrete to the project site.

1.6 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For the following, from manufacturer:
 1. Cementitious materials.
 2. Fiber reinforcement.
 3. Admixtures.
 4. Curing compounds.
 5. Joint fillers.

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 48"x48".
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 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.
 4. Cover base material with thermal blankets prior to concrete pour in order to keep temperature of base material above 40 deg F.
 5. When temperatures are forecasted to drop below 40 deg F, cover concrete with plastic sheeting followed by thermal blankets for a minimum of 1 week or per mix design requirements.
- 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.
 2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
 3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

PART 2 PRODUCTS

2.1 CONCRETE, GENERAL

- A. ACI Publications: Comply with ACI 301 unless otherwise indicated.

2.2 FORMS

- A. Form Materials: Plywood, plastic lumber, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.
 - 1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less.
- 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/II.
 - 2. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.
- B. Normal-Weight Aggregates: ASTM C 33/C 33M, Class 4S, uniformly graded. Provide aggregates from a single source.
 - 1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Air-Entraining Admixture: ASTM C 260/C 260M.
- D. 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. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - 2. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
- E. Color Pigment: ASTM C 979/C 979M, synthetic mineral -oxide pigments or colored water-reducing admixtures; color stable, nonfading and resistant to lime and other alkalis.
 - 1. Manufacturer: Brickform by Solomon Colors, Ultra-Mix, or approved equal.
 - 2. Color: to be selected by Landscape Architect from manufacturer's full range of colors.
- F. Water: Potable and complying with ASTM C 94/C 94M.

2.4 FIBER REINFORCEMENT

- A. Synthetic Fiber: Fibrillated 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.

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 RELATED MATERIALS

- A. Joint Dowels:
 - 1. Smooth Dowel: 5/8" x 18" Steel, ASTM A 615 Grade 60 Steel & ACI 302.1 R-04 3.2.7.
 - 2. Speed Dowel system: Sika #4x9" Speed Dowel, PSD09/#4TX with base PSD/#4BX, or approved equal.
- B. Joint Fillers: ASTM D 1752, cork or self-expanding cork in preformed strips.

2.7 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: use one of the following to reduce the amount of Portland cement needed.
 - 1. Ground Granulated Blast Furnace Slag (GGBFS): preferred, minimum 20 percent, maximum 60 percent.
 - 2. Fly Ash or Pozzolan: minimum 15, maximum 25 percent.
 - 3. Slag Cement: minimum 20, maximum 50 percent.
 - 4. Combined Fly Ash or Pozzolan, and Slag Cement: minimum 20, maximum 50 percent, with fly ash or pozzolan not exceeding 25 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: 6 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 water-reducing admixture high-range, water-reducing admixture high-range, water-reducing and retarding admixture plasticizing and retarding 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.
- F. Synthetic Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than 1.0 lb/cu. yd.
- 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.

2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.
 - 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 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. 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.
 - 1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.
- B. Expansion Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.
 - 1. Locate expansion joints at intervals of 20 feet unless otherwise indicated.
 - 2. Dowels:
 - a. Using Speed Dowels or similar, attach base anchors directly to edge form and insert sleeves.
 - b. Install at 12" on center or per manufacturer's recommendation.
 - c. After removing form, insert ungreased steel dowels into sleeves.
 - 3. Joint Fillers.
 - a. Extend joint fillers full width and depth of joint.
 - b. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.

- c. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
 - d. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
 - e. Cut holes in joint material as needed to accommodate dowels.
 - f. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
- C. Control (Contraction) Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:
1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate grooving-tool marks on concrete surfaces.
 2. Sawed Joints: Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete within 4 to 12 hours after placing the slab to avoid contraction cracks.
 - a. Sawed Joint cannot be used for curved control joints.
 - b. Grooved joints are preferred, contractor to obtain approval for Sawed Joints from owner's representative before concrete is poured.
 3. Tolerances:
 - a. Depth: +/- 1/8 inch.
 - b. Horizontal: +/- 2 inches.
- D. Joining an existing slab, when joining existing paving, dowels should be drilled into existing slab and epoxied in place.
1. Use 1/2" x 18" square dowels.
 2. Drill into existing slab +/- 2" from top of slab in a line parallel to the top of slab.
 3. Spacing should be 12" on center, starting 8" from the edge of the existing slab.
 4. Epoxy dowel in place, insuring it is square to the face of the joint both vertically and horizontally.
 5. Install speed dowel sleeve or grease the end of the dowel that will be covered by the new slab.
- E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 3/8-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, steel reinforcement, and

items to be embedded or cast-in.

- B. Remove snow, ice, or frost from subbase surface and steel reinforcement 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.
 - 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement dowels and joint devices.
- 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.
 - 2. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiff-bristled broom, perpendicular

to line of traffic.

3.7 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 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.

3.8 PAVING TOLERANCES

- A. Comply with tolerances in ACI 117 and as follows:
 - 1. Elevation: 3/8 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. Alignment of Tie-Bar End Relative to Line Perpendicular to Paving Edge: 1/2 inch per 12 inches of tie bar.
 - 5. Lateral Alignment and Spacing of Dowels: 1 inch.
 - 6. Vertical Alignment of Dowels: 1/4 inch.
 - 7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/16 inch per 12 inches of dowel.
 - 8. Joint Spacing: 3 inches.
 - 9. Contraction Joint Depth: 1/8 inch,

10. Joint Width: Plus 1/8 inch, no minus.

3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- C. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
- D. Concrete paving will be considered defective if it does not pass tests and inspections.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

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

SECTION 321613
CURBS AND GUTTERS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Precast Concrete Curb for playground edging.

1.2 DESCRIPTION OF WORK

- A. The Work of this Section consists of providing labor, equipment, materials, incidental work, and construction methods necessary to furnish and install the precast concrete curb, as indicated on the Contract Documents and as specified.

1.3 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General Requirements, apply to this Section.
- B. The following items of related work are specified and included in other Sections of the Specifications:
 - 1. Section 321813 - Synthetic Grass Surfacing.
 - 2. Section 321816.13 - Playground Protective Surfacing.

1.4 REFERENCES

- A. The following standards shall apply to the work of this Section.
 - 1. State of Rhode Island Department of Transportation (RIDOT):
 - a. Specifications Standard Specifications for Road and Bridge Construction.
 - 2. American Society for Testing and Materials (ASTM):
 - a. A 615 Deformed and Plain Billet - Steel Bars for Concrete Reinforcement.

1.5 SUBMITTALS

- A. A. Submit complete shop drawings of precast concrete curbing for Owner's Representative's approval.
 - 1. Shop drawings shall indicate size, dimension, and finish of each curb type.
 - 2. Submit a complete schedule for quantity, lengths, and size for all curbing on the project.
- B. Submit manufacturer's literature and test reports for all curbing required for project; include each curb type.

1.6 QUALITY ASSURANCE

- A. A. Unless otherwise indicated, pre-cast concrete curb materials and construction shall conform to the applicable portions of the following:
 - 1. RIDOT Specifications Section 906, "Curbing for Roadways".
 - 2. Concrete for all curbing shall be supplied from a single source for entire project.
 - 3. Source of concrete shall be approved by Owner's Representative prior to construction.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Precast concrete curb units shall be delivered to the job adequately protected from damage during transit.
- B. Curb units shall be stored off the ground with wood cribbing between each unit. Curb shall be protected against staining, chipping, and other damage. Cracked, chipped, or stained units will be rejected and shall not be employed in the work.
- C. Store pallets of curbing on pavement or other hard, durable surfaces that will not compact as a result of the weight of the pallets of curbing. Prevent steel strapping of pallets from rusting and staining of pavement. Remove and replace all pavement stained by rusting steel strapping of pallets.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Precast curb units shall be the product of one of the following precast concrete curb suppliers, or an approved equal:
 - 1. Means Precast, Braintree, MA 02184, Tel. (781) 843-1909.
 - 2. Durastone Corporation, P.O. Box 1114, 150 Higginson Avenue, Lincoln, RI 02865, Tel. (401) 596-7225.

3. Precast Specialties Corp., 999 Adams Street, P.O. Box 86, Abington, MA 02351, Tel. (781) 878-7220.

B. Reclaimed Granite Block is stored on pallets at a Parks Department facility within Roger Williams Park. Contractor will be responsible for retrieving the materials from Roger Williams Park and delivering them to the project site.

2.2 CONCRETE MATERIALS

A. Formwork:

1. Forms shall be wood or steel and shall have a "smooth form" surface to produce required finish on exposed portions of precast curbing.

B. Reinforcing Steel:

1. Steel reinforcing bars shall be deformed type conforming to ASTM A 615.
2. Unless otherwise indicated on the Contract Documents, provide a minimum of two No. 3 bars for each curb unit.

C. Concrete for Precast Curbing:

1. Concrete shall be air-entrained type with a minimum 28 day compressive strength of 4000 psi, 3/4 inches aggregate, 610 lb. Portland cement per cubic yard. Air content shall be 5% to 7%.

2.3 SIZE AND DIMENSIONS

A. Straight curb units shall be 6 inches x 18 inches, 6 feet lengths.

B. Curved curbing shall be employed on radii up to 100 feet.

C. Arris exposed to traffic shall be rounded to a 3/4 inches radius. Back arris line shall be straight.

D. Curb units shall be true to line, plane, and dimensions.

E. Granite Blocks are roughly 'Jumbo Cobble' size: +/-4" x +/-7" x +/-10."

2.4 FINISH

A. Curb units shall have a uniform, smooth texture finish, free from cracks and other defects. Color of units shall be uniform.

B. Curb shall have no paint, mortar, or other coating.

- C. Clean any mortar from granite blocks prior to installation.

2.5 CURING

- A. Precast units shall be moist cured by steam or water for a sufficient length of time for the concrete to obtain the required compressive strength. Curing compounds will not be permitted.

PART 3 EXECUTION

3.1 SETTING CURB

- A. Curb shall be set in an 18-inch wide trench, with trench bottom at 6 inches below bottom of curb. Excavation shall be filled to required level with dense graded crushed stone provided, installed and paid for under the work of Section 312000 - Earth Excavation, Backfill, Fill, & Grading.
 - 1. All spaces under the curb shall be filled with compacted dense graded crushed stone so that the curb will be completely supported throughout its length.
 - 2. Vertical face of vertical curb shall be plumb, with curb top parallel to adjacent surface.
 - 3. Curb shall be set accurately to line and grade. Curb alignment shall be uniform, with smooth and continuous arris lines. Radius curbs shall meet with a common tangent.
- B. Curb units shall be placed accurately to line. Final points (locations where lines of curb intersect) shall be joined by closure pieces made to order and not less than 30 inches in length.
- C. Curb shall not be field cut except with the prior permission of the Owner's Representative.
 - 1. If field cutting of curb is permitted by the Owner's Representative, the curb shall be cut using concrete cutting tools to provide a smooth and uniform saw cut. Sawn end shall match manufactured end, in every respect. Chamfers shall be ground to match abutting curb unit. Field chamfers and sawn end profiles shall be finished with manufacturer recommended bonding agent, to match surface finish of curb unit. In no case, shall field sawn end cut be exposed to view.
- D. Curb units shall be butted together with joints between curb units (both front and back) no greater than 1/8 inches. Joint space shall not be filled with mortar.
- E. Set curb to required line and grade. Where indicated, provide transition sections to create smooth transition between standard curb and flush curb at entrances, ramps, and all other locations requiring transition curbing as determined by the Owner's Representative.
- F. Backfill material on each side of curb shall be as specified for adjacent surface and shall be thoroughly compacted by means of power tampers. Extreme care shall be taken not to destroy alignment. Curb sections disturbed during backfilling or otherwise shall be reset to line and

grade, and properly backfilled.

- G. Remove and reset all curb sections that do not conform to the vertical and horizontal alignment shown on the Contract Documents.

3.2 SETTING GRANITE BLOCKS

- A. Blocks shall be set in a 12-inch wide trench, with trench bottom at 7 inches below bottom of curb. Excavation shall be filled to required level with dense graded crushed stone provided, installed and paid for under the work of Section 312000 - Earth Excavation, Backfill, Fill, & Grading.
- B. Lay down 3" thick bed of mortar, approximately 10" wide.
- C. Blocks shall be placed accurately to line in mortar bed.
- D. After blocks have been placed, while mortar setting bed is still wet, add additional mortar to front and back of blocks, covering a minimum of the bottom 3" of the blocks.
- E. Blocks shall be butted together with joints between units (both front and back) no greater than 1/4 inches. Joint space shall be filled with mortar and tooled back from face of block.
- F. Backfill material on each side of block shall be as specified for adjacent surface and shall be thoroughly compacted by means of hand tampers. Extreme care shall be taken not to destroy alignment. Block sections disturbed during backfilling or otherwise shall be reset to line and grade, and properly backfilled.
- G. Remove and reset all block sections that do not conform to the vertical and horizontal alignment shown on the Contract Documents.

3.3 CLEANING

- A. Once Curbs and Granite blocks are in place and backfilled, thoroughly clean exposed faces, removing any dirt, mortar or other materials.

END OF SECTION

SECTION 321813

SYNTHETIC GRASS SURFACING

PART 1 GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Synthetic turf surfacing, including artificial turf, subbase preparation and placement of aggregate base course, and turf infill.
- B. Related Information:
 - 1. Section 312000 - Earth Moving.
 - 2. Section 31213 - Rough Grading.
 - 3. Section 321216 - Asphalt Paving.

1.2 REFERENCES

- A. ASTM International (ASTM): www.astm.org
 - 1. ASTM D1335 - Test Method for Tuft Bind of Pile Yarn Floor Coverings.
 - 2. ASTM D2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials.
 - 3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 4. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings.
 - 5. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
 - 6. ASTM F1015 - Standard Test Method for Relative Abrasiveness of Synthetic Turf Playing Surfaces.
 - 7. ASTM F1292 - Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment.
 - 8. ASTM F1951 - Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.
- B. International Play Equipment Manufacturers Association (IPEMA):
www.ipema.org

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Conference: Conduct conference at Project site following award of contract. Review methods and procedures related to synthetic turf surfacing installation including, but not limited to, the following:
 - 1. Review survey of subbase conditions.
 - 2. Review delivery, storage, and handling procedures.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product specified.
- B. Shop Drawings: Provide installation details including roll and seaming layout, methods of attachment and details at penetrations and terminations.
 - 1. Show layout of marking plan if any, indicating details for specified activity areas.
- C. Samples: For each type of synthetic turf surfacing indicated.
 - 1. Minimum 12-by-12-inch- square sample of synthetic turf surface with tufted perimeter line and carpet seam.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Installation Schedule: Showing planned commencement and completion dates for each portion of the Work; include critical dates indicated on Owner's project schedule.
- C. Warranty: Sample warranty specified in this Section.

1.6 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. Seaming Materials: Sufficient quantity for 100 sq. ft.
 - 2. Synthetic Turf Fiber: Sufficient quantity for 100 sq. ft.
 - 3. Infill Material: Sufficient quantity for 100 sq. ft., in weatherproof bags.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing synthetic turf surfacing materials similar to those specified for this project, with a record of successful service for a

minimum of 5 years.

- B. **Installer Qualifications:** An experienced Installer certified by the manufacturer, employing workers trained and approved by manufacturer, who has successfully installed work similar in design and extent to that required for the project, in not less than 5 projects of similar scope.
- C. **Source Limitations:** Obtain synthetic turf surfacing materials through one source from a single manufacturer.
 - 1. Provide secondary materials including adhesives, paint, thread, and repair materials of type and from source recommended by manufacturer of synthetic turf surfacing materials.

1.8 PROJECT CONDITIONS

- A. **Weather Limitations:** Proceed with installation only when existing and forecasted weather conditions permit synthetic turf surfacing installation to be performed according to manufacturers' written instructions and warranty requirements.

1.9 COORDINATION

- A. Coordinate installation of synthetic turf surfacing with installation of site paving, playground equipment, adjacent lawns, landscaping materials, site lighting, and related work.

1.10 WARRANTY

- A. **Manufacturer's Warranty:** Submit manufacturer's standard published limited warranty form in which manufacturer agrees to repair or replace components of synthetic turf surfacing installation installed by manufacturer-certified Installer that fail in materials under normal use and maintenance, or provide other relief, within specified warranty period.
 - 1. Failures include ultraviolet degradation, backing integrity, more than 50 percent loss of face fiber, and loss of tuft bind strength.
 - 2. Warranty Period: Life of product.
- B. **Installer Project Warranty:** Submit synthetic turf surfacing Installer's warranty, signed by Installer, covering the Work of this Section, including installation of all components of synthetic turf surfacing system, for the following warranty period:
 - 1. Warranty Period: Two years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. SYNLawn (www.synlawn.com).
 - 1. Distributed by:
 - 2. SYNLawn New England.
 - 3. Atlantic Sports Group/New England Turf Store,
 - 4. 5 Fulton Street, Canton, MA 022021.
 - 5. 781.633.6102.
- B. Approved Equal.
- C. Submit requests for substitution in accordance with Instructions to Bidders and Division 01 General Requirements.
- D. Source Limitations: Obtain synthetic turf surfacing materials through one source from a single manufacturer.
 - 1. Provide secondary materials including adhesives, paint, thread, and repair materials of type and from source recommended by manufacturer of synthetic turf surfacing materials.

2.2 PERFORMANCE REQUIREMENTS

- A. Certification: Provide synthetic turf surfacing system with safety performance testing certified by IPEMA.
- B. Shock Attenuation Value: Provide synthetic turf system with G-max value not exceeding 200 and Head Injury Criteria (HIC) not exceeding 1,000 in accordance with ASTM F 1292, based upon application and fall height indicated on Drawings.
- C. Fire-Test-Response Characteristics: Provide products with the critical radiant flux classification indicated in Part 2, as determined by testing identical products per ASTM E648 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
- D. Exterior Fire-Test Exposure: Provide synthetic turf surfacing materials identical to those of assemblies tested for Class A fire resistance according to ASTM E108 or UL 790 by Underwriters Laboratories or another testing and inspecting agency acceptable to authorities having jurisdiction.
- E. Accessibility Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1 for recreation surfaces.
 - 1. Provide synthetic turf system meeting requirements of ASTM F1951.

2.3 SYNTHETIC TURF SURFACING

- A. Synthetic Turf Surfacing: Complete surfacing system, consisting of synthetic yarns bound to water-permeable primary and secondary backing and accessory materials.

- B. Synthetic Turf Surfacing: Complete surfacing system, consisting of delustered UV-stabilized antimicrobial synthetic yarns bound to water-permeable bio-based primary and secondary backing. IPEMA-certified. Non-abrasive blades with low surface temperature. Anti-Static and Ultra Violet reflective pigment-enhanced.
 - 1. Basis of Design Product: SYNLawn Play Premium.
 - 2. Artificial Turf Fiber and Construction Characteristics:
 - a. Yarn, Turf Zone: Polyethylene; high-emissivity omega shape.
 - 1) Color: Field green + apple.
 - 2) Denier, ASTM D1577: 10,800/6.
 - 3) Antimicrobial Protection: Sanitized.
 - 4) Antistatic Protection: StatBlock™.
 - 5) IR Reflective: DualChill™.
 - b. Yarn, Thatch Zone: Polyethylene.
 - 1) Color: Field green + beige.
 - 2) Denier: 5,000/8.
 - c. Finished Pile Height, ASTM D5823: 1 ½ inch.
 - d. Face Weight, ASTM D5848: 80 oz./sq. yd.
 - e. Tuft Machine Gauge: 3/8 inch.
 - f. Backing, Primary: 6 oz./sq. yd. 15/18 polypropylene, 2 layers with fiber-reinforcing core.
 - g. Backing, Secondary: 22 oz. /sq. yd. bio-based urethane.
 - 1) Enviroloc+™.
 - a) Anti Fungi and Anti Algae blended into secondary backing.
 - h. Total Weight: 108 oz./sq. yd.
 - i. Infill: Silica sand ballast.
 - j. Temperature-Reducing Infill: Silica sand and moisture-retaining coated sand ballast.
 - 3. Performance Characteristics:
 - a. Tuft Bind, ASTM D1335: Not less than 8 lb.
 - b. Grab tear strength, ASTM D5034: Not less than 200 lbf.
 - c. Elongation to break, ASTM D2256: Not less than 30 percent.
 - d. Yarn breaking strength, ASTM D5793: Not less than 20 lb.
 - e. Foot Traffic Rating: 4.
 - f. Softness Rating: 2.
 - g. Flammability, ASTM D2859: Pass.
 - h. Fire Test Exposure, ASTM E108: Class A.

- C. Or Approved Equal.

2.4 SUPPLEMENTARY TURF SURFACING MATERIALS

- A. Cushion Layer - use 1 of the 2 options below:
 - 1. Poured-in-Place 100% post-consumer recycled SBR (Styrene Butadiene Rubber) and polyurethane.
 - a. Thickness: 2" or as required by critical fall heights.
 - b. Accessibility, ASTM F1951: Passes.
 - 2. Fall Pad: Resilient Molded Expanded Polypropylene Base System.
 - a. Product: Brock Pad.
 - b. Pad Thickness: 1-1/8 inch or as required by critical fall heights.
 - c. Accessibility, ASTM F1951: Passes.
 - d. Rainfall Capacity, ASTM F1551: Not less than 30 inches per hour.
- B. Nailer Board: Manufacturer's approved nailer/edger board.
- C. Curbing: Profile and extent as indicated on Drawings.

2.5 MATERIALS

- A. Infill Material: Silica sand in manufacturer's recommended formula for application to synthetic turf surfacing.
 - 1. Product: Envirofill.
 - a. Color: Green.
 - 2. Approved Equal.
- B. Glue, Seaming Fabric, and Thread: As recommended by manufacturer for application.
- C. Aggregate Base Course: Sound crushed graded stone or gravel complying with ASTM D 448 for Size No. 8.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine synthetic turf surfacing base and perimeter conditions, with Installer present, for compliance with requirements for installation tolerances, and other conditions affecting performance of the Work.
 - 1. Verify substrate meets profile required.
 - 2. Confirm base material, compaction of substrate, permeability, and drainage system installation meets requirements.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SUBBASE PREPARATION

- A. Refer to Section 312213 "Rough Grading" for requirements for preparing subbase for Work of this Section.
- B. General: Prepare substrates to receive surfacing products according to synthetic turf surfacing manufacturer's written instructions. Verify that substrates are sound and without high spots, ridges, holes, and depressions. Remove organic debris. Grade soil subgrade level and compact.
- C. Finish grade soil subgrade with slope between 0.5 percent and 1.0 percent toward path of site drainage.
 - 1. Compact subgrade in both directions with mechanical compacting equipment to achieve specified compaction at 90 percent standard Proctor.
 - 2. Prepare subgrade to tolerance of within 0.5 inch of design grade.
 - 3. Prepare subgrade within 0.25 inch in 10 feet in any direction from design grade over entire playing surface.

3.3 AGGREGATE COURSE INSTALLATION

- A. Place aggregate base course, compact by tamping with plate vibrator to 90 percent of ASTM D 1557 maximum laboratory density, and screed to depth indicated. Install 4-inch base course unless otherwise indicated.
 - 1. Slope base course between 0.5 percent and 1.0 percent, measured from the longitudinal center of the installation towards the edges. Grade base course to tolerance of within 0.5 inch of design grade, and with a maximum variation of 0.25 inch in 10 feet in any direction.

3.4 SYNTHETIC TURF INSTALLATION

- A. General: Comply with synthetic turf surfacing manufacturer's written installation instructions. Install synthetic turf surfacing over area and in thickness indicated.
- B. Fall Pad: Place fall pads tightly abutted over area to receive synthetic turf surfacing. Tape seams with pad seam tape to secure pads in position prior to installing synthetic turf.
- C. Artificial Turf: Loose-lay artificial turf and allow fabric to relax for period recommended by manufacturer. Stretch carpet and attach at perimeter in accordance with approved submittals.
- D. Seaming: Form seams flat and snug, with no gaps or fraying. Remove yarns that are trapped within seams. Form seams as recommended in synthetic turf manufacturer's written instructions using manufacturer's provided or recommended materials.
- E. Attachment: Attach turf fabric to perimeter restraint system as recommended by the

manufacturer.

3.5 INSTALLATION, INFILL

- A. Mix and install infill material components in accordance with manufacturer's requirements for approved system. Groom material and leave surface ready for use.

3.6 PROTECTION

- A. Protect completed installation from damage. Prevent traffic over system prior to acceptance by Owner's Representative.

3.7 DEMONSTRATION

- A. Instruct Owner's personnel in proper inspection and maintenance of synthetic turf surfacing. Review manufacturer's recommended maintenance procedures and warranty terms and conditions.

END OF SECTION

SECTION 321816.13

PLAYGROUND PROTECTIVE SURFACING

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. Organic loose-fill surfacing.
 - 2. Playground Safety Surfacing Wearing Mats.

1.3 DEFINITIONS

- A. Definitions in ASTM F 2223 apply to Work of this Section.
- B. Critical Height: Standard measure of shock attenuation according to ASTM F 2223; same as "critical fall height" in ASTM F 1292. According to ASTM F 1292, this approximates "the maximum fall height from which a life-threatening head injury would not be expected to occur."
- C. Unitary Surfacing: A protective surfacing of one or more material components bound together to form a continuous surface; same as "unitary system" in ASTM F 2223.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For each type of protective surfacing.
 - 1. Include plans, sections, placement and penetration details, and attachment to substrates.
 - 2. Include accessories and edge terminations.
 - 3. Include fall heights and use zones for equipment and structures specified in Section 116800 "Play Field Equipment and Structures," coordinated with the critical

heights for protective surfacing.

- C. Samples for Initial Selection: For each type of exposed finish.
- D. Samples for Verification: For each type of protective surfacing and exposed finish.
 - 1. Loose-Fill Surfacing: Minimum 1 quart.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and testing agency.
- B. Material Certificates: For each type of loose-fill surfacing.
- C. Materials Certificates: for Unitary Swing Mats.
- D. Sample Warranty: For manufacturer's special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For playground protective surfacing to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.9 WARRANTY

- A. Special Warranty: Manufacturer and Installer agree to repair or replace components of protective surfacing that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Reduction in impact attenuation as measured by reduction of critical fall height.
 - b. Deterioration of protective surfacing and other materials beyond normal weathering.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain protective surfacing materials, including loose-fill accessories, from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Impact Attenuation: Critical fall height tested according to ASTM F 1292.
- B. Accessibility Standard: Minimum surfacing performance according to ASTM F 1951.

2.3 ORGANIC LOOSE-FILL SURFACING

- A. Engineered Wood Fiber: ASTM F 2075; containing no bark, leaves, twigs, or foreign or toxic materials; tested for accessibility according to ASTM F 1951.
 - 1. Critical Height: As indicated on Drawings and as recommended by play and fitness equipment manufacturer.
 - 2. Material Depth: Not less than as required for critical height indicated.
- B. Swing Wear Mats: As manufactured by Action Play Systems. Sales Rep.: Jon Jalbert, 508.688.7007, jjalbert@ultiplayus.com.
 - 1. Sizes include 3x5'x2"; 8x4'x2" and 14' diameter.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for subgrade elevations, slope, and drainage and for other conditions affecting performance of the Work.
 - 1. Verify that substrates are sound and without high spots, ridges, holes, and depressions.
- B. Hard-Surface Substrates: Verify that substrates are satisfactory for unitary, protective surfacing installation and that substrate surfaces are dry, cured, and uniformly level within recommended tolerances according to protective surfacing manufacturer's written requirements for cross-section profile.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates to receive surfacing products according to protective surfacing manufacturer's written instructions.
- B. Hard-Surface Substrates: Clean surface free of laitance, efflorescence, curing compounds, and other contaminants incompatible with protective surfacing.
 - 1. Repair: Fill holes and depressions in unsatisfactory surfaces with leveling and patching material.
 - 2. Treatment: Mechanically abrade or otherwise prepare concrete substrates according to protective surfacing manufacturer's written instructions to achieve adequate roughness.

3.3 INSTALLATION OF LOOSE-FILL SURFACING

- A. Apply components of loose-fill surfacing according to manufacturer's written instructions to produce a uniform surface.
- B. Loose Fill: Place loose-fill materials to required depth after installation of playground equipment support posts and foundations. Include manufacturer's recommended amount of additional material to offset natural compaction over time.
- C. Installation of EWF (Engineered Wood Fiber):
 - 1. Ensure the subgrade is compacted and leveled.
 - 2. Install EWF in 6" lifts, one layer at a time.
 - 3. Wet the surface with clean potable water.
 - 4. Compact with a mechanical compactor after each layer is installed and wet.
 - 5. Change the direction of the compactor to 90 degrees between each layer.
 - 6. Repeat steps until the required safety surfacing thickness is achieved.
- D. Grading: Uniformly grade loose fill to an even surface free from irregularities.
- E. Compaction: After initial grading, mechanically compact loose fill before finish grading to 95% mod proctor density.
- F. Finish Grading: Hand rake to a uniformly smooth finished surface and to required elevations.

END OF SECTION

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.
 - 4. Bollards

1.3 ACTION SUBMITTALS

- 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 6' bench with back.
- C. Complete Shop Drawings for the installation of ADA picnic table with benches.
- D. Complete Shop Drawings for the installation of 6' picnic table with benches.
- E. Complete Shop Drawings for the installation of cone table with top.
- F. Complete Shop Drawings for the installation of arc benches.

- G. Complete Shop Drawings for the installation of metal bollard.
- H. 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. 72" long backless bench, surface mount, Thermally Modified Red Oak wood slats with black supports.
 - 1. Model #6B-115TMR as manufactured by Dumor, Inc.
 - a. P.O. Box 142 Mifflintown, PA 17059.
 - b. Phone: 1.800.598.4018.
 - 2. Color: to be selected by owner.
 - 3. Or approved equal.
- B. 72" long bench w/ back, Thermally Modified Red Oak wood slats with black supports. Surface mount & in-ground mount, see schedule for quantities of each.
 - 1. Model #34TMR as manufactured by Dumor, Inc.
 - 2. Color: to be selected by owner.
 - 3. Or approved equal.
- C. Loop arc bench, surface mount
 - 1. Model #TPP 29510 as manufactured by Kompan.

- a. Kompan Inc., Vendor Rep: Jeffrey Hochwarter, 508-821-8715,
JefHoc@kompan.com.
2. Color: to be selected by owner.
3. Or approved equal.

2.2 TABLES

- A. 8' long ADA picnic table, surface mount, Thermally Modified Red Oak wood slats with Black supports.
 1. Model #67-079-68-1 as manufactured by DuMor, Inc.
 - a. P.O. Box 142, Mifflintown, PA 17059.
 - b. Phone: 1.800.598.4018.
 2. Color: to be selected by owner.
 3. Or approved equal.
- B. 6' long picnic table, surface mount, Thermally Modified Red Oak wood slats with Black supports.
 1. Model #67-079-6 as manufactured by DuMor, Inc.
 - a. P.O. Box 142 Mifflintown, PA 17059.
 - b. Phone: 1.800.598.4018.
 2. Color: to be selected by owner.
 3. Or approved equal.
- C. Loop cone, surface mount.
 1. Model #TPP 29540 as manufactured by Kompan.
 - a. Kompan Inc., Vendor Rep: Jeffrey Hochwarter, 508-821-8715,
JefHoc@kompan.com.
 2. Color: to be selected by owner.
 3. Or approved equal.
- D. Loop top, 28"
 1. Model #TPP 29545 as manufactured by Kompan.
 - a. Kompan Inc., Vendor Rep: Jeffrey Hochwarter, 508-821-8715,
JefHoc@kompan.com.
 2. Color: to be selected by owner.
 3. Or approved equal.

2.3 TRASH RECEPTACLES

- A. 55 Gal round black steel trash receptacle with dome lid, surface mount .
 1. Model #CN-R/R-55 as manufactured by Pilot Rock,
 - a. R.J. Thomas Mfg. Co. Inc.

- PO Box 946
Cherokee, IA 51012-0946.
- b. Phone: 1.800.762.5002.
- c. Lid: CN-2755.
- d. Cable Kit: CK-5 (Qty: 2).
- 2. Or approved equal.

2.4 BOLLARDS

- A. 2-Way Collapsible bollard
 - 1. Model #2436 as manufactured by TrafficGuard.
 - a. TrafficGuard, Inc.
PO Box 201
Geneva, IL 60134
 - b. 877-727-7347
 - c. www.TrafficGuard.net
 - 2. Color: to be selected by owner.
 - 3. Or approved equal.

2.5 FABRICATION

- A. Factory Assembly: Factory assemble components to greatest extent possible to minimize field assembly. Clearly mark units for assembly in the field.

2.6 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

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.
 - 2. Section 329300 "Plants" for placing planting soil for plantings.

1.3 ALLOWANCES

- A. and testing are part of testing and inspecting allowance.

1.4 UNIT PRICES

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

1.5 DEFINITIONS

- A. Backfill: The earth used to replace or the act of replacing earth in an excavation. This can be amended or unamended soil as indicated.
- B. CEC: Cation exchange capacity.
- C. Compost: The product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.

- D. Imported Soil: Soil that is transported to Project site for use.
- E. Manufactured Soil: Soil produced by blending soils, sand, stabilized organic soil amendments, and other materials to produce planting soil.
- F. Organic Matter: The total of organic materials in soil exclusive of undecayed plant and animal tissues, their partial decomposition products, and the soil biomass; also called "humus" or "soil organic matter."
- G. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified as specified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- H. RCRA Metals: Hazardous metals identified by the EPA under the Resource Conservation and Recovery Act.
- I. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- J. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- K. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil"; but in disturbed areas such as urban environments, the surface soil can be subsoil.
- L. USCC: U.S. Composting Council.

1.6 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project.

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

1.9 QUALITY ASSURANCE

1.10 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.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and 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.

2.3 FERTILIZERS

- A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
 - 1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
 - 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified testing agency.
- B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 - 1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
 - 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified testing agency.

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.
 - a. Mix with dry soil before mixing fertilizer.
 - b. Mix fertilizer with planting soil no more than seven days before planting.
 - 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 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.

3.4 CLEANING

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

END OF SECTION

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 312213 - Rough Grading.
 - 3. Section 329200 - Turf and Grasses.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

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

1.3 SUBMITTALS

- A. 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. High quality loam, blended with compost and 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

SECTION 329200
TURF AND GRASSES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Seeding.
 - 2. Hydroseeding.
- 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 Seed: From seed vendor for each 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. 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. Use the following seed mix for Lawn areas:
 - 1. Lawn/Disturbed Areas - Parks Mix:
 - a. 30% Improved Perennial Rye.
 - b. 30% Turf Type Tall Fescue.
 - c. 35% Chewings Fescue.
 - d. 5% Miniature or Dutch White Clover.
 - 2. Low-Mow Mix
 - a. 70% Creeping Red Fescue
 - b. 15% Improved Per. Rye
 - c. 15% Birdsfoot Trefoil
 - 3. Available from:
 - a. Allen's Seed Store - 693 S County Trail Exeter, RI 02822 Phone: 401-294-2722.
 - b. Approved Equal.

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.
- C. Erosion-Control Blankets: Double Net Straw/Coconut Biodegradable Rolled fiber mat, as manufactured by East Coast Erosion Control (www.eastcoasterosion.com, 443 Bricker Road Bernville, PA 19506, 1.800.582.4005 +1.610.488.8496 Fax +1.610.488.8494) or approved equal.
 - 1. The ECSC-2B™ is made with uniformly distributed 70% agricultural straw, 30% coconut fiber and two organic jute nets securely sewn together with biodegradable thread.
 - 2. Secure erosion control blankets with 6" steel landscape staples 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 Landscape 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 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. Mowing/Cutting:
 - 1. Turf areas (seeded or sodded):
 - a. 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.

3.7 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.

3.8 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

SECTION 329300

PLANTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Plants.
 - 2. Tree stabilization.
 - 3. Tree-watering devices.
- 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 329119 "Landscape Grading" for preparation of planting beds.

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. Finish Grade: Elevation of finished surface of planting soil.
- D. 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.

- E. 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.
- F. Planting Area: Areas to be planted.
- G. 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.
- H. 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.
- I. 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.
- J. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.
- K. 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.

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: Include color photographs in digital 3- by 5-inch print format of each required species and size of plant material as it will be furnished to Project. Take photographs from an angle depicting true size and condition of the typical plant to be furnished. Include a scale rod or other measuring device in each photograph. For species

where more than 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. 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 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.

1.9 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. 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.
- G. 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.
- H. 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. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
 - 2. Do not remove container-grown stock from containers before time of planting.
 - 3. 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.

1.10 FIELD CONDITIONS

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

1.11 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.
 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: Ground or shredded bark Wood and bark chips.
 - 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. Trunk-Stabilization Materials:
 - 1. Upright and Guy Stakes: Rough-sawn, sound, new hardwood, free of knots, holes, cross grain, and other defects, 2-by-2-inch nominal by length indicated, pointed at one end.
 - 2. Tree-Tie Webbing: UV-resistant polypropylene or nylon webbing with brass grommets.

2.4 TREE-WATERING DEVICES

- A. Slow-Release Watering Device: Standard product manufactured for drip irrigation of plants and emptying its water contents over one week; manufactured from UV-light-stabilized nylon-reinforced polyethylene sheet, PVC, or HDPE plastic.
 - 1. Manufacturers:
 - a. Tree Gator.
 - b. A.M. Leonard.
 - c. Approved Equal.
 - 2. Color: As selected by Architect from manufacturer's full range dark chocolate or green or.

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.
- B. Tree Watering Bag: provide each tree with a ARBORRAIN TOWER TREE AND PLANT HYDRATOR by AM Leonard (or Approved Equal) following planting. Contractor is responsible for filling bag when it becomes empty for during active growing seasons for 1 year following substantial completion.

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 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 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. and 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 with two stakes for trees up to 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.
 - 2. Support trees with bands of flexible ties at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.
- B. Root-Ball Stabilization: Install at- or below-grade stabilization system to secure each new planting by the root ball unless otherwise indicated.
 - 1. 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.

3.8 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.

3.9 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.

3.10 INSTALLING SLOW-RELEASE WATERING DEVICE

- A. Provide one device for each tree.
- B. Place device on top of the mulch at base of tree stem and fill with water according to manufacturer's written instructions.

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.

END OF SECTION