



Turf & Track Replacement

Bid and Construction Documents PROJECT MANUAL

APRIL 4, 2014

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PROJECT MANUAL FOR THE CONSTRUCTION OF:

SOUTHERN OREGON UNIVERSITY
TURF & TRACK REPLACEMENT
ASHLAND, OREGON

SOUTHERN OREGON UNIVERSITY

Facilities, Management, and Planning
351 Walker Avenue
Ashland, OR 97520
(541) 552-6233
Contact: Drew Gilliland, Director Facilities, Management and Planning

LANDSCAPE ARCHITECT

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CIVIL ENGINEER

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Contact: Jim Higday, PE

ELECTRICAL ENGINEER

Paradigm Engineering
85193 Appletree Drive
Eugene, OR 97405
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LANDSCAPE ARCHITECT

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**OREGON UNIVERSITY SYSTEM
STANDARD PUBLIC IMPROVEMENT CONTRACT**

**ADVERTISEMENT FOR BIDS
TURF & TRACK REPLACEMENT ITB #2014-0404**

The State of Oregon, acting by and through the State Board of Higher Education on behalf of Southern Oregon University is accepting sealed bids for a public improvement project at Southern Oregon University (SOU) in Ashland, Oregon. Bids must be received at: **SOU Facilities Management & Planning Department, 351 Walker Avenue, Ashland, Oregon** until **4:00 PM** local time on **April 24, 2014** for the **Turf and Tack Replacement** project.

This project includes all labor, equipment and materials necessary to demolish the existing natural turf football field and running track and construct a new artificial turf field and new running track. The project includes selective demolition, excavation, grading, drainage, site utilities, asphalt paving, concrete, monofilament artificial turf, new running track, track and field markings, field accessories, chain-link fencing, electrical work and miscellaneous related work. All on-site work will be completed between June 18, 2014 and September 18, 2014.

A **mandatory** pre-bid conference will be held on **Monday April 14, 2014, 2:00 PM** at the SOU Raider Stadium, 378 Wightman Street, Ashland, OR). A representative for each prime bidder is required to attend. Attendance will be documented through a sign-in sheet prepared by the Owner's Representative. Prime bidders who arrive more than 5 minutes after start of time of the meeting (as stated in the solicitation and by the Owner's Representative's watch) or after the discussion portion of the meeting (whichever comes first) shall not be permitted to sign in and will not be permitted to submit a bid on the Project.

Bids will be opened and publicly read aloud on **April 24, 2014 at 4:00 PM**, local time, at the **Southern Oregon University Facilities Management & Planning Department, 351 Walker Avenue, Ashland, Oregon** by the undersigned or a designated representative. No bid will be considered unless fully completed in the manner provided in the "Instructions to Bidders" and "Supplemental Instructions to Bidders". Bids must be submitted upon the Bid Form provided and accompanied by Bid Security. OUS encourages bids from Minority, Women, and Emerging Small Businesses.

The prime bidder and all subcontractors must be currently licensed to practice in each of their respective areas of expertise by the State of Oregon Construction Contractor's Board (CCB). The prime bidder shall have the required Public Works Bond on file with the CCB prior to submitting a bid. Failure to be registered and have the bond in place will result in the rejection of your bid as non-responsive. All subcontractors must file a Public Works Bond with the CCB prior to starting work on the project, unless exempt.

Oregon Bureau of Labor and Industries (BOLI) wage rates (ORS 279C.800 through ORS 279C.870) apply to this project. See OUS General Conditions, Sections C.1 and C.2, regarding wage rate compliance and payroll certification requirements. Workers shall be paid the applicable rates per the January 1, 2014 BOLI Prevailing Wage Rate schedule including the April 1, 2014 amendments. Prevailing wage rates are available at <http://www.oregon.gov/BOLI>. If a contractor fails to pay for labor or services, SOU can pay and withhold these amounts from payments due the Contractor (ORS 279C.5.15). The Contractor and their subcontractors shall provide a written schedule to employees showing the number of hours per day and days per week the employee may be required to work (ORS 279C.520). The Contractor and their subcontractors must promptly pay for any medical services they have agreed to pay (ORS 279C.530).

Contract documents may be obtained from the OUS website <http://www.ous.edu/about/bid> or by contacting Jim McNamara at the SOU Facilities Office. Phone: 541-552-6888. Email: <mailto:mcnamaraj@sou.edu>.

OREGON STATE BOARD OF HIGHER EDUCATION
By: Drew Gilliland
Director, SOU Facilities Management and Planning

OREGON UNIVERSITY SYSTEM
STANDARD PUBLIC IMPROVEMENT CONTRACT
INSTRUCTIONS TO BIDDERS

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INSTRUCTIONS TO BIDDERS

Oregon Administrative Rules (“OAR”) Chapter 580, Divisions 61 and 63 govern this OUS procurement process.

Article 1. Definitions

1.1. Capitalized words used herein but not defined shall have the meaning set forth in the OUS Public Improvement General Conditions and OAR 580-061-0010. The following terms used herein shall have the meaning set forth below:

“Bid Form”- refers to OUS Contract Form B-5 provided by Owner to be completed by Bidder.

“Project Manual”- The Project Manual includes, but is not necessarily limited to the following: the Advertisement for Bids or Notice of Contracting Opportunity, these Instructions to Bidders, Supplemental Instructions to Bidders (if any), Bid Form, Bid Bond, Public Improvement Contract General Conditions, Supplemental General Conditions (if any), Sample Public Improvement Agreement Form, Performance Bond, Payment Bond, and the Plans and Specifications.

Article 2. Scope of Work

2.1 The Work contemplated in this document shall be for the Owner in connection with the Project described in the Project Manual.

Article 3. Examination of Site and Conditions

3.1 Before making a Bid, the Bidder shall examine the Work site to ascertain its physical condition. The Bidder shall be responsible for being fully informed as to the quality, quantity and sources of supply of the materials listed on the Project Manual. Failure to comply with this Section will not release Contractor from entering into the Contract nor excuse Contractor from performing the Work in strict accordance with the terms of the Contract Documents.

3.2 The Owner will not be responsible for any loss or unanticipated costs which may arise as a result of Contractor's failure to be fully informed in advance with regard to all conditions pertaining to the Work and the character of the Work required.

3.3. No statement made by any officer, agent, or employee of the Owner in relation to the physical conditions pertaining to the Work site or quality, quantity, and supply of materials will be binding on the Owner, unless included in writing in the Project Manual or an Addendum.

Article 4. Substitute Materials Approval Process

4.1 Prior to submitting a Bid including a Substitution, the Bidder must first seek approval of the Substitution from the Architect (or Engineer, as appropriate hereafter) by submitting a written request for approval at least [10] calendar days prior to the Closing Date and Time. The Bidder submitting the request shall be responsible for its timely delivery.

4.2 Substitution approval requests shall be accompanied by samples, records of performance, certified copies of tests by impartial and recognized laboratories, and such other information as the Architect may request.

4.3 Within a reasonable time after receiving such a request the Owner (or Architect if so designated) will consider whether the Substitution sought by Bidder is of equal value or utility as the designated product in the Project Manual. If the requested Substitution is approved an Addendum to the Project Manual shall be issued. A copy of each Addendum will be posted on the OUS Bid and Business Opportunities website (<http://secure.ous.edu/bid>) and shall become a part of the Project Manual.

4.4 When the Architect approves a Substitution by Addendum, it is with the understanding that the Contractor guarantees the substituted article or material to be equal or better than the one specified.

Article 5. Interpretation of Project Manual

5.1 A Bidder in doubt as to the meaning of any part of the Project Manual may submit a written request for an interpretation to the Architect at any time prior to [10] calendar days prior to the Closing Date and Time.

5.2 Any interpretation of the Project Manual will be made only by a duly issued Addendum. The Owner will not be responsible for any other explanation or interpretation of the Project Manual nor for any other approval of a particular manufacturer's process or item.

5.3 To establish a basis of quality, certain processes, types of machinery and equipment or kinds of materials may be specified in the Project Manual either by description of process or by designating a manufacturer by name and referring to a brand or product designation or by specifying a kind of material. Whenever a process is designated or a manufacturer named, brand or item designation given, or whenever a process or material covered by patent is designated or described, it shall be understood that the words "or approved equal" follow such name, designation or description, whether they do so or not.

Article 6. Execution of the Bid Form

6.1 The Bid Form relates to Bids on a specific Project Manual. Only the amounts and information asked for on the Bid Form furnished by the Owner will be considered as the Bid. Each Bidder shall Bid upon the Work exactly as set forth in the Bid Form. The Bidder shall include in the Bid a sum to cover the cost of all items contemplated by the Project Manual. Bids that fail to address alternates set forth on the Bid Form may be considered non-responsive.

6.2 Each Bid Form must: 1) Be completed in accordance with these instructions; 2) Include the appropriate signatures as noted on the Bid Form; 3) Include numbers pertaining to base Bids stated both in writing and in figures; and 4) Include the Bidder's typed or clearly printed address.

6.3 When Bidding on an alternate for which there is no charge, the Bidder shall write the words "No Charge" in the space provided on the Bid Form. If one or more alternates is shown on the Bid Form, the Bidder shall indicate whether each is "add" or "deduct."

Article 7. Prohibition of Alterations to Bid

7.1 Bids which are incomplete, or contain ambiguities or conditions not provided for in the Bid Form, may be rejected.

Article 8. Submission of Bid

8.1 Each Bid shall be sealed in an envelope, properly addressed to the appropriate project representative of the Owner, showing on the outside of the envelope the name of the Bidder and the name of the project. Bids will be

received at the time and place stated in the Advertisement for Bids.

Article 9. Bid Closing and Opening of Bids

9.1 All Bids must be received by the Owner before the Closing Date and Time. Any Bids received after the Closing Date and Time will be rejected and returned to the Bidder unopened.

9.2 At the time of opening and reading of Bids, each Bid received, irrespective of any irregularities or informalities, will be publicly opened and read aloud.

Article 10. Acceptance or Rejection of Bids by Owner

10.1 Unless all Bids are rejected, the Owner will award the Contract based on the lowest responsive Bid from a responsible Bidder. If that Bidder does not execute the Contract, the Contract will be awarded to the next lowest responsible Bidder or Bidders in succession.

10.2 The procedures for Contract awards shall be in compliance with the provisions of OARs adopted by the Owner.

10.3 The Owner reserves the right to reject all Bids and to waive minor informalities.

10.4 The Owner reserves the right to hold the Bid and any required Bid security, of the three lowest Bidders for a period of 30 calendar days from the time of Bid opening pending award of the Contract. Following award of the Contract, any Bid security furnished by the three lowest Bidders may be held 20 calendar days pending execution of the Contract. All other Bids will be rejected and Bid security returned.

10.5 In determining the lowest Bidder, the Owner reserves the right to take into consideration any or all authorized base Bids as well as alternates or combinations indicated in the Bid Form.

10.6 If Owner has not accepted a Bid within 30 calendar days after the opening of the Bids, each of the three lowest Bidders may withdraw the Bid submitted and request the return of any Bid security then held.

Article 11. Withdrawal of Bid

11.1 At any time prior to the Closing Date and Time a Bidder may withdraw its Bid. This will not preclude the submission of another Bid by such Bidder prior to the Closing Date and Time.

11.2 After the Closing Date and Time, no Bidder will be permitted to withdraw its Bid within the time period specified in Article 10 for award and execution, except as provided for in that Article.

Article 12. Execution of Contract, Agreement, Performance Bond and Payment Bond

12.1 The Owner will provide the successful Bidder with Contract Documents within 10 calendar days after the award of the Contract. The Bidder shall be required to execute the Contract as provided, including a Performance Bond and a Payment Bond from a surety company licensed to do surety business in the State of Oregon, within 20 calendar days after the award of the Contract. The Contract Documents shall be delivered to the Owner in the manner stated in the Notice of Award.

Article 13. Recyclable Products

13.1 Contractors must use recyclable products to the maximum extent economically feasible in the performance of the Contract.

Article 14. Security to Be Furnished by Each Bidder

14.1 Each Bid must be accompanied by either: 1) a cashier's check or a certified check drawn on a bank authorized to do business in the State of Oregon, or 2) a Bid Bond described hereinafter, executed in favor of Owner, for an amount equal to 10 percent of the total Bid amount as a guarantee that if awarded the contract the Bidder will execute the contract and give a Performance Bond and Payment Bond as required.

14.2 The Contractor's check or Bid Bond will be retained until the Contractor has entered into a Contract and furnished a 100 percent Performance Bond and 100 percent Payment Bond.

14.3 The Owner reserves the right to hold the Bid security as described in Article 10. Should the successful Bidder fail to execute and deliver the Contract as provided for in Article 12, including a satisfactory performance bond and payment bond within 20 calendar days after the Bid has been accepted by the Owner, then the Contract award may be canceled and the Bid security may be forfeited as liquidated damages, at the option of the Owner. The date of the acceptance of the Bid and the award of the contract as contemplated by the Project Manual shall mean the date of acceptance specified in the Notice of Award.

Article 15. Execution of Bid Bond

15.1 Should the Bidder elect to utilize a Bid Bond as described in Article 14 in order to satisfy the Bid security requirements, such form must be completed in the following manner:

15.1.1 Bid Bonds must be executed on OUS forms, which will be provided to all prospective Bidders by the Owner.

15.1.2 The Bid Bond shall be executed on behalf of a bonding company licensed to do business in the State of Oregon.

15.1.3 In the case of a sole individual, the Bid Bond need only be executed as principal by the sole individual. In the case of a partnership, the Bid Bond must be executed by at least one of the partners. In the case of a corporation, the Bid Bond must be executed by stating the official name of the corporation under which is placed the signature of an officer authorized to sign on behalf of the corporation followed by such person's official capacity, such as president, etc. This signature shall be attested by the secretary or assistant secretary of the corporation. The corporation seal should then be affixed to the Bid Bond. In the case of a limited liability company/corporation ("LLC"), the Bid Bond must be executed by stating the official name of the LLC under which is placed the signature of a member authorized to sign on behalf of the LLC.

15.1.4 The name of the surety must be stated in the execution over the signature of its duly authorized attorney-in-fact and accompanied by the seal of the surety corporation.

OREGON UNIVERSITY SYSTEM

STANDARD PUBLIC IMPROVEMENT CONTRACT

SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

Project Name: SOU Turf & Track Replacement ITB #2014-0404

The following modify the Oregon University System “Instructions to Bidders, Form B-2” for this procurement. Where a portion of the Instructions to Bidders has been modified by these Supplemental Instructions to Bidders, the unaltered portions shall remain in effect.

Bidder Questions

Bidder questions, requests for clarification and substitution requests can be emailed to <mailto:soubid@sou.edu> not later than April 17, 2014 at 1:00 PM. SOU will respond in with an addendum to be issued April 18, 2014. Addenda will be posted on the OUS procurement website: <http://www.ous.edu/about/bid> and will be emailed to prime bidders who register at the mandatory pre-bid meeting.

Submission of Bids by email

Complete Bids (including all attachments) may be emailed and must be electronically received by the Closing Date and Time **April 24, 2014 at 4:00 p.m. Local Time**. **The Bid may be emailed to: Drew Gilliland <mailto:soubid@sou.edu>. The email subject line must be “Bid for [Project Name].” Bidders submitting an electronic Bid will receive an automatic email reply.** Bidders that do not receive an automatic reply *must* telephone and confirm electronic receipt of the complete emailed document(s) before the Closing Date and Time. Bids delayed or lost by email system filtering or failures may be considered at Owner’s sole discretion.

In addition to electronic submission, the original copy of the Bid must be postmarked no later than **April 25, 2014**. The envelope/package containing the Proposal must be clearly marked “**Bid for Turf & Track Replacement**”.

Project Schedule

Advertisement for Bids	April 4, 2014
Mandatory Pre-bid Conference	April 14, 2014, 2:00 p.m.
Deadline for Written Submittal of Questions/Requests for Clarifications	April 17, 2014, 1:00 p.m.
SOU to Issue Written Addendum in Response to Questions	April 18, 2014, 4:00 p.m.
Bid Deadline	April 24, 2014, 4:00 p.m.

Anticipated Notice of Intent to Award	April 25, 2014
Finalize Contract	May 2, 2014
Construction Schedule:	
Construction Start	June 18, 2014
Substantial Completion	September 18, 2014

OREGON UNIVERSITY SYSTEM
STANDARD PUBLIC IMPROVEMENT CONTRACT

BID BOND

We, _____, as "Principal,"
(Name of Principal)

and _____, an _____ Corporation,
(Name of Surety)

authorized to transact Surety business in Oregon, as "Surety," hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns to pay unto the State of Oregon and the Oregon State Board of Higher Education ("Obligee") the sum of (\$ _____)

_____ dollars.

WHEREAS, the condition of the obligation of this bond is that Principal has submitted its proposal or bid to an agency of the Obligee in response to Obligee's procurement document (No. _____) for the project identified as:

_____ which proposal or bid is made a part of this bond by reference, and Principal is required to furnish bid security in an amount equal to ten (10%) percent of the total amount of the bid pursuant to the procurement document.

NOW, THEREFORE, if the proposal or bid submitted by Principal is accepted, and if a contract pursuant to the proposal or bid is awarded to Principal, and if Principal enters into and executes such contract within the time specified in the Instructions to Bidders and executes and delivers to Obligee its good and sufficient Performance Bond and Payment Bond required by Obligee within the time fixed by Obligee, then this obligation shall be void; otherwise, it shall remain in full force and effect.

IN WITNESS WHEREOF, we have caused this instrument to be executed and sealed by our duly authorized legal representatives this _____ day of _____, 20____.

PRINCIPAL: _____

SURETY: _____

By _____
Signature

BY ATTORNEY-IN-FACT:

Official Capacity

Name

Attest: _____
Corporation Secretary

Signature

Address

City State Zip

Phone

Fax

OREGON UNIVERSITY SYSTEM
STANDARD PUBLIC IMPROVEMENT CONTRACT
BID FORM

OUS CAMPUS: **Southern Oregon University**
PROJECT: **Turf & Track Replacement ITB #2014-0404**
BID CLOSING DATE: **April 24, 2014, 4:00 PM Local Time**
BID OPENING: **April 24, 2014, 4:00 PM Local Time**

FROM: _____
 Name of Contractor

TO: The State of Oregon, acting by and through the Oregon State Board of Higher Education, on behalf of [**Southern Oregon University**] (“Owner”)

SOU Facilities Management and Planning
351 Walker Avenue
Ashland, OR 97520

1. The Undersigned (*check one of the following and insert information as requested*):
- _____ a. An individual doing business under an assumed name registered under the laws of the State of _____; or
- _____ b. A partnership registered under the laws of the State of _____; or
- _____ c. A corporation organized under the laws of the State of _____; or
- _____ d. A limited liability corporation/company organized under the laws of the State of _____;

hereby proposes to furnish all material and labor and perform all Work hereinafter indicated for the above project in strict accordance with the Contract Documents for the Basic Bid as follows:

Base Bid:

_____ Dollars (\$_____)

and the Undersigned agrees to be bound by each of the following documents:

- Notice of Public Improvement Contract Opportunity

- Instructions to Bidders
- Supplemental Instructions to Bidders
- Bid Bond
- OUS General Conditions
- Supplemental General Conditions
- Sample Public Improvement Agreement Form
- Performance Bond and Payment Bond
- Plans and Specifications
- Drawings and Details
- Prevailing Wage Rates
- Payroll and Certified Statement Form
- Any ADDENDA numbered ____ through____, inclusive (*fill in blanks*).

2. The Undersigned proposes to add to the Base Bid indicated above the items of work relating to the following Alternate(s) as designated in the Specifications:

Alternate #1 - Add E Layer
 _____ Dollars (\$_____)

Alternate #2 – Custom Raider Logo at Center of Field
 _____ Dollars (\$_____)

Alternate #3 – Custom SOU Wordmarks at End Zones
 _____ Dollars (\$_____)

Alternate #4 – Shot Put Edge Improvement
 _____ Dollars (\$_____)

Alternate #5 – Track Surface Upgrade to Sandwich System
 _____ Dollars (\$_____)

Alternate #6 – Track Surface Upgrade to Full Pour System
 _____ Dollars (\$_____)

3. The Undersigned proposes to add to the Base Bid indicated above the items or work relating to the following Unit Price(s) as designated in the Specifications, for which any adjustments in the Contract amount will be made in accordance with Section D of the OUS General Conditions:

Unit Price for Removal and Replacement of Unsuitable soil with Compacted ¾”-0 Rock
 _____(per cubic yard). Dollars (\$_____ per cubic yard)

4. The work shall be completed within the time stipulated and specified in Section B-3, Supplemental-Instructions-to-Bidders.
5. The Undersigned certifies that: (1) This Bid has been arrived at independently and is being submitted without collusion with and without any agreement, understanding, or planned common course of action with any other vendor of materials, supplies, equipment or services described in the invitation to bid designed to limit independent bidding or competition; and (2) The contents of the Bid have not been communicated by the Undersigned or its employees or agents to any person not an employee or agent of the Undersigned or its surety on any Bond furnished with the Bid and will not be communicated to such person prior to the official opening of the Bid.
6. The undersigned **HAS, HAS NOT** (*circle applicable status*) paid unemployment or income taxes in Oregon within the past 12 months and **HAS, HAS NOT** (*circle applicable status*) a business address in Oregon.
7. The Undersigned agrees, if awarded a contract, to comply with the provisions of ORS 279C.800 through 279C.870 pertaining to the payment of the prevailing rates of wage.
8. Contractor's CCB registration number is _____. As a condition to submitting a bid, a Contractor must be registered with the Oregon Construction Contractors Board in accordance with ORS 701.035 to 701.055, and disclose the registration number. Failure to register and disclose the number will render the bid unresponsive and it will be rejected, unless contrary to federal law.
9. The successful Bidder hereby certifies that all subcontractors who will perform construction work as described in ORS 701.005(2) were registered with the Construction Contractors Board in accordance with ORS 701.035 to 701.055 at the time the subcontractor(s) made a bid to work under the Contract.
10. The successful Bidder hereby certifies that, in compliance with the Worker's Compensation Law of the State of Oregon, its Worker's Compensation Insurance provider is _____, Policy No. _____, and that Contractor shall submit Certificates of Insurance as required.
11. Contractor's Project Manager for this project is: _____,
Office Phone: _____ Cell Phone: _____.
Contractor's On-Site Superintendent for this project is: _____,
Office Phone: _____ Cell Phone: _____.
12. The Undersigned certifies that it has not discriminated against minority, women, or emerging small businesses in obtaining any subcontracts for this project.
13. Accompanying herewith is Bid Security which is equal to ten (10) percent of the total amount of the Basic Bid.
14. The Undersigned further agrees that the Bid Security accompanying the Bid is left in escrow with the Board; that the amount thereof is the measure of liquidated damages which the Owner will sustain by the failure of the Undersigned to execute and deliver the above-named Agreement Form,

Performance Bond and Payment Bond, and, that if the Undersigned defaults in either executing the Agreement Form or providing the Performance Bond and Payment Bond within twenty (20) calendar days after receiving the Contract Documents, then the Bid Security may become the property of the Owner at the Owner's option; but if the Bid is not accepted within thirty (30) calendar days of the time set for the opening of the Bids, or if the Undersigned executes and timely delivers said Agreement Form, Performance Bond and Payment Bond, the Bid Security shall be returned.

15. The Undersigned agrees, if awarded the Contract, to execute and deliver to Owner, within twenty (20) calendar days after receiving the Contract Documents, an Agreement Form and a satisfactory Performance Bond and Payment Bond, each in an amount equal to one hundred (100) percent of the Contract sum, using forms provided by the Owner. The surety requested to issue the Performance Bond and Payment Bond will be:

_____.
(name of surety company - not insurance agency)

The Undersigned hereby authorizes said surety company to disclose any information to the Owner concerning the Undersigned's ability to supply a Performance Bond and Payment Bond each in the amount of the Contract.

By signature below, Contractor agrees to be bound by this Bid.

NAME OF FIRM _____

ADDRESS _____

FEDERAL TAX ID _____

TELEPHONE NO _____

FAX NO _____

SIGNATURE 1) _____

Sole Individual

or 2) _____

Partner

or 3) _____

Authorized Officer of Corporation

(SEAL)

Attested: Secretary of Corporation

Payment information will be reported to the IRS under the name and taxpayer ID # provided above. Information not matching IRS records could subject Contractor to 31 percent backup withholding.

******* END OF BID *******

**STATE OF OREGON
FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM**

This form must be submitted at the location specified in the Invitation to Bid within two (2) working hours after the date and time of the deadline when the bids are due.

List below the name of each subcontractor that will be furnishing labor or labor and materials and that is required to be disclosed by ORS 279C.370, the dollar value of the subcontract and the category of work that the subcontractor will be performing.

*Enter "**NONE**" if there are no subcontractors that need to be disclosed.
(ATTACH ADDITIONAL SHEETS IF NEEDED)*

Project Name: **Turf & Track Replacement ITB #2014-0404**

Bid Closing - Date: **April 24, 2014** **Time:** **4:00 PM**

SUBCONTRACTOR NAME (Please Print)	DOLLAR VALUE	CATEGORY/DIVISION OF WORK (Painting, electrical, landscaping, etc.)
Name	\$	
Name	\$	
Name	\$	
Name	\$	
Name	\$	
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**Failure to submit this form by 6:00 p.m. on the day of the bid opening will result in a non-responsive bid.
A non-responsive bid will not be considered for award.**

Form submitted by (Bidders Name): _____

Contact Name: _____ Phone No.: _____

OREGON UNIVERSITY SYSTEM SAMPLE PUBLIC IMPROVEMENT CONTRACT

This Public Improvement Contract for the (Insert Project Name) (the "Contract"), made by and between the State of Oregon, acting by and through the Oregon State Board of Higher Education on behalf of (Insert Institution), hereinafter called OWNER, and (Insert Contractor's Name) hereinafter called the CONTRACTOR (collectively the "Parties"), shall become effective on (Insert contract award date), or the date this Contract has been signed by all the Parties and all required State of Oregon governmental approvals have been obtained, whichever is later.

WITNESSETH:

1. Contract Price, Contract Documents and Work.

The CONTRACTOR, in consideration of the sum of (Insert Contract Price) (the "Contract Price"), to be paid to the CONTRACTOR by OWNER in the manner and at the time hereinafter provided, and subject to the terms and conditions provided for in the Instructions to Bidders and other Contract Documents (as defined in the Oregon University System General Conditions For Public Improvement Contracts referenced within the Instructions to Bidders), all of which are incorporated herein by reference, hereby agrees to perform all Work described and reasonably inferred from the Contract Documents. The Contract Price is the amount contemplated by the Base Bid [*adjusted for Alternates* [Identify accepted Alternates]], as indicated in the accepted Bid.

Also, the following documents are incorporated by reference in this Contract and made a part hereof if checked for inclusion [X]:

(RESERVED)

2. Representatives.

CONTRACTOR has named (Insert Name) its' Authorized Representative to act on its behalf. OWNER designates, or shall designate, its Authorized Representative as indicted below (check one):

A. Unless otherwise specified in the Contract Documents, the OWNER designates (Insert Name) as its Authorized Representative in the administration of this Contract. The above-named individual shall be the initial point of contact for matters related to Contract performance, payment authorization, and to carry out the responsibilities of the OWNER.

B. Name of OWNER'S Authorized Representative shall be submitted by OWNER in a separate writing.

3. Key Persons.

CONTRACTOR's personnel indicated below are specifically valuable to the Project ("Key Persons"). Key Persons shall not be replaced during the project without the written consent of

OWNER, which shall not be unreasonably withheld. If CONTRACTOR intends to substitute personnel, OWNER shall receive the request at least 15 days prior to the effective date of substitution. When replacements have been approved by OWNER, CONTRACTOR shall provide a transition period of at least 10 working days during which the original and replacement personnel shall be working on the project concurrently. Upon authorization for the replacement of a Key Person, all subsequent substitutions of that Key Person shall require OWNER's written consent in accordance with this Section. The Key Persons for this Project are the following:

Project Executive: _____ shall be CONTRACTOR's Project Executive, and will provide oversight and guidance throughout the Project term.

Project Manager: _____ shall be CONTRACTOR's Project Manager and will participate in all meetings throughout the Project term.

Job Superintendent: _____ shall be CONTRACTOR's on-site Job Superintendent throughout the Project term.

Project Engineer: _____ shall be CONTRACTOR's Project Engineer, providing assistance to the Project Manager, and subcontractor and supplier coordination throughout the Project term.

4. Contract Dates.

COMMENCEMENT DATE: Within **(Insert # of Days)** days of the execution of the Contract ("Execution").

SUBSTANTIAL COMPLETION DATE: **(Insert # of Days)** from Contract Execution **(or a date certain)**.

FINAL COMPLETION DATE: **(Insert # of Days)** from Contract Execution **(or a date certain)**.

5. Tax Compliance.

The individual signing on behalf of CONTRACTOR hereby affirms, under penalty of perjury as provided in ORS 305.385(6), that, to the best of CONTRACTOR's knowledge, the CONTRACTOR is not in violation of any of the tax laws described in ORS 305.380(4). For purposes of this certification, "tax laws" means a state tax imposed by ORS 320.005 to 320.150 and 403.200 to 403.250, ORS Chapters 118, 314, 316, 317, 318, 321 and 323; the elderly rental assistance program under ORS 310.630 to 310.706; and local taxes administered by the Oregon Department of Revenue under ORS 305.620.

6. Liquidated Damages. **[OPTIONAL]**

Failure to complete the Work by the time specified in this Contract will result in actual damages to the OWNER. Since actual damages will be difficult or impossible to determine, it is agreed that the CONTRACTOR shall pay OWNER, not as a penalty but as liquidated damages **(Insert Dollar Value)** per Day for each Day elapsed in excess of the Substantial Completion Date.

6/7. Integration

The Contract documents constitute the entire agreement between the parties. There are no other understandings, agreements or representations, oral or written, not specified herein regarding this Contract. CONTRACTOR, by the signature below of its authorized representative, hereby acknowledges that it has read this Contract, understands it, and agrees to be bound by its terms and conditions.

In witness whereof, the State of Oregon, acting by and through the Oregon State Board of Higher Education on behalf of **(Insert Institution)** executes this Contract and the CONTRACTOR does execute the same as of the day and year indicated below.

CONTRACTOR DATA:

(Insert Contractor Name & Address)

CONTRACTOR NAME _____
CONTRACTOR FEDERAL TAX ID # _____
CONTRACTOR CCB # _____ Expiration Date: _____

[Payment information will be reported to the IRS under the name and taxpayer ID # provided above. Information must be provided prior to contract approval. Information not matching IRS records could subject Contractor to 31 percent backup withholding.]

CONTRACTOR SIGNATURE

By _____
Signature Date

Print Name Title

STATE OF OREGON acting by and through the
OREGON STATE BOARD OF HIGHER EDUCATION
on behalf of **(Insert Institution)**

By _____
Name/Title Date

By _____
Name/Title Date

OREGON UNIVERSITY SYSTEM
SUPPLEMENTAL GENERAL CONDITIONS

To The
GENERAL CONDITIONS
FOR PUBLIC IMPROVEMENT CONTRACTS

Contract No. 2014-0404
Project Name: SOU Turf & Track Replacement

The following modify the Oregon University System “General Conditions for Public Improvement Contracts”, July 1, 2012, (OUS General Conditions) for this Contract. Where a portion of the OUS General Conditions is modified by these Supplemental General Conditions, the unaltered portions shall remain in effect.

SG-1. Section B.2.2 is modified as follows: Add the following:

"Should the Contractor request the assistance of Owner in the performance of any Work included in the Contract Documents, and should Owner, at its discretion, agree to provide such assistance, Owner may provide such assistance by using its own forces or by using another contractor. If Owner performs Work using Owner's own forces, Contractor shall pay Owner at the rate of one and one-half (1½) times the standard hourly rate of Owner's forces, plus related overhead and any direct non-salary costs. If Owner performs the Work using another contractor, Contractor shall pay Owner the amount of Owner's direct costs billed by the other contractor for the Work performed, plus the direct salary costs and related overhead and direct non-salary expenses of Owner's forces who are required to monitor that contractor's work. Work performed by Owner using Owner's own forces or those of another contractor shall not affect the Contractor's contractual duties under these provisions, including warranty provisions."

SG-2. Section B.4 is modified as follows: Revise to read:

“Contractor shall obtain and pay for all necessary permits and licenses, except for those specifically excluded in the Supplemental General Conditions, for the construction of the Work, for temporary obstructions, enclosures, opening of streets for pipes, walls, utilities, environmental Work, etc., as required for the project. Owner shall obtain and pay for the general building permit and pay for any specialty permits required for the Work. Contractor shall be responsible for all violations of the law, in connection with the construction or caused by obstructing streets, sidewalks or otherwise. Contractor shall give all requisite

notices to public authorities. The Contractor shall pay all royalties and license fees. The Contractor shall defend all suits or claims for infringement of any patent or other proprietary rights and save harmless and blameless from loss, on account thereof, the State of Oregon, and its departments, divisions, members and employees.”

SG-3. Section E.2.9 is modified as follows: Add the following:

“Owner shall provide the Contractor with an electronic version of the desired reporting format at the time of execution of the Contract or GMP Amendment for the Contractor’s use in submittal of the report, which should be submitted both electronically and in hard copy.”

SG-4. Section F.2.4 is modified as follows: Add the following:

“Contractor shall verify that all mechanical or electrical equipment in the construction areas that may be affected by the Work is in working order and shall notify the Owner, in writing, of any equipment not in working order prior to the start of the Work. Start of Work will be considered as acknowledgement that all equipment is in good working order. Contractor shall be required to restore equipment to its original, or better, condition upon completion of the project.”

SG-5. Section G.3.4.1 is modified as follows: Replace the last two sentences of with the following:

"Combined single limit per occurrence shall not be less than \$5 million per occurrence, or the equivalent. Each annual aggregate limit shall not be less than \$5 million, when applicable. Should Contractor require Subcontractors to provide Commercial General Liability coverage for the benefit of Contractor, Contractor shall not require coverage in an amount exceeding \$2 million per occurrence, or the equivalent."

SG-6. Section G.3 is modified as follows: Add the following G.3.4.4:

“Professional Liability: Prior to the beginning of any work on Design Build Components, the Contractor shall provide to the Owner certificates of insurance for Commercial General Liability in an amount not less than \$1,000,000, including Product Liability and Completed Operations, from the manufacturers of Design Build components, unless such Design/Build components are “off-the-shelf” products purchased from a supplier. All such certificates shall be in compliance with the Owner’s contract requirements.

For those elements requiring design or calculations performed by a professional engineer, the Contractor shall obtain from the Engineer, if not an employee of Contractor, and provide to the Owner, similar certificates of Commercial General

Liability coverage. The Engineer shall also provide the Owner with proof of coverage for Professional Liability insurance covering any damages caused by any negligent error, omission, or any act for the project, its drawings and specifications, and all related work products of the Engineer. The policy may be either a practice based policy or a policy pertaining to the specific project. Professional Liability insurance to be provided shall have a combined single limit of not less than \$1,000,000.”

SG-7. Section H.2.1 is deleted and replaced with the following:

"Contractor shall provide, by or before the pre-construction conference, a detailed project Work schedule for review and acceptance by the Owner. The submitted schedule must illustrate Work by significant project components, significant labor trades, long lead items, broken down by building and/or floor where applicable. Each schedule item shall account for no greater than 5% of the monetary value of the project or 5% of the available time. Schedules with activities of less than one day or valued at less than 1% of the Contract shall be considered too detailed and shall not be accepted. Schedules lacking adequate detail, or unreasonably detailed, shall be rejected. Included within the schedule are the following: Notice to Proceed, Substantial Completion, and Final Completion. Contractor shall provide an updated, full project schedule with each payment request. In addition, twice monthly, the Contractor shall provide an updated three-week forward-looking schedule. Acceptance of the Schedule by the Owner does not constitute agreement by the Owner as to the Contractor's sequencing, means, methods, or durations. Any positive difference between the Contractor's scheduled completion and the contract completion date is float owned by the Owner. Use of the float shall be negotiated. In no case shall the Contractor make a claim for delays if the Work is completed within the Contract Period but after Contractor's scheduled completion."

OREGON UNIVERSITY SYSTEM

GENERAL CONDITIONS FOR PUBLIC IMPROVEMENT CONTRACTS

July 1, 2012

INSTRUCTIONS: The attached **Oregon University System General Conditions for Public Improvement Contracts** ("OUS Public Improvement General Conditions") apply to all designated public improvement contracts. Changes to the OUS Public Improvement General Conditions (including any additions, deletions or substitutions) should only be made by attaching Public Improvement Supplemental General Conditions. The text of these OUS Public Improvement General Conditions should not otherwise be altered.

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**OREGON UNIVERSITY SYSTEM
GENERAL CONDITIONS FOR PUBLIC IMPROVEMENT CONTRACTS
("OUS Public Improvement General Conditions")**

**SECTION A
GENERAL PROVISIONS**

A.1 DEFINITION OF TERMS

In the Contract Documents the following terms shall be as defined below:

APPLICABLE LAWS, means federal, state and local laws, codes, rules, regulations and ordinances applicable to the Work and to the Contract.

ARCHITECT/ENGINEER, means the Person appointed by the Owner to make drawings and specifications and, to provide contract administration of the Work contemplated by the Contract to the extent provided herein or by supplemental instruction of Owner (under which Owner may delegate responsibilities to the Architect/Engineer), in accordance with ORS Chapter 671 (Architects) or ORS Chapter 672 (Engineers) and administrative rules adopted thereunder.

BID, means an offer binding on the Bidder and submitted in response to an Instructions to Bidders or a proposal in connection with a Request for Proposals.

BIDDER, means an Entity that submits a Bid in response to Instructions to Bidders or a proposer in connection with a Request for Proposals.

CHANGE ORDER, means a written order which, when fully executed by the Parties to this Contract, constitutes a change to the Contract Documents. Change Orders shall be issued in accordance with the changes provisions in Section D and, if applicable, establish a Contract Price or Contract Time adjustment. A Change Order shall not be effective until executed as a Change Order.

CLAIM, means a demand by Contractor pursuant to Section D.3 for review of the denial of Contractor's initial request for an adjustment of Contract terms, payment of money, extension of Contract Time or other relief, submitted in accordance with the requirements and within the time limits established for review of Claims in these OUS Public Improvement General Conditions.

CONSTRUCTION CHANGE DIRECTIVE, means a written order by the Owner to the Contractor requiring a change in the Work within the general scope of the Contract Documents, issued under the changes provisions of Section D.

CONTRACT, means the written agreement between the Owner and the Contractor comprised of the Contract Documents which describe the Work to be done and the obligations between the parties.

CONTRACT DOCUMENTS, means the Solicitation Document and addenda thereto, Instructions to Bidders, Supplemental Instructions to Bidders, the OUS Public Improvement Contract, OUS Public Improvement General Conditions, Public Improvement Supplemental General Conditions, if any, the accepted Bid, Plans, Specifications, Change Orders, and Construction Change Directives.

CONTRACT PERIOD, as set forth in the Contract Documents, means the total period of time beginning with the full execution of this Contract and, if applicable, the issuance of a Notice to Proceed and concluding upon Final Completion.

CONTRACT PRICE, means the total of the awarded Bid amount, as increased or decreased by the price of approved alternates, as indicated in the Contract Documents.

CONTRACT TIME, means any incremental period of time allowed

under the Contract to complete any portion of the Work as reflected in the project schedule.

CONTRACTOR, means the Person awarded the Contract for the Work contemplated.

DAYS, are calendar days, including weekdays, weekends and holidays, unless otherwise specified.

DIRECT COSTS, means, unless otherwise provided in the Contract Documents, the cost of materials, including sales tax, cost of delivery; cost of labor, including social security, Medicare and unemployment insurance, and fringe benefits required by agreement or custom; worker's compensation insurance; project specific insurance (including, without limitation, Builder's Risk Insurance and Builder's Risk Installation Floater); bond premiums, rental cost of equipment, and machinery required for execution of the Work; Owner's costs to correct defective Work; and the additional costs of field personnel directly attributable to the Work.

FINAL COMPLETION, means the final completion of all requirements under the Contract, including Contract Closeout as described in Section K but excluding Warranty Work as described in Section I.2, and the final payment and release of all retainage, if any, released.

FORCE MAJEURE, means an act, event or occurrence caused by fire, riot, war, acts of God, nature, sovereign, or public enemy, strikes, freight embargoes or any other act, event or occurrence that is beyond the control of the party to this Contract who is asserting Force Majeure.

MWESB REPORT, means an accurate report by the Contractor to the Owner identifying all Minority, Women and Emerging Small Business (MWESB) enterprises, as those terms are defined in ORS 200.005, receiving contracts throughout the course of the Work. An initial MWESB report is required (see Section E.2.9) and MWESB Reports are required annually (see Section E.2.9) and as a condition of final payment (see Section K.1). The initial report shall be in the form required by OUS and as posted from time to time on the OUS website and shall include the total number of contracts and subcontracts awarded to MWESB enterprises and the dollar value of their respective contracts and subcontracts. The annual reports shall include the total number of contracts and subcontracts awarded to MWESB enterprises, the dollar value of each, and the expenditure toward each contract and subcontract during the previous twelve (12) months. The final report shall include the total number of contracts and subcontracts awarded to MWESB enterprises and the dollar value of their respective contracts and subcontracts including all Change Orders incorporated during the course of the project. The reports shall only include enterprises certified with the State of Oregon as MWESB enterprises and shall include individual identification of each enterprise as a Minority business enterprise, a Women business enterprise, and/or an Emerging Small Business Enterprise, as applicable.

NOTICE TO PROCEED, means the official written notice from the Owner stating that the Contractor is to proceed with the Work defined in the Contract Documents. Notwithstanding the Notice to Proceed, Contractor shall not be authorized to proceed with the Work until all initial Contract requirements, including the Contract, performance bond and payment bond, and certificates of insurance, have been fully executed and submitted to Owner in a suitable form.

OVERHEAD, means those items which may be included in the Contractor's markup (general and administrative expense and profit) and that shall not be charged as Direct Cost of the Work,

including without limitation such Overhead expenses as wages or salary of personnel above the level of foreman (i.e., superintendents and project managers), expenses of Contractor's offices and supplies at the job site (e.g. job trailer) and at Contractor's principal place of business and including expenses of personnel staffing the job site office and Contractor's principal place of business, and Commercial General Liability Insurance and Automobile Liability Insurance.

OWNER, means the State of Oregon acting by and through the Oregon State Board of Higher Education, in its own right or on behalf of one of its institutions as identified in the Solicitation Document, also known as the Oregon University System (OUS). Owner may elect, by written notice to Contractor, to delegate certain duties to more than one party, including without limitation, to an Architect/Engineer. However, nothing in these OUS Public Improvement General Conditions is intended to abrogate the separate design professional responsibilities of Architects under ORS Chapter 671 or of Engineers under ORS Chapter 672.

PERSON, means a natural person or entity doing business as a sole proprietorship, a partnership, a joint venture, a corporation, a limited liability company or partnership, or any other entity possessing the legal capacity to contract.

PLANS, means the drawings which show the location, type, dimensions, and details of the Work to be done under the Contract.

PUNCH LIST, means the list of Work yet to be completed or deficiencies which need to be corrected in order to achieve Final Completion of the Contract.

RECORD DOCUMENT, means the as-built Plans, Specifications, testing and inspection records, product data, samples, manufacturer and distributor/supplier warranties evidencing transfer of ownership to Owner, operational and maintenance manuals, shop drawings, Construction Change Directives, MWESB Reports, correspondence, certificate(s) of occupancy, and other documents listed in Subsection B.9.1 of these OUS Public Improvement General Conditions, recording all Services performed.

SOLICITATION DOCUMENT, means Instructions to Bidders or Bidders or a Request for Proposal or a Request for Quotes.

SPECIFICATION, means any description of the physical or functional characteristics of the Work, or of the nature of a supply, service or construction item. Specifications may include a description of any requirement for inspecting, testing or preparing a supply, service or construction item for delivery and the quantities or qualities of materials to be furnished under the Contract. Specifications generally will state the results or products to be obtained and may, on occasion, describe the method and manner of doing the Work to be performed. Specifications may be incorporated by reference and/or may be attached to the Contract.

SUBCONTRACTOR, means a Person having a direct contract with the Contractor, or another Subcontractor, to perform one or more items of the Work.

SUBSTANTIAL COMPLETION, means the date when the Owner accepts in writing the construction, alteration or repair of the improvement to real property constituting the Work or any designated portion thereof as having reached that state of completion when it may be used or occupied for its intended purpose. Substantial Completion of facilities with operating systems occurs only after thirty (30) continuous Days of successful, trouble-free operation of the operating systems as provided in Section K.4.2.

SUBSTITUTIONS, means items that in function, performance, reliability, quality, and general configuration are the same or better than the product(s) specified. Approval of any substitute item shall be solely determined by the Owner. The decision of the Owner is final.

PUBLIC IMPROVEMENT SUPPLEMENTAL GENERAL CONDITIONS, means those conditions that remove from, add to, or modify these OUS Public Improvement General Conditions. Public Improvement Supplemental General Conditions may be included in the Solicitation Document or may be a separate attachment to the Contract.

WORK, means the furnishing of all materials, equipment, labor, transportation, services and incidentals necessary to successfully complete any individual item or the entire Contract and the carrying out of duties and obligations imposed by the Contract Documents.

A.2 SCOPE OF WORK

The Work contemplated under this Contract includes all labor, materials, transportation, equipment and services for, and incidental to, the completion of all construction work in connection with the project described in the Contract Documents. The Contractor shall perform all Work necessary so that the project can be legally occupied and fully used for the intended use as set forth in the Contract Documents.

A.3 INTERPRETATION OF CONTRACT DOCUMENTS

- A.3.1 Unless otherwise specifically defined in the Contract Documents, words which have well-known technical meanings or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings. Contract Documents are intended to be complementary. Whatever is called for in one, is interpreted to be called for in all. However, in the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following descending order of precedence:
- (a) Contract Change Orders and Construction Change Directives, with those of later date having precedence over those of an earlier date;
 - (b) The Public Improvement Supplemental General Conditions;
 - (c) The OUS Public Improvement Contract;
 - (d) The OUS Public Improvement General Conditions;
 - (e) Division One (General Requirements) of the Specifications;
 - (f) Detailed Schedules of finishes, equipment and other items included in the Specifications;
 - (g) Plans and Specifications (other than Division One and the Detailed Schedules to the Specifications);
 - (h) Large-scale drawings on Plans;
 - (i) Small-scale drawings on Plans;
 - (j) Dimension numbers written on Plans which shall prevail and take precedence over dimensions scaled from Plans;
 - (k) The Solicitation Document, and any addenda thereto;
 - (l) The accepted Bid.
- A.3.2 In the case of an inconsistency between Plans and Specifications or within either document not clarified by addendum, the better quality or greater quantity of Work shall be provided in accordance with the Owner's interpretation in writing.
- A.3.3 If the Contractor finds discrepancies in, or omissions from the Contract Documents, or if the Contractor is in doubt as to their meaning, the Contractor shall at once notify the Owner. Matters concerning and interpretation of requirements of the Contract Documents will be decided by the Owner, who may delegate that duty in some instances to the Architect/Engineer. Responses to Contractor's requests for interpretation of Contract

Documents will be made in writing by Owner (or the Architect/Engineer) within any time limits agreed upon or otherwise with reasonable promptness. Interpretations and decisions of the Owner (or Architect/Engineer) will be consistent with the intent of and reasonably inferable from the Contract Documents. Contractor shall not proceed without direction in writing from the Owner (or Architect/Engineer).

- A.3.4 References to standard specifications, manuals, codes of any technical society, organization or association, to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code, laws or regulations in effect in the jurisdiction where the project is occurring on the first published date of the Solicitation Document, except as may be otherwise specifically stated.

A.4 EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE

- A.4.1 It is understood that the Contractor, before submitting a Bid, has made a careful examination of the Contract Documents; has become fully informed as to the quality and quantity of materials and the character of the Work required; and has made a careful examination of the location and conditions of the Work and the sources of supply for materials. The Owner will in no case be responsible for any loss or for any unanticipated costs that may be suffered by the Contractor as a result of the Contractor's failure to acquire full information in advance in regard to all conditions pertaining to the Work. No oral agreement or conversation with any officer, agent, or personnel of the Owner, or with the Architect/Engineer either before or after the execution of this Contract, shall affect or modify any of the terms or obligations herein contained.
- A.4.2 Should the Plans or Specifications fail to particularly describe the materials, kind of goods, or details of construction of any aspect of the Work, Contractor shall have the duty to make inquiry of the Owner and Architect/Engineer as to what is required prior to performance of the Work. Absent Specifications to the contrary, the materials or processes that would normally be used to produce first quality finished Work shall be considered a part of the Contract requirements.
- A.4.3 Any design errors or omissions noted by the Contractor shall be reported promptly to the Owner, including without limitation, any nonconformity with Applicable Laws.
- A.4.4 If the Contractor believes that adjustments to cost or Contract Time is involved because of clarifications or instructions issued by the Owner (or Architect/Engineer) in response to the Contractor's notices or requests for information, the Contractor must submit a written request to the Owner, setting forth the nature and specific extent of the request, including all time and cost impacts against the Contract as soon as possible, but no later than thirty (30) Days after receipt by Contractor of the clarifications or instructions issued. If the Owner denies Contractor's request for additional compensation, additional Contract Time, or other relief that Contractor believes results from the clarifications or instructions, the Contractor may proceed to file a Claim under Section D.3, Claims Review Process. If the Contractor fails to perform the obligations of Sections A.4.1 to A.4.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations.

A.5 INDEPENDENT CONTRACTOR STATUS

The service or services to be performed under this Contract are those of an independent contractor as defined in ORS 670.600. Contractor represents and warrants that it is not an officer, employee or agent of the Owner as those terms are used in ORS 30.265.

A.6 RETIREMENT SYSTEM STATUS AND TAXES

Contractor represents and warrants that it is not a contributing member of the Public Employees' Retirement System and will be responsible for any federal or state taxes applicable to payment received under this Contract. Contractor will not be eligible for any benefits from these Contract payments of federal Social Security, employment insurance, workers' compensation or the Public Employees' Retirement System, except as a self-employed individual. Unless the Contractor is subject to backup withholding, Owner will not withhold from such payments any amount(s) to cover Contractor's federal or state tax obligations.

A.7 GOVERNMENT EMPLOYMENT STATUS

- A.7.1 If this payment is to be charged against federal funds, Contractor represents and warrants that it is not currently employed by the Federal Government. This does not preclude the Contractor from holding another contract with the Federal Government.
- A.7.2 Contractor represents and warrants that Contractor is not an employee of the State of Oregon for purposes of performing Work under this Contract.

SECTION B ADMINISTRATION OF THE CONTRACT

B.1 OWNER'S ADMINISTRATION OF THE CONTRACT

- B.1.1 The Owner shall administer the Contract as described in the Contract Documents (1) during construction (2) until final payment is due and (3) during the one-year period for correction of Work. The Owner will act as provided in the Contract Documents, unless modified in writing in accordance with other provisions of the Contract. In performing these tasks, the Owner may rely on the Architect/Engineer or other consultants to perform some or all of these tasks.
- B.1.2 The Owner will visit the site at intervals appropriate to the stage of the Contractor's operations (1) to become generally familiar with and to keep the Owner informed about the progress and quality of the portion of the Work completed, (2) to endeavor to guard the Owner against defects and deficiencies in the Work, and (3) to determine in general if Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. The Owner will not make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Owner will neither have control over or charge of, nor be responsible for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work.
- B.1.3 Except as otherwise provided in the Contract Documents or when direct communications have been specifically authorized, the Owner and Contractor shall communicate with each other about matters arising out of or relating to the Contract. Communications by and with the Architect/Engineer's consultants shall be through the Architect/Engineer. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.
- B.1.4 Based upon the Architect/Engineer's evaluations of the Contractor's Application for Payment, or unless otherwise stipulated by the Owner, the Architect/Engineer will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

B.2 CONTRACTOR'S MEANS AND METHODS; MITIGATION OF IMPACTS

B.2.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures.

B.2.2 The Contractor is responsible to protect and maintain the Work during the course of construction and to mitigate any adverse impacts to the project, including those caused by authorized changes, which may affect cost, schedule, or quality.

B.2.3 The Contractor is responsible for the actions of all its personnel, laborers, suppliers, and Subcontractors on the project. The Contractor shall enforce strict discipline and good order among Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of persons who are unfit or unskilled for the tasks assigned to them.

B.3 MATERIALS AND WORKMANSHIP

B.3.1 The intent of the Contract Documents is to provide for the construction and completion in every detail of the Work described. All Work shall be performed in a professional manner and unless the means or methods of performing a task are specified elsewhere in the Contract Documents, Contractor shall employ methods that are generally accepted and used by the industry, in accordance with industry standards.

B.3.2 The Contractor is responsible to perform the Work as required by the Contract Documents. Defective Work shall be corrected at the Contractor's expense.

B.3.3 Work done and materials furnished shall be subject to inspection and/or observation and testing by the Owner to determine if they conform to the Contract Documents. Inspection of the Work by the Owner does not relieve the Contractor of responsibility for the Work in accordance with the Contract Documents.

B.3.4 Contractor shall furnish adequate facilities, as required, for the Owner to have safe access to the Work including without limitation walkways, railings, ladders, tunnels, and platforms. Producers, suppliers, and fabricators shall also provide proper facilities and access to their facilities.

B.3.5 The Contractor shall furnish Samples of materials for testing by the Owner and include the cost of the Samples in the Contract Price.

B.4 PERMITS

Except to the extent otherwise directed by Owner, Contractor shall obtain and pay for all necessary permits, licenses and fees, except for those specifically excluded in the Public Improvement Supplemental General Conditions, for the construction of the Work, for temporary obstructions, enclosures, opening of streets for pipes, walls, utilities, environmental Work, etc., as required for the project. Contractor shall be responsible for all violations of the law, in connection with the construction or caused by obstructing streets, sidewalks or otherwise. Contractor shall give all requisite notices to public authorities.

B.5 COMPLIANCE WITH GOVERNMENT REGULATIONS

B.5.1 Contractor shall comply with Applicable Laws pertaining to the Work and the Contract. Failure to comply with such

requirements shall constitute a breach of Contract and shall be grounds for Contract termination. Without limiting the generality of the foregoing, Contractor expressly agrees to comply with the following, as applicable:

(i) Title VI and VII of Civil Rights Act of 1964, as amended; (ii) Section 503 and 504 of the Rehabilitation Act of 1973, as amended; (iii) the Health Insurance Portability and Accountability Act of 1996; (iv) the Americans with Disabilities Act of 1990, as amended; (v) ORS Chapter 659A; as amended; (vi) all regulations and administrative rules established pursuant to the foregoing laws; and (vii) all other applicable requirements of federal and state civil rights and rehabilitation statutes, rules and regulations.

B.5.2 Contractor shall comply with all applicable requirements of federal and state civil rights and rehabilitation statutes, rules and regulations, and

(a) Contractor shall not discriminate against Disadvantaged, Minority, Women or Emerging Small Business enterprises, as those terms are defined in ORS 200.005, or a business enterprise that is owned or controlled by or that employs a disabled veteran, as that term is defined in ORS 408.225, in the awarding of subcontracts.

(b) Contractor shall maintain, in current and valid form, all licenses and certificates required by Applicable Laws or this Contract when performing the Work.

B.5.3 Unless contrary to federal law, Contractor shall certify that it shall not accept a bid from Subcontractors to perform Work as described in ORS 701.005 under this Contract unless such Subcontractors are registered with the Construction Contractors Board in accordance with ORS 701.035 to 701.055 at the time they submit their bids to the Contractor.

B.5.4 Unless contrary to federal law, Contractor shall certify that each landscape contractor, as defined in ORS 671.520(2), performing Work under this Contract holds a valid landscape contractor's license issued pursuant to ORS 671.560.

B.5.5 The following notice is applicable to Contractors who perform excavation Work. "ATTENTION: Oregon law requires you to follow rules adopted by the Oregon Utility Notification Center. Those rules are set forth in OAR 952-001-0010 through OAR 952-001-0090. You may obtain copies of the rules by calling the center at (503)232-1987."

B.5.6 Failure to comply with any or all of the requirements of B.5.1 through B.5.5 shall be a breach of Contract and constitute grounds for Contract termination. Damages or costs resulting from such noncompliance shall be the responsibility of Contractor.

B.6 SUPERINTENDENCE

Contractor shall keep on the site, during the progress of the Work, a competent superintendent and any necessary assistants who shall be satisfactory to the Owner and who shall represent the Contractor on the site. Directions given to the superintendent by the Owner shall be confirmed in writing to the Contractor.

B.7 INSPECTION

B.7.1 Owner shall have access to the Work at all times.

B.7.2 Inspection of the Work will be made by the Owner at its discretion. The Owner will have authority to reject Work that does not conform to the Contract Documents. Any Work found to be not in conformance with the Contract Documents, in the discretion of the Owner, shall be removed and replaced at the Contractor's expense.

B.7.3 Contractor shall make or obtain at the appropriate time all tests, inspections and approvals of portions of the Work required by the Contract Documents or by Applicable Laws or orders of public authorities having jurisdiction. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work. The Contractor shall give the Owner timely notice of when and where tests and inspections are to be made so that the Owner may be present for such procedures. Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Owner.

B.7.4 As required by the Contract Documents, Work done or material used without required inspection or testing and/or without providing timely notice to the Owner may be ordered removed at the Contractor's expense.

B.7.5 If directed to do so any time before the Work is accepted, the Contractor shall uncover portions of the completed Work for inspection. After inspection, the Contractor shall restore such portions of Work to the standard required by the Contract. If the Work uncovered is unacceptable or was done without required testing or inspection or sufficient notice to the Owner, the uncovering and restoration shall be done at the Contractor's expense. If the Work uncovered is acceptable and was done with sufficient notice to the Owner, the uncovering and restoration will be paid for pursuant to a Change Order.

B.7.6 If any testing or inspection reveals failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Owner's and Architect/Engineer's services and expenses, shall be at the Contractor's expense.

B.7.7 When the United States government participates in the cost of the Work, or the Owner has an agreement with other public or private organizations, or if any portion of the Work is being performed for a third party or in close proximity to third party facilities, representatives of these organizations shall have the right to inspect the Work affecting their interests or property. Their right to inspect shall not make them a party to the Contract and shall not interfere with the rights of the parties of the Contract. Instructions or orders of such parties shall be transmitted to the Contractor, through the Owner.

B.8 SEVERABILITY

If any provision of this Contract is declared by a court to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected and the rights and obligations of the parties shall be construed and enforced as if the Contract did not contain the particular provision held to be invalid.

B.9 ACCESS TO RECORDS

B.9.1 Contractor shall keep, at all times on the Work site, one record copy of the complete Contract Documents, including the Plans, Specifications, Construction Change Directives and addenda, in good order and marked currently to record field changes and selections made during construction, and one record copy of Shop Drawings, Product Data, Samples and similar submittals, and shall at all times give the Owner access thereto.

B.9.2 Contractor shall retain and the Owner and its duly authorized representatives shall have access, for a period not less than ten (10) years, to all Record Documents, financial and accounting

records, and other books, documents, papers and records of Contractor which are pertinent to the Contract, including records pertaining to Overhead and indirect costs, for the purpose of making audit, examination, excerpts and transcripts. If for any reason, any part of the Work or this Contract shall be subject to litigation, Contractor shall retain all such records until all litigation is resolved and Contractor shall continue to provide Owner and/or its agents with full access to such records until such time as all litigation is complete and all periods for appeal have expired and full and final satisfaction of any judgment, order or decree is recorded and Owner receives a record copy of documentation from Contractor.

B.10 WAIVER

Failure of the Owner to enforce any provision of this Contract shall not constitute a waiver or relinquishment by the Owner of the right to such performance in the future nor of the right to enforce any other provision of this Contract.

B.11 SUBCONTRACTS AND ASSIGNMENT

B.11.1 Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound by the terms and conditions of these OUS Public Improvement General Conditions, and to assume toward the Contractor all of the obligations and responsibilities which the Contractor assumes toward the Owner thereunder, unless (1) the same are clearly inapplicable to the subcontract at issue because of legal requirements or industry practices, or (2) specific exceptions are requested by Contractor and approved in writing by Owner. Where appropriate, Contractor shall require each Subcontractor to enter into similar agreements with sub-subcontractors at any level.

B.11.2 At Owner's request, Contractor shall submit to Owner prior to their execution either Contractor's form of subcontract, or the subcontract to be executed with any particular Subcontractor. If Owner disapproves such form, Contractor shall not execute the form until the matters disapproved are resolved to Owner's satisfaction. Owner's review, comment upon or approval of any such form shall not relieve Contractor of its obligations under this Agreement or be deemed a waiver of such obligations of Contractor.

B.11.3 Contractor shall not assign, sell, or transfer its rights, or delegate its responsibilities under this Contract, in whole or in part, without the prior written approval of the Owner. No such written approval shall relieve Contractor of any obligations of this Contract, and any transferee shall be considered the agent of the Contractor and bound to perform in accordance with the Contract Documents. Contractor shall remain liable as between the original parties to the Contract as if no assignment had occurred.

B.12 SUCCESSORS IN INTEREST

The provisions of this Contract shall be binding upon and shall accrue to the benefit of the parties to the Contract and their respective permitted successors and assigns.

B.13 OWNER'S RIGHT TO DO WORK

Owner reserves the right to perform other or additional work at or near the project site with other forces than those of the Contractor. If such work takes place within or next to the project site, Contractor shall coordinate work with the other contractors or forces, cooperate with all other contractors or forces, carry out the Work in a way that will minimize interference and delay for all forces involved, place and dispose of materials being used so as not to interfere with the operations of another, and join the Work with the work of the others in an acceptable manner and perform it in proper sequence to that of the others. The Owner will resolve any disagreements that may arise

between or among Contractor and the other contractors over the method or order of doing all work (including the Work). In case of unavoidable interference, the Owner will establish work priority (including the Work) which generally will be in the sequence that the contracts were awarded.

B.14 OTHER CONTRACTS

In all cases and at any time, the Owner has the right to execute other contracts related to or unrelated to the Work of this Contract. The Contractor of this Contract shall fully cooperate with any and all other contractors without additional cost to the Owner in the manner described in section B.13.

B.15 GOVERNING LAW

This Contract shall be governed by and construed in accordance with the laws of the State of Oregon without regard to principles of conflict of laws.

B.16 LITIGATION

Any Claim between Owner and Contractor that arises from or relates to this Contract and that is not resolved through the Claims Review Process in Section D.3 shall be brought and conducted solely and exclusively within the Circuit Court of Marion County for the State of Oregon, unless stated otherwise in the Contract Documents, provided, however, if a Claim must be brought in a federal forum, then it shall be brought and conducted solely and exclusively within the United States District Court for the District of Oregon. In no event shall this section be construed as a waiver by the State of Oregon of any form of defense or immunity, whether sovereign immunity, governmental immunity, immunity based on the Eleventh Amendment to the Constitution of the United States or otherwise, from any claim or from the jurisdiction of any court. CONTRACTOR, BY EXECUTION OF THIS CONTRACT, HEREBY CONSENTS TO THE IN PERSONAM JURISDICTION OF THE COURTS REFERENCED IN THIS SECTION B.16.

B.17 ALLOWANCES

B.17.1 The Contractor shall include in the Contract Price all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct.

B.17.2 Unless otherwise provided in the Contract Documents:

- (a) when finally reconciled, allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- (b) Contractor's costs for unloading and handling at the site, labor, installation costs, Overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Price but not in the allowances;
- (c) whenever costs are more than or less than allowances, the Contract Price shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (i) the difference between actual costs and the allowances under Section B.17.2(a) and (2) changes in Contractor's costs under Section B.17.2(b).
- (d) Unless Owner requests otherwise, Contractor shall provide to Owner a proposed fixed price for any allowance work prior to its performance.

B.18 SUBMITTALS, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

B.18.1 The Contractor shall prepare and keep current, for the Architect's/Engineer's approval (or for the approval of Owner if approval authority has not been delegated to the

Architect/Engineer), a schedule and list of submittals which is coordinated with the Contractor's construction schedule and allows the Architect/Engineer reasonable time to review submittals. Owner reserves the right to finally approve the schedule and list of submittals. Submittals include, without limitation, Shop Drawings, Product Data, and Samples which are described below:

- (a) Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor (including any sub-subcontractor), manufacturer, supplier or distributor to illustrate some portion of the Work.
- (b) Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.
- (c) Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

B.18.2 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required by the Contract Documents the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review of submittals by the Architect/Engineer is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, or for approval of safety precautions or, unless otherwise specifically stated by the Architect/Engineer, of any construction means, methods, techniques, sequences or procedures, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect/Engineer's review of the Contractor's submittals shall not relieve the Contractor of its obligations under the Contract Documents. The Architect/Engineer's approval of a specific item shall not indicate approval of an assembly of which the item is a component. Informational submittals upon which the Architect/Engineer is not expected to take responsive action may be so identified in the Contract Documents. Submittals which are not required by the Contract Documents may be returned by the Architect/Engineer without action.

B.18.3 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect/Engineer Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Architect/Engineer without action.

B.18.4 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

B.18.5 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect/Engineer.

B.18.6 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect/Engineer's review or approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect/Engineer in writing of such deviation at the time of submittal and (i) the Architect/Engineer has given written approval to the specific deviation as a minor change in the Work, or (ii) a Change Order or Construction Change Directive has been executed by Owner authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect/Engineer's review or approval thereof.

B.18.7 In the event that Owner elects not to have the obligations and duties described under this Section B.18 performed by the Architect/Engineer, or in the event no Architect/Engineer is employed by Owner on the project, all obligations and duties assigned to the Architect/Engineer hereunder shall be performed by the Owner.

B.19 SUBSTITUTIONS

The Contractor may make Substitutions only with the consent of the Owner, after evaluation by the Owner and only in accordance with a Change Order or Construction Change Directive. Substitutions shall be subject to the requirements of the Bid documents. By making requests for Substitutions, the Contractor: represents that the Contractor has personally investigated the proposed substitute product; represents that the Contractor will provide the same warranty for the Substitution that the Contractor would for the product originally specified unless approved otherwise; certifies that the cost data presented is complete and includes all related costs under this Contract including redesign costs, and waives all claims for additional costs related to the Substitution which subsequently become apparent; and will coordinate the installation of the accepted Substitution, making such changes as may be required for the Work to be completed in all respects.

B.20 USE OF PLANS AND SPECIFICATIONS

Plans, Specifications and related Contract Documents furnished to Contractor by Owner or Owner's Architect/Engineer shall be used solely for the performance of the Work under this Contract. Contractor and its Subcontractors and suppliers are authorized to use and reproduce applicable portions of such documents appropriate to the execution of the Work, but shall not claim any ownership or other interest in them beyond the scope of this Contract, and no such interest shall attach. Unless otherwise indicated, all common law, statutory and other reserved rights, in addition to copyrights, are retained by Owner.

B.21 FUNDS AVAILABLE AND AUTHORIZED

Owner reasonably believes at the time of entering into this Contract that sufficient funds are available and authorized for expenditure to finance the cost of this Contract within the Owner's appropriation or limitation. Contractor understands and agrees that, to the extent that sufficient funds are not available and authorized for expenditure to finance the cost of this Contract, Owner's payment of amounts under this Contract attributable to Services performed after the last day of the current biennium is contingent on Owner receiving from the Oregon Legislative Assembly appropriations, limitations or other expenditure authority sufficient to allow Owner, in the exercise of its reasonable administrative discretion, to continue to make payments under this Contract.

B.22 NO THIRD PARTY BENEFICIARIES

Owner and Contractor are the only parties to this Contract and are the only parties entitled to enforce its terms. Nothing in this Contract gives, is intended to give, or shall be construed to give or

provide any benefit or right, whether directly, indirectly, or otherwise, to third persons unless such third persons are individually identified by name herein and expressly described as intended beneficiaries of the terms of this Contract.

SECTION C WAGES AND LABOR

C.1 MINIMUM WAGE RATES ON PUBLIC WORKS

Contractor shall comply fully with the provisions of ORS 279C.800 through 279C.870. Documents establishing those conditions, as determined by the Commissioner of the Bureau of Labor and Industries (BOLI), are included as attachments to or are incorporated by reference in the Contract Documents. Pursuant to ORS 279C.830(1)(d), Contractor shall pay workers at not less than the specified minimum hourly rate of wage, and shall include that requirement in all subcontracts. If the Work is subject to both the state prevailing wage rate law and the federal Davis-Bacon Act, Contractor shall pay the higher of the applicable state or federal prevailing rate of wage. Contractor shall provide written notice to all workers of the number of hours per day and days per week such workers may be required to work.

C.2 PAYROLL CERTIFICATION AND FEE REQUIREMENTS

C.2.1 In accordance with ORS 279C.845, the Contractor and every Subcontractor shall submit written certified statements to the Owner, on the form prescribed by the Commissioner of the Bureau of Labor and Industries, certifying the hourly rate of wage paid each worker which the Contractor or the Subcontractor has employed on the project and further certifying that no worker employed on the project has been paid less than the prevailing rate of wage or less than the minimum hourly rate of wage specified in the Contract, which certificate and statement shall be verified by the oath of the Contractor or the Subcontractor that the Contractor or Subcontractor has read the certified statement, that the Contractor or Subcontractor knows the contents of the certified statement, and, that to the Contractor's or Subcontractor's best knowledge and belief, the certified statement is true. The certified statements shall set out accurately and completely the payroll records for the prior week, including the name and address of each worker, the worker's correct classification, rate of pay, daily and weekly number of hours worked, deductions made, and actual wages paid. Certified statements for each week during which the Contractor or Subcontractor has employed a worker on the project shall be submitted once a month, by the fifth business day of the following month. The Contractor and Subcontractors shall preserve the certified statements for a period of ten (10) years from the date of completion of the Contract.

C.2.2 Pursuant to ORS 279C.845(7), the Owner shall retain 25 percent of any amount earned by the Contractor on this public works project until the Contractor has filed the certified statements required by section C.2.1. The Owner shall pay to the Contractor the amount retained under this subsection within 14 days after the Contractor files the required certified statements, regardless of whether a Subcontractor has failed to file certified statements.

C.2.3 Pursuant to ORS 279C.845(8), the Contractor shall retain 25 percent of any amount earned by a first-tier Subcontractor on this public works project until the first-tier Subcontractor has filed with the Owner the certified statements required by C.2.1. Before paying any amount retained under this subsection, the Contractor shall verify that the first-tier Subcontractor has filed the certified statement. Within 14 days after the first-tier Subcontractor files the required certified statement the

Contractor shall pay the first-tier Subcontractor any amount retained under this subsection.

- C.2.4 In accordance with statutory requirements and administrative rules promulgated by the Commissioner of the Bureau of Labor and Industries, the fee required by ORS 279C.825(1) will be paid by Owner to the Commissioner.

C.3 PROMPT PAYMENT AND CONTRACT CONDITIONS

C.3.1 As a condition to Owner's performance hereunder, the Contractor shall:

C.3.1.1 Make payment promptly, as due, to all persons supplying to Contractor labor or materials for the prosecution of the Work provided for in this Contract.

C.3.1.2 Pay all contributions or amounts due the State Industrial Accident Fund from such Contractor or Subcontractor incurred in the performance of the Contract.

C.3.1.3 Not permit any lien or claim to be filed or prosecuted against the Owner on account of any labor or material furnished. Contractor will not assign any claims that Contractor has against Owner, or assign any sums due by Owner, to Subcontractors, suppliers, or manufacturers, and will not make any agreement or act in any way to give Subcontractors a claim or standing to make a claim against the Owner.

C.3.1.4 Pay to the Department of Revenue all sums withheld from employees pursuant to ORS 316.167.

C.3.2 As a condition to Owner's performance hereunder, if Contractor fails, neglects or refuses to make prompt payment of any claim for labor or services furnished to the Contractor or a Subcontractor by any person in connection with the project as such claim becomes due, the proper officer(s) representing the Owner may pay the claim and charge the amount of the payment against funds due or to become due Contractor under this Contract. Payment of claims in this manner shall not relieve the Contractor or the Contractor's surety from obligation with respect to any unpaid claims.

C.3.3 Contractor shall include in each subcontract for property or services entered into by the Contractor and a first-tier subcontractor, including a material supplier, for the purpose of performing a construction contract, a payment clause that obligates the Contractor to pay the first-tier Subcontractor for satisfactory performance under its subcontract within ten (10) Days out of such amounts as are paid to the Contractor by the public contracting agency under such contract.

C.3.4 All employers, including Contractor, that employ subject workers who work under this contract in the State of Oregon shall comply with ORS 656.017 and provide the required Workers' Compensation coverage, unless such employers are exempt under ORS 656.126. Contractor shall ensure that each of its Subcontractors complies with these requirements.

C.4 PAYMENT FOR MEDICAL CARE

As a condition to Owner's performance hereunder, Contractor shall promptly, as due, make payment to any person, partnership, association or corporation furnishing medical, surgical, and hospital care or other needed care and attention, incident to sickness or injury, to the employees of such Contractor, all sums of which the Contractor agrees to pay for such services and all moneys and sums which the Contractor has collected or deducted from the wages of personnel pursuant to any law, contract or agreement for the purpose of providing or paying for such services.

C.5 HOURS OF LABOR

As a condition to Owner's performance hereunder, no person shall be employed to perform Work under this Contract for more than ten (10) hours in any one day or forty (40) hours in any one week, except in cases of necessity, emergency or where public policy absolutely requires it. In such instances, Contractor shall pay the employee at least time and a half pay:

- (a) For all overtime in excess of eight (8) hours a day or forty (40) hours in any one week when the work week is five consecutive Days, Monday through Friday; or
- (b) For all overtime in excess of ten (10) hours a day or forty (40) hours in any one week when the work week is four consecutive Days, Monday through Friday; and
- (c) For all Work performed on Saturday and on any legal holiday specified in ORS 279C.540.

This section C.5 will not apply to Contractor's Work under this Contract to the extent Contractor is currently a party to a collective bargaining agreement with any labor organization.

This Section C.5 shall not excuse Contractor from completion of the Work within the time required under this Contract.

SECTION D CHANGES IN THE WORK

D.1 CHANGES IN WORK

D.1.1 The terms of this Contract shall not be waived, altered, modified, supplemented or amended in any manner whatsoever, without prior written agreement and then only after any necessary approvals have been obtained. A Change Order is required, which shall not be effective until its execution by the parties to this Contract and all approvals required by public contracting laws have been obtained.

D.1.2 It is mutually agreed that changes in Plans, quantities, or details of construction are inherent in the nature of construction and may be necessary or desirable during the course of construction. Within the general scope of this Contract, the Owner may at any time, without notice to the sureties and without impairing the Contract, require changes consistent with this Section D.1. All changes to the Work shall be documented and Change Orders shall be executed under the conditions of the Contract Documents. Such changes may include, but are not limited to:

- (a) Modification of specifications and design.
- (b) Increases or decreases in quantities.
- (c) Increases or decreases to the amount of Work.
- (d) Addition or elimination of any Work item.
- (e) Change in the duration of the project.
- (f) Acceleration or delay in performance of Work.
- (g) Deductive changes.

Deductive changes are those that reduce the scope of the Work, and shall be made by mutual agreement whenever feasible. In cases of suspension or partial termination under Section J, Owner reserves the right to unilaterally impose a deductive change and to self perform such Work, for which the provisions of B.13 (Owner's Right to Do Work) shall then apply. Adjustments in compensation shall be made under the provisions of D.1.3, in which costs for deductive changes shall be based upon a Direct Costs adjustment together with the related percentage markup specified for profit, Overhead and other indirect costs, unless otherwise agreed to by Owner.

D.1.3 The Owner and Contractor agree that adjustments to or deletions from the Work shall be administered and compensated according to the following:

- (a) Unit pricing may be utilized at the Owner's option when unit prices or solicitation alternates were provided that established the cost for adjustments to Work, and a binding obligation exists under the Contract on the parties covering the terms and conditions of the adjustment to Work.
- (b) If the Owner elects not to utilize unit pricing, or in the event that unit pricing is not available or appropriate, fixed pricing may be used for adjustments to or deletions from the Work. In fixed pricing the basis of payments or total price shall be agreed upon in writing between the parties to the Contract, and shall be established before the Work is done whenever feasible. Notwithstanding the foregoing, the mark-ups set forth in D.1.3(c) shall be utilized in establishing fixed pricing, and such mark-ups shall not be exceeded. Cost and price data relating to adjustments to or deletions from the Work shall be supplied by Contractor to Owner upon request, but Owner shall be under no obligation to make such requests.
- (c) In the event that unit pricing and fixed pricing are not utilized, then adjustments to or deletions from the Work shall be performed on a cost reimbursement basis for Direct Costs. Such Work shall be compensated on the basis of the actual, reasonable and allowable cost of labor, equipment, and material furnished on the Work performed. In addition, the following markups shall be added to the Contractor's or Subcontractor's Direct Costs as full compensation for profit, Overhead and other indirect costs for Work directly performed with the Contractor's or Subcontractor's own forces:

On Labor.....	15%
On Equipment.....	10%
On Materials.....	10%

- (d) When adjustments to or deletions from the Work under D.1.3(c) are invoiced by an authorized Subcontractor at any level, each ascending tier Subcontractor or Contractor will be allowed a supplemental mark-up on each piece of subcontract Work covered by a Change Order as follows:

\$0.00 - \$5,000.00	10%, and then
Over \$5,000.00	5%

Payments made to the Contractor shall be complete compensation for Overhead, profit, and all costs that were incurred by the Contractor or by other forces furnished by the Contractor, including Subcontractors, for adjustments to or deletions from the Work pursuant to a Change Order. Owner may establish a maximum cost for additional Work under this Section D.1.3, which shall not be exceeded for reimbursement without additional written authorization from Owner in the form of a Change Order. Contractor shall not be required to complete such additional Work without additional authorization.

- D.1.4 Any necessary adjustment of Contract Time that may be required as a result of adjustments to or deletions from the Work must be agreed upon by the parties before the start of the revised Work unless Owner authorizes Contractor to start the revised Work before agreement on Contract Time adjustment. Contractor shall submit any request for additional compensation (and additional Contract Time if Contractor was authorized to start Work before an adjustment of Contract Time was approved) as soon as possible but no later than thirty (30) Days after receipt of Owner's request for additional Work. If Contractor's request for additional compensation or adjustment of Contract Time is not made within the thirty (30) Day time limit, Contractor's requests pertaining to that additional Work shall be barred. The thirty (30) Day time limit for making requests shall not be extended for any reason, including without

limitation Contractor's claimed inability to determine the amount of additional compensation or adjustment of Contract Time, unless an extension is granted in writing by Owner. If the Owner denies Contractor's request for additional compensation or adjustment of Contract Time, Contractor may proceed to file a Claim under Section D.3, Claims Review Process. No other reimbursement, compensation, or payment will be made, except as provided in Section D.1.5 for impact claims.

- D.1.5 If any adjustment to Work under Section D.1.3 causes an increase or decrease in the Contractor's cost of, or the Contract Time required for the performance of any other part of the Work under this Contract, Contractor shall submit a written request to the Owner, setting forth the nature and specific extent of the request, including all time and cost impacts against the Contract as soon as possible, but no later than thirty (30) Days after receipt of Owner's request for adjustments to or deletions from the Work by Contractor.

The thirty (30) Day time limit applies to claims of Subcontractors, suppliers, or manufacturers who may be affected by Owner's request for adjustments to or deletions from the Work and who request additional compensation or an extension of Contract Time to perform; Contractor has responsibility for contacting its Subcontractors, suppliers, or manufacturers within the thirty (30) Day time limit, and including their requests with Contractor's requests. If the request involves Work to be completed by Subcontractors, or materials to be furnished by suppliers or manufacturers, such requests shall be submitted to the Contractor in writing with full analysis and justification for the adjustments to compensation and Contract Time requested. The Contractor shall analyze and evaluate the merits of the requests submitted by Subcontractors, suppliers, and manufacturers to Contractor prior to including those requests and Contractor's analysis and evaluation of those requests with Contractor's requests for adjustments to compensation or Contract Time that Contractor submits to the Owner. Failure of Subcontractors, suppliers, manufacturers or others to submit their requests to Contractor for inclusion with Contractor's requests submitted to Owner within the time period and by the means described in this section shall constitute a waiver of these Subcontractor claims. The Owner will not consider direct requests or claims from Subcontractors, suppliers, manufacturers or others not a party to this Contract. The consideration of such requests and claims under this section does not give any Person, not a party to the Contract the right to bring a claim against Owner, whether in this claims process, in litigation, or in any dispute resolution process.

If the Owner denies the Contractor's request for adjustment to compensation or Contract Time, the Contractor may proceed to file a Claim under Section D.3, Claims Review Process.

- D.1.6 No request or Claim by the Contractor for additional costs or an adjustment of Contract Time shall be allowed if made after receipt of final payment application under this Contract. Final payment application must be made by Contractor within the time required under Section E.6.4.
- D.1.7 It is understood that changes in the Work are inherent in construction of this type. The number of changes, the scope of those changes, and the effect they have on the progress of the original Work cannot be defined at this time. The Contractor is notified that numerous changes may be required and that there will be no compensation made, unless and only to the extent otherwise provided in the Contract Documents, to the Contractor directly related to the number of changes. Each change will be evaluated for extension of Contract Time and increase or decrease in compensation based on its own merit.

D.2 DELAYS

D.2.1 Delays in construction include "Avoidable Delays", which are defined in Section D.2.1.1, and "Unavoidable Delays", which are defined in Section D.2.1.2. The effect of Avoidable Delays is described in Section D.2.2 and the effect of Unavoidable Delays is described in Section D.2.3.

D.2.1.1 Avoidable Delays include any delays other than Unavoidable Delays, and include delays that otherwise would be considered Unavoidable Delays but that:

- (a) Could have been avoided by the exercise of care, prudence, foresight, and diligence on the part of the Contractor or its Subcontractors.
- (b) Affect only a portion of the Work and do not necessarily prevent or delay the prosecution of neither other parts of the Work nor the completion of the whole Work within the Contract Time.
- (c) Do not impact activities on the accepted critical path schedule.
- (d) Are associated with the reasonable interference of other contractors employed by the Owner that do not necessarily prevent the completion of the whole Work within the Contract Time.

D.2.1.2 Unavoidable Delays include delays other than Avoidable Delays that are:

- (a) To the extent caused by any actions of the Owner, or any other employee or agent of the Owner, or by separate contractor employed by the Owner.
- (b) To the extent caused by any site conditions which differ materially from what was represented in the Contract Documents or from conditions that would normally be expected to exist and be inherent to the construction activities defined in the Contract Documents. The Contractor shall notify the Owner immediately of differing site conditions before the area has been disturbed. The Owner will investigate the area and make a determination as to whether or not the conditions differ materially from either the conditions stated in the Contract Documents or those which could reasonably be expected in execution of this particular Contract. If Contractor and the Owner agree that a differing site condition exists, any adjustment to compensation or Contract Time will be determined based on the process set forth in Section D.1.5 for adjustments to or deletions from Work. If the Owner disagrees that a differing site condition exists and denies Contractor's request for additional compensation or Contract Time, Contractor may proceed to file a Claim under Section D.3, Claims Review Process.
- (c) To the extent caused by Force Majeure acts, events or occurrences that could not have been avoided by the exercise of care, prudence, foresight, and diligence on the part of the Contractor or its Subcontractors.
- (d) To the extent caused by adverse weather conditions. Any adverse weather conditions must be substantiated by documentary evidence that weather conditions were abnormal for the specific time period claimed, could not have been anticipated by the Contractor, and adversely impacted the project in a manner that could not be avoided by rescheduling the Work or by implementing measures to protect against the weather so that the Work could proceed. A rain, windstorm, high water, or other natural phenomenon for the specific locality of the Work, which might reasonably have been anticipated from the previous 10-year historical records of the general locality of the Work, shall not be construed as abnormal. The parties

agree that rainfall greater than the following levels cannot be reasonably anticipated:

- (i) Daily rainfall equal to, or greater than, 0.50 inch during a month when the monthly rainfall exceeds the normal monthly average by twenty-five percent (25 %) or more.
- (ii) daily rainfall equal to, or greater than, 0.75 inch at any time.

The Office of the Environmental Data Service of the National Oceanic and Atmospheric Administration of the U.S. Department of Commerce nearest the project site shall be considered the official agency of record for weather information.

D.2.2 Contractor shall not be entitled to additional compensation or additional Contract Time for Avoidable Delays.

D.2.3 In the event of Unavoidable Delays, based on principles of equitable adjustment, Contractor may be entitled to the following:

- (a) Contractor may be entitled to additional compensation or additional Contract Time, or both, for Unavoidable Delays described in Section D.2.1.2 (a) and (b).
- (b) Contractor may be entitled to additional Contract Time for Unavoidable Delays described in Section D.2.1.2(c) and (d).

In the event of any requests for additional compensation or additional Contract Time, or both, as applicable, arising under this Section D.2.3 for Unavoidable Delays, other than requests for additional compensation or additional Contract Time for differing site conditions for which a review process is established under Section D.2.1.2 (b), Contractor shall submit a written notification of the delay to the Owner within two (2) Days of the occurrence of the cause of the delay. This written notification shall state the cause of the potential delay, the project components impacted by the delay, and the anticipated additional Contract Time extension or the additional compensation, or both, as applicable, resulting from the delay. Within seven (7) Days after the cause of the delay has been mitigated, or in no case more than thirty (30) Days after the initial written notification, the Contractor shall submit to the Owner, a complete and detailed request for additional compensation or additional Contract Time, or both, as applicable, resulting from the delay. If the Owner denies Contractor's request for additional compensation or adjustment of Contract Time, the Contractor may proceed to file a Claim under Section D.3, Claims Review Process.

If Contractor does not timely submit the notices required under this Section D.2, then unless otherwise prohibited by law, Contractor's Claim shall be barred.

D.3 CLAIMS REVIEW PROCESS

D.3.1 All Contractor Claims shall be referred to the Owner for review. Contractor's Claims, including Claims for adjustments to compensation or Contract Time, shall be submitted in writing by Contractor to the Owner within five (5) Days after a denial of Contractor's initial request for an adjustment of Contract terms, payment of money, extension of Contract Time or other relief, provided that such initial request has been submitted in accordance with the requirements and within the time limits established in these OUS Public Improvement General Conditions. Within thirty (30) Days after the initial Claim, Contractor shall submit to the Owner a complete and detailed description of the Claim (the "Detailed Notice") that includes all information required by Section D.3.2. Unless the Claim is

made in accordance with these time requirements, it shall be waived by Contractor.

D.3.2 The Detailed Notice of the Claim shall be submitted in writing by Contractor and shall include a detailed, factual statement of the basis of the Claim, pertinent dates, Contract provisions which support or allow the Claim, reference to or copies of any documents which support the Claim, the dollar value of the Claim, and the Contract Time adjustment requested for the Claim. If the Claim involves Work to be completed by Subcontractors, the Contractor will analyze and evaluate the merits of the Subcontractor claim prior to forwarding it and that analysis and evaluation to the Owner. The Owner will not consider direct claims from Subcontractors, suppliers, manufacturers, or others not a party to this Contract. Contractor agrees that it will make no agreement, covenant, or assignment, nor will it commit any other act that will permit or assist any Subcontractor, supplier, manufacturer, or other to directly or indirectly make a claim against Owner.

D.3.3 The Owner will review all Claims and take one or more of the following preliminary actions within ten (10) Days of receipt of the Detailed Notice of a Claim: (1) request additional supporting information from the Contractor; (2) inform the Contractor and Owner in writing of the time required for adequate review and response; (3) reject the Claim in whole or in part and identify the reasons for rejection; (4) based on principles of equitable adjustment, recommend approval of all or part of the Claim; or (5) propose an alternate resolution.

D.3.4 The Owner's decision shall be final and binding on the Contractor unless appealed by written notice to the Owner within fifteen (15) Days of receipt of the decision. The Contractor must present written documentation supporting the Claim within fifteen (15) Days of the notice of appeal. After receiving the appeal documentation, the Owner shall review the materials and render a decision within thirty (30) Days after receiving the appeal documents.

D.3.5 The decision of the Owner shall be final and binding unless the Contractor delivers to the Owner its request for mediation, which shall be a non-binding process, within fifteen (15) Days of the date of the Owner's decision. The mediation process will be considered to have commenced as of the date the Contractor delivers the request. Both parties acknowledge and agree that participation in mediation is a prerequisite to commencement of litigation of any disputes relating to the Contract. Both parties further agree to exercise their best efforts in good faith to resolve all disputes within sixty (60) Days of the commencement of the mediation through the mediation process set forth herein.

In the event that a lawsuit must be filed within this sixty (60) Day period in order to preserve a cause of action, the parties agree that, notwithstanding the filing, they shall proceed diligently with the mediation to its conclusion prior to actively prosecuting the lawsuit, and shall seek from the Court in which the lawsuit is pending such stays or extensions, including the filing of an answer, as may be necessary to facilitate the mediation process. Further, in the event settlements are reached on any issues through mediation, the plaintiff shall promptly cause to be entered by the Court a stipulated general judgment of dismissal with prejudice, or other appropriate order limiting the scope of litigation as provided in the settlement.

D.3.6 Should the parties arrive at an impasse regarding any Claims or disputed Claims, it is agreed that the parties shall participate in mediation as specified in Section D.3.5. The mediation process will be considered to have been commenced as of the date one party delivers to the other its request in writing to mediate. The mediator shall be an individual mutually acceptable to both parties, but in the absence of agreement each party shall select a temporary mediator and the temporary mediators shall jointly

select the permanent mediator. Each party shall pay its own costs for the time and effort involved in mediation. The cost of the mediator shall be split equally between the two parties. Both parties agree to exercise their best effort in good faith to resolve all disputes in mediation. Participation in mediation is a mandatory requirement of both the Owner and the Contractor. The schedule, time and place for mediation will be mutually acceptable, or, failing mutual agreement, shall be as established by the mediator. The parties agree to comply with Owner's administrative rules governing the confidentiality of mediation, if any, and shall execute all necessary documents to give effect to such confidentiality rules. In any event, the parties shall not subpoena the mediator or otherwise require the mediator to produce records, notes or work product, or to testify in any future proceedings as to information disclosed or representations made in the course of mediation, except to the extent disclosure is required by law.

D.3.7 Unless otherwise directed by Owner, Contractor shall proceed with the Work while any Claim, or mediation or litigation arising from a Claim, is pending. Regardless of the review period or the final decision of the Owner, the Contractor shall continue to diligently pursue the Work as identified in the Contract Documents. In no case is the Contractor justified or allowed to cease or Delay Work, in whole or in part, without a written stop work order from the Owner.

SECTION E PAYMENTS

E.1 SCHEDULE OF VALUES

The Contractor shall submit, at least ten (10) Days prior to submission of its first application for progress payment, a schedule of values ("Schedule of Values") for the contracted Work. This schedule shall provide a breakdown of values for the contracted Work and will be the basis for progress payments. The breakdown shall demonstrate reasonable, identifiable, and measurable components of the Work. Unless objected to by the Owner, this schedule shall be used as the basis for reviewing Contractor's applications for payment. If objected to by Owner, Contractor shall revise the schedule of values and resubmit the same for approval of Owner.

E.2 APPLICATIONS FOR PAYMENT

E.2.1 Owner shall make progress payments on the Contract monthly as Work progresses, in accordance with the requirements of this Section E.2. Applications for payment shall be based upon estimates of Work completed and the Schedule of Values. As a condition precedent to Owner's obligation to pay, all applications for payment shall be approved by the Owner. A progress payment shall not be considered acceptance or approval of any Work or waiver of any defects therein. Owner shall pay to Contractor interest for overdue invoices at the rate of two-thirds of one percent per month on the progress payment, not including retainage, due the Contractor. Overdue invoices will be those that have not been paid within forty five (45) days from the latest of:

- (a) The date of the receipt of the accurate invoice;
- (b) The date Owner receives the correct application for payment if no invoice is received;
- (c) The date all goods and services have been received; or
- (d) The date a Claim is made certain by agreement of the parties or by operation of law.

Notwithstanding the foregoing, in instances when an application for payment is filled out incorrectly, or when there is any defect or impropriety in any submitted application or when there is a good faith dispute, Owner shall so notify the Contractor within

fifteen (15) Days stating the reason or reasons the application for payment is defective or improper or the reasons for the dispute. A defective or improper application for payment, if corrected by the Contractor within seven (7) Days of being notified by the Owner, shall not cause a payment to be made later than specified in this section unless interest is also paid. Payment of interest will be postponed when payment on the principal is delayed because of disagreement between the Owner and the Contractor.

Owner reserves the right, instead of requiring the Contractor to correct or resubmit a defective or improper application for payment, to reject the defective or improper portion of the application for payment and pay the remainder of the application for such amounts which are correct and proper.

Owner, upon written notice to the Contractor, may elect to make payments to the Contractor only by means of Electronic Funds Transfers (EFT) through Automated Clearing House (ACH) payments. If Owner makes this election, the Contractor shall arrange for receipt of the EFT/ACH payments.

E.2.2 Contractor shall submit to the Owner an application for each payment and, if required, receipts or other vouchers showing payments for materials and labor including payments to Subcontractors. Contractor shall include in its application for payment a schedule of the percentages of the various parts of the Work completed, based on the Schedule of Values which shall aggregate to the payment application total, and shall include, on the face of each copy thereof, a certificate in substantially the following form:

"I, the undersigned, hereby certify that the above bill is true and correct, and the payment therefore, has not been received.

Signed: _____
Dated: _____"

E.2.3 Generally, applications for payment will be accepted only for materials that have been installed. Under special conditions, applications for payment for stored materials will be accepted at Owner's sole discretion. Such a payment, if made, will be subject to the following conditions:

(a) The request for stored material shall be submitted at least thirty (30) Days in advance of the application for payment on which it appears. Applications for payment shall be entertained for major equipment, components or expenditures only.

(b) The Contractor shall submit applications for payment showing the quantity and cost of the material stored.

(c) The material shall be stored in a bonded warehouse and Owner shall be granted the right to access the material for the purpose of removal or inspection at any time during the Contract Period.

(d) The Contractor shall name the Owner as co-insured on the insurance policy covering the full value of the property while in the care and custody of the Contractor until it is installed. A certificate noting this coverage shall be issued to the Owner.

(e) Payments shall be made for materials and equipment only. The submitted amount in the application for payment shall be reduced by the cost of transportation from the storage site to the project site and for the cost of an inspector to verify delivery and condition of the goods at the storage site. The cost of storage and inspection shall be borne solely by the Contractor.

(f) Within sixty (60) Days of the application for payment, the Contractor shall submit evidence of payment covering the material and/or equipment stored and of payment for the storage site.

(g) Payment for stored materials and/or equipment shall in no way indicate acceptance of the materials and/or equipment or waive any rights under this Contract for the rejection of the Work or materials and/or equipment not in conformance with the Contract Documents.

(h) All required documentation shall be submitted with the respective application for payment.

E.2.4 The Owner reserves the right to withhold all or part of a payment, or may nullify in whole or part any payment previously made, to such extent as may be necessary in the Owner's opinion to protect the Owner from loss because of:

- (a) Work that is defective and not remedied, or that has been demonstrated or identified as failing to conform with Applicable Laws or the Contract Documents,
- (b) third party claims filed or evidence reasonably indicating that such claims will likely be filed unless security acceptable to the Owner is provided by the Contractor;
- (c) failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment (in which case Owner may issue checks made payable jointly to Contractor and such unpaid Persons under this provision, or directly to Subcontractors and suppliers at any level under Section C.3.2.1);
- (d) reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Price;
- (e) damage to the Work, Owner or another contractor;
- (f) reasonable evidence that the Work will not be completed within the Contract Time required by the Contract, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
- (g) failure to carry out the Work in accordance with the Contract Documents; or
- (h) assessment of liquidated damages, when withholding is made for offset purposes.

E.2.5 Subject to the provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

- (a) Take that portion of the Contract Price properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the total Contract Price allocated to that portion of the Work in the Schedule of Values, less retainage as provided in Section E.5. Pending final determination of cost to the Owner of changes in the Work, no amounts for changes in the Work can be included in applications for payment until the Contract Price has been adjusted by a Change Order;
- (b) Add that portion of the Contract Price properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner pursuant to Section E.2.3, suitably stored off the site at a location agreed upon in writing), less retainage as provided in Section E.5;
- (c) Subtract the aggregate of previous payments made by the Owner; and
- (d) Subtract any amounts for which the Owner has withheld or nullified payment as provided in the Contract Documents.

E.2.6 Contractor's applications for payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay to a Subcontractor or material supplier.

E.2.7 The Contractor warrants to Owner that title to all Work covered by an application for payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an application for payment all Work for which payments are received from the Owner shall be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided financing, labor, materials and equipment relating to the Work.

E.2.8 If Contractor disputes any determination by Owner with regard to any application for payment, Contractor nevertheless shall continue to expeditiously perform the Work. No payment made hereunder shall be or be construed to be final acceptance or approval of that portion of the Work to which such partial payment relates or shall relieve Contractor of any of its obligations hereunder.

E.2.9 Contractor shall submit its initial MWESB Report within ten (10) Days of Contractor's execution of the Contract. Contractor shall submit annual MWESB Reports on June 30 of each year the Contract is active. Contracts - first executed by Contractor within ninety (90) Days before June 30 of the year of execution by Contractor may at the discretion of Owner be exempt from submitting the annual MWESB Report otherwise due on that June 30. The final MWESB Report shall be filed with the application for final payment. Timely receipt of MWESB Reports by Owner shall be a condition precedent to Owner's obligation to pay any progress payments or final payment otherwise due.

E.3 PAYROLL CERTIFICATION REQUIREMENT

Owner's receipt of payroll certification pursuant to Section C.2 of this Contract shall be a condition precedent to Owner's obligation to pay any progress payments or final payment otherwise due.

E.4 DUAL PAYMENT SOURCES

Contractor shall not be compensated for Work performed under this Contract from any state agency other than the agency that is a party to this Contract.

E.5 RETAINAGE

E.5.1 Retainage shall be withheld and released in accordance with the requirements set forth in OAR 580-063-0045.

E.5.1.1 Owner may reserve as retainage from any progress payment an amount not to exceed five percent of the payment. As Work progresses, Owner may reduce the amount of retainage on or may eliminate retainage on any remaining monthly Contract payments after 50 percent of the Work under the Contract is completed if, in the Owner's discretion, such Work is progressing satisfactorily. Elimination or reduction of retainage shall be allowed only upon written application by the Contractor, which application shall include written approval of Contractor's surety; except that when the Work is 97-1/2 percent completed the Owner may, at its discretion and without application by the Contractor, reduce the retained amount to 100 percent of the value of the Work remaining to be done. Upon receipt of written application by the Contractor, Owner shall respond in writing within a reasonable time.

E.5.1.2 Contractor may request in writing:

(a) to be paid amounts which would otherwise have been retained from progress payments where Contractor has deposited acceptable bonds and securities of equal value with Owner or in a custodial account or other mutually-agreed account satisfactory to Owner, with an approved bank or trust company to be held in lieu of the cash retainage for the benefit of Owner;

(b) for construction projects over \$1,000,000, that retainage be deposited in an interest bearing account, established through the State Treasurer for state agencies, in a bank, savings bank, trust company or savings association for the benefit of Owner, with earnings from such account accruing to the Contractor; or

(c) that the Owner allow Contractor to deposit a surety bond for the benefit of Owner, in a form acceptable to Owner, in lieu of all or a portion of funds retained, or to be retained. Such bond and any proceeds therefrom shall be made subject to all claims in the manner and priority as set forth for retainage.

When the Owner has accepted the Contractor's election of option (a) or (b), Owner may recover from Contractor any additional costs incurred through such election by reducing Contractor's final payment. Where the Owner has agreed to Contractor's request for option (c), Contractor shall accept like bonds from Subcontractors and suppliers on the project from which Contractor has required retainages.

E. 5.1.3 The retainage held by Owner shall be included in and paid to the Contractor as part of the final payment of the Contract Price. The Owner shall pay to Contractor interest at the rate of two-thirds of one percent per month on the final payment due Contractor, interest to commence forty five (45) Days after the date which Owner receives Contractor's final approved application for payment and Work under the Contract has been completed and accepted and to run until the date when final payment is tendered to Contractor. The Contractor shall notify Owner in writing when the Contractor considers the Work complete and deliver to Owner its final application for payment and Owner shall, within thirty (30) Days after receiving the written notice and the application for payment, either accept the Work or notify the Contractor of Work yet to be performed on the Contract. If Owner does not within the time allowed notify the Contractor of Work yet to be performed to fulfill contractual obligations, the interest provided by this subsection shall commence to run forty five (45) Days after the end of the 30-Day period.

E.5.1.4 Owner will reduce the amount of the retainage if the Contractor notifies the Owner that the Contractor has deposited in an escrow account with a bank or trust company, in a manner authorized by the Owner, bonds and securities of equal value of a kind approved by the Owner and such bonds and securities have in fact been deposited in accordance with Applicable Laws.

E.5.1.5 Contractor agrees that if Contractor elects to reserve a retainage from any progress payment due to any Subcontractor or supplier, such retainage shall not exceed five percent of the payment, and such retainage withheld from Subcontractors and suppliers shall be subject to the same terms and conditions stated in Subsection E.5 as apply to Owner's retainage from any progress payment due to Contractor.

E.6 FINAL PAYMENT

E.6.1 Upon completion of all the Work under this Contract, the Contractor shall notify the Owner, in writing, that Contractor has completed Contractor's obligations under the Contract and shall prepare its application requesting final payment. Upon receipt

of such notice and application for payment, the Owner will inspect the Work, and, if acceptable, submit to Contractor a recommendation as to acceptance of the completed Work and the final estimate of the amount due the Contractor. If the Work is not acceptable, Owner will notify Contractor within fifteen (15) Days of Contractor's request for final payment. Upon approval of this final application for payment by the Owner and compliance by the Contractor with provisions in Section K, and Contractor's satisfaction of other provisions of the Contract Documents as may be applicable, the Owner shall pay to the Contractor all monies due under the provisions of these Contract Documents.

- E.6.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Owner (1) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least thirty (30) Days' prior written notice has been given to the Owner, (2) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (3) consent of surety, if any, to final payment and (4), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.
- E.6.3 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final application for payment.
- E.6.4 Contractor agrees to submit its final payment application within ninety (90) Days after Substantial Completion, unless written extension is granted by Owner. Contractor shall not delay final payment application for any reason, including without limitation nonpayment of Subcontractors, suppliers, manufacturers or others not a party to this Contract, or lack of resolution of a dispute with Owner or any other person of matters arising out of or relating to the Contract. If Contractor fails to submit its final payment application within ninety (90) Days after Substantial Completion, and Contractor has not obtained written extension by Owner, all requests or Claims for additional costs or an extension of Contract Time shall be waived.

SECTION F JOB SITE CONDITIONS

F.1 USE OF PREMISES

Contractor shall confine equipment, storage of materials and operation of Work to the limits indicated by Contract Documents, Applicable Laws, permits or directions of the Owner. Contractor shall follow the Owner's instructions regarding use of premises, if any.

F.2 PROTECTION OF WORKERS, PROPERTY AND THE PUBLIC

F.2.1 Contractor shall maintain continuous and adequate protection of all of the Work from damage and shall protect the Owner, workers and property from injury or loss arising in connection with this Contract. Contractor shall remedy acceptably to the Owner any damage, injury, or loss, except such as may be directly due to errors in the Contract Documents or caused by authorized representatives or personnel of the Owner.

Contractor shall adequately protect adjacent property as provided by law and the Contract Documents.

- F.2.2 Contractor shall take all necessary precautions for the safety of all personnel on the job site or otherwise engaged in the undertaking of the Work and shall comply with the Contract Documents, best practices and all applicable provisions of federal, state and municipal safety laws and building and fire codes to prevent accidents or injury to persons on, about or adjacent to the premises where the Work is being performed. Contractor shall erect and properly maintain at all times, as required by the conditions and progress of the Work, all necessary safeguards for protection of workers and the public against any hazards created by construction. Contractor shall designate a responsible employee or associate on the Work site, whose duty shall be the prevention of accidents. The name and position of the person designated shall be reported to the Owner. The Owner has no responsibility for Work site safety. Work site safety shall be the responsibility of the Contractor.
- F.2.3 Contractor shall not enter upon private property without first obtaining permission from the property owner or its duly authorized representative. Contractor shall be responsible for the preservation of all public and private property along and adjacent to the Work contemplated under the Contract and shall use every precaution necessary to prevent damage thereto. In the event the Contractor damages any property, the Contractor shall at once notify the property owner and make, or arrange to make, full restitution. Contractor shall, immediately and in writing, report to the Owner, all pertinent facts relating to such property damage and the ultimate disposition of the claim for damage.
- F.2.4 Contractor shall be responsible for protection of adjacent work areas including impacts brought about by activities, equipment, labor, utilities, vehicles and materials on the site.
- F.2.5 Contractor shall at all times direct its activities in such a manner as to minimize adverse effects on the environment. Handling of all materials shall be conducted so no release will occur that may pollute or become hazardous.
- F.2.6 In an emergency affecting the safety of life or limb or of the Work or of adjoining property, the Contractor, without special instruction or authorization from the Owner, shall act reasonably to prevent threatened loss or injury, and shall so act, without appeal, if instructed by the Owner. Any compensation claimed by the Contractor on account of emergency work shall be determined in accordance with section D.

F.3 CUTTING AND PATCHING

- F.3.1 Contractor shall be responsible for coordinating all cutting, fitting, or patching of the Work to make its several parts come together properly and fit to receive or be received by work of other contractors or Subcontractors shown upon, or reasonably implied by, the Contract Documents.
- F.3.2 Contractor shall be responsible for restoring all cut, fitted, or patched surfaces to an original condition; provided, however, that if a different condition is specified in the Contract Documents, then Contractor shall be responsible for restoring such surfaces to the condition specified in the Contract Documents.

F.4 CLEANING UP

From time to time as may be prudent or ordered by the Owner and, in any event, immediately after completion of the Work, the Contractor shall, at its own expense, clean up and remove all refuse and unused materials of any kind resulting from the Work. If Contractor fails to do so within twenty-four hours after notification by the Owner

the work may be done by others and the cost charged to the Contractor and deducted from payment due the Contractor.

F.5 ENVIRONMENTAL CONTAMINATION

F.5.1. Contractor shall be held responsible for and shall indemnify, defend (with counsel of Owner's choice), and hold harmless Owner from and against any costs, expenses, damages, claims, and causes of action, (including attorney fees), or any of them, resulting from all spills, releases, discharges, leaks and disposal of environmental pollution, including storage, transportation, and handling during the performance of the Work or Contractor's obligations under the Contract which occur as a result of, or are contributed by, the negligence or actions of Contractor or its personnel, agents, or Subcontractors or any failure to perform in accordance with the Contract Documents (except to the extent otherwise void under ORS 30.140). Nothing in this section F.5.1 shall limit Contractor's responsibility for obtaining insurance coverages required under Section G.3 of this Contract, and Contractor shall take no action that would void or impair such coverages.

F.5.1.1 Contractor agrees to promptly dispose of such spills, releases, discharge or leaks to the satisfaction of Owner and regulatory agencies having jurisdiction in a manner that complies with Applicable Laws. Cleanup shall be at no cost to the Owner and shall be performed by properly qualified and, if applicable, licensed personnel.

F.5.1.2 Contractor shall obtain the Owner's written consent prior to bringing onto the Work site any (i) environmental pollutants or (ii) hazardous substances or materials, as the same or reasonably similar terms are used in any Applicable Laws. Notwithstanding such written consent from the Owner, the Contractor, at all times, shall:

- (a) properly handle, use and dispose of all environmental pollutants and hazardous substances or materials brought onto the Work site, in accordance with all Applicable Laws;
- (b) be responsible for any and all spills, releases, discharges, or leaks of (or from) environmental pollutants or hazardous substances or materials which Contractor has brought onto the Work site; and
- (c) promptly clean up and remediate, without cost to the Owner, such spills, releases, discharges, or leaks to the Owner's satisfaction and in compliance with all Applicable Laws.

F.5.2 Contractor shall report all reportable quantity releases, as such releases are defined in Applicable Laws, including but not limited to 40 CFR Part 302, Table 302.4 and in OAR 340-142-0050, to applicable federal, state, and local regulatory and emergency response agencies. Upon discovery, regardless of quantity, Contractor must telephonically report all releases to the Owner. A written follow-up report shall be submitted to Owner within 48 hours of the telephonic report. Such written report shall contain, as a minimum:

- (a) Description of items released (identity, quantity, manifest numbers, and any and all other documentation required by law.)
- (b) Whether amount of items released is EPA/DEQ reportable, and, if so, when reported.
- (c) Exact time and location of release, including a description of the area involved.
- (d) Containment procedures initiated.

(e) Summary of communications about the release between Contractor and members of the press or State, local or federal officials other than Owner.

(f) Description of cleanup procedures employed or to be employed at the site, including disposal location of spill residue.

(g) Personal injuries, if any, resulting from, or aggravated by, the release.

F.6 ENVIRONMENTAL CLEAN-UP

F.6.1 Unless disposition of environmental pollution is specifically a part of this Contract, or was caused by the Contractor (reference F.5 Environmental Contamination), Contractor shall immediately notify Owner of any hazardous substance(s) which Contractor discovers or encounters during performance of the Work required by this Contract. "Hazardous substance(s)" means any hazardous, toxic and radioactive materials and those substances defined as "hazardous substances," "hazardous materials," "hazardous wastes," "toxic substances," or other similar designations in any federal, state, or local law, regulation, or ordinance, including without limitation asbestos, polychlorinated biphenyl (PCB), or petroleum, and any substances, materials or wastes regulated by 40 CFR, Part 261 and defined as hazardous in 40 CFR S 261.3. In addition to notifying Owner of any hazardous substance(s) discovered or encountered, Contractor shall immediately cease working in any particular area of the project where a hazardous substance(s) has been discovered or encountered if continued work in such area would present a risk or danger to the health or well being of Contractor's or any Subcontractor's work force, property or the environment.

F.6.2 Upon being notified by Contractor of the presence of hazardous substance(s) on the project site, Owner shall arrange for the proper disposition of such hazardous substance(s).

F.7 FORCE MAJEURE

A party to this Contract shall not be held responsible for delay or default due to Force Majeure acts, events or occurrences unless they could have been avoided by the exercise of reasonable care, prudence, foresight, and diligence by that party. The Owner may terminate this Contract upon written notice after determining that delay or default caused by Force Majeure acts, events or occurrences will reasonably prevent successful performance of the Contract.

SECTION G INDEMNITY, BONDING, AND INSURANCE

G.1 RESPONSIBILITY FOR DAMAGES / INDEMNITY

G.1.1 Contractor shall be responsible for all damage to property, injury to persons, and loss, expense, inconvenience, and delay that may be caused by, or result from, the carrying out of the Work to be done under this Contract, or from any act, omission or neglect of the Contractor, its Subcontractors, employees, guests, visitors, invitees and agents.

G.1.2 To the fullest extent permitted by law, Contractor shall indemnify, defend (with counsel approved by Owner) and hold harmless the Owner, Architect/Engineer, Architect/Engineer's consultants, and their respective officers, directors, agents, employees, partners, members, stockholders and affiliated companies (collectively "Indemnitees") from and against all liabilities, damages, losses, claims, expenses (including reasonable attorney fees), demands and actions of any nature whatsoever which arise out of, result from or are related to, (a) any damage, injury, loss, expense, inconvenience or delay described in this Section G.1., (b) any accident or occurrence which happens or is alleged to have happened in or about the

project site or any place where the Work is being performed, or in the vicinity of either, at any time prior to the time the Work is fully completed in all respects, (c) any failure of the Contractor to observe or perform any duty or obligation under the Contract Documents which is to be observed or performed by the Contractor, or any breach of any agreement, representation or warranty of the Contractor contained in the Contract Documents or in any subcontract, (d) the negligent acts or omissions of the Contractor, a Subcontractor or anyone directly or indirectly employed by them or any one of them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder (except to the extent otherwise void under ORS 30.140), and (e) any lien filed upon the project or bond claim in connection with the Work. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section G.1.2.

G.1.3 In claims against any person or entity indemnified under Section G.1.2 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section G.1.2 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

G.2 PERFORMANCE AND PAYMENT SECURITY; PUBLIC WORKS BOND

G.2.1 When the Contract Price is \$100,000 or more (or \$50,000 or more in the case of Contracts for highways, bridges and other transportation projects), the Contractor shall furnish and maintain in effect at all times during the Contract Period a performance bond in a sum equal to the Contract Price and a separate payment bond also in a sum equal to the Contract Price. Contractor shall furnish such bonds even if the Contract Price is less than the above thresholds if otherwise required by the Contract Documents.

G.2.2 Bond forms furnished by the Owner and notarized by awarded Contractor's surety company authorized to do business in Oregon are the only acceptable forms of performance and payment security, unless otherwise specified in the Contract Documents.

G.2.3 Before execution of the Contract the Contractor shall file with the Construction Contractors Board, and maintain in full force and effect, the separate public works bond required by Oregon Laws 2005, Chapter 360, and OAR 839-025-0015, unless otherwise exempt under those provisions. The Contractor shall also include in every subcontract a provision requiring the Subcontractor to have a public works bond filed with the Construction Contractors Board before starting Work, unless otherwise exempt, and shall verify that the Subcontractor has filed a public works bond before permitting any Subcontractor to start Work.

G.3 INSURANCE

G.3.1 Primary Coverage: Insurance carried by Contractor under this Contract shall be the primary coverage. The coverages indicated are minimums unless otherwise specified in the Contract Documents.

G.3.2 Workers' Compensation: All employers, including Contractor, that employ subject workers who work under this Contract in the State of Oregon shall comply with ORS 656.017 and provide the required Workers' Compensation coverage, unless such employers are exempt under ORS 656.126. This shall include

Employer's Liability Insurance with coverage limits of not less than the minimum amount required by statute for each accident. Contractors who perform the Work without the assistance or labor of any employee need not obtain such coverage if the Contractor certifies so in writing. Contractor shall ensure that each of its Subcontractors complies with these requirements. The Contractor shall require proof of such Workers' Compensation coverage by receiving and keeping on file a certificate of insurance from each Subcontractor or anyone else directly employed by either the Contractor or its Subcontractors.

G.3.3 Builder's Risk Insurance:

G.3.3.1 Builder's Risk: During the term of this Contract, for new construction the Contractor shall obtain and keep in effect Builder's Risk insurance on an all risk forms, including earthquake and flood, for an amount equal to the full amount of the Contract, plus any changes in values due to modifications, Change Orders and loss of materials added. Such Builder's Risk shall include, in addition to earthquake and flood, theft, vandalism, mischief, collapse, transit, debris removal, and architect's fees ("soft costs") associated with delay of project due to insured peril. Any deductible shall not exceed \$50,000 for each loss, except the earthquake and flood deductible which shall not exceed 2 percent of each loss or \$50,000, whichever is greater. The deductible shall be paid by Contractor if Contractor is negligent. The policy will include as loss payees Owner, the Contractor and its Subcontractors as their interests may appear.

G.3.3.2 Builder's Risk Installation Floater: For Work other than new construction, Contractor shall obtain and keep in effect during the term of this Contract, a Builder's Risk Installation Floater for coverage of the Contractor's labor, materials and equipment to be used for completion of the Work performed under this Contract. The minimum amount of coverage to be carried shall be equal to the full amount of the Contract. The policy will include as loss payees Owner, the Contractor and its Subcontractors as their interests may appear. Owner may waive this requirement at its sole and absolute discretion.

G.3.3.3 Such insurance shall be maintained until Owner has occupied the facility.

G.3.3.4 A loss insured under the Builder's Risk insurance shall be adjusted by the Owner and made payable to the Owner as loss payee. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner. The Owner shall have power to adjust and settle a loss with insurers.

G.3.4 General Liability Insurance:

G.3.4.1 Commercial General Liability: Upon execution of this Contract, Contractor shall obtain, and keep in effect at Contractor's expense for the term of this Contract, Commercial General Liability Insurance covering bodily injury and property damage in the amount of \$1,000,000 per claim and \$2,000,000 per occurrence in a form satisfactory to Owner. This insurance shall include personal injury liability, products and completed operations, and contractual liability coverage for the indemnities provided under this Contract (to the extent contractual liability coverage for the indemnity is available in the marketplace), and shall be issued on an occurrence basis.

G.3.4.2 Automobile Liability: Contractor shall obtain, at Contractor's expense, and keep in effect during the term of this Contract, Automobile Liability Insurance covering owned, and/or hired vehicles, as applicable. The coverage may be written in combination with the Commercial General Liability Insurance. Contractor shall provide proof of insurance of not less than

\$1,000,000 per claim and \$2,000,000 per occurrence. Contractor and its Subcontractors shall be responsible for ensuring that all non-owned vehicles maintain adequate Automobile Liability insurance while on site.

- G.3.4.3 Owner may adjust the insurance amounts required in Section G.3.4.1 and G.3.4.2 based upon institution specific risk assessments through the issuance of Supplemental General Conditions to this Contract.
- G.3.4.4 "Tail" Coverage: If any of the required liability insurance is arranged on a "claims made" basis, "tail" coverage will be required at the completion of this Contract for a duration of 36 months or the maximum time period available in the marketplace if less than 36 months. Contractor shall furnish certification of "tail" coverage as described or continuous "claims made" liability coverage for 36 months following Final Completion. Continuous "claims made" coverage will be acceptable in lieu of "tail" coverage, provided its retroactive date is on or before the effective date of this Contract. Owner's receipt of the policy endorsement evidencing such coverage shall be a condition precedent to Owner's obligation to make final payment and to Owner's final acceptance of Work or services and related warranty (if any).
- G.3.4.5: Umbrella Liability (if required by Owner through issuance of Supplemental General Conditions): Contractor shall obtain, at Contractor's expense, and keep in effect during the term of this Contract, Umbrella liability Insurance over and above the general liability, automobile liability and workers' compensation coverage if required by Owner in specified limits at time of requirement.
- G.3.4.6 Pollution Liability (if required by Owner through issuance of Supplemental General Conditions): Contractor shall obtain, at Contractor's expense, and keep in effect during the term of this Contract, Pollution liability Insurance in minimum amounts of \$1,000,000, or other amount as indicated in the Supplemental General Conditions, naming Owner as "additional insured," as noted in the "additional insured section below.
- G.3.5 Additional Insured: The general liability insurance coverage, professional liability, umbrella, and pollution liability if required, shall include the Owner as additional insureds but only with respect to the Contractor's activities to be performed under this Contract.
- If Contractor cannot obtain an insurer to name the Owner as additional insureds, Contractor shall obtain at Contractor's expense, and keep in effect during the term of this Contract, Owners and Contractors Protective Liability Insurance, naming the Owner as additional insureds with not less than a \$2,000,000 limit per occurrence. This policy must be kept in effect for 36 months following Final Completion. As evidence of coverage, Contractor shall furnish the actual policy to Owner prior to execution of the Contract.
- G.3.6 Notice of Cancellation or Change: If the Contractor receives a non-renewal or cancellation notice from an insurance carrier affording coverage required herein, or receives notice that coverage no longer complies with the insurance requirements herein, Contractor agrees to notify Owner by fax within five (5) business days with a copy of the non-renewal or cancellation notice, or written specifics as to which coverage is no longer in compliance. When notified by Owner, the Contractor agrees to stop Work pursuant to this Contract, unless all required insurance remains in effect. Any failure to comply with the reporting provisions of this insurance, except for the potential exhaustion of aggregate limits, shall not affect the coverages provided to the Owner and its institutions, divisions, officers, and employees.

Owner shall have the right, but not the obligation, of prohibiting Contractor from entering the Work site until a new certificate(s) of insurance is provided to Owner evidencing the replacement coverage. The Contractor acknowledges and agrees that Owner reserves the right to withhold payment to Contractor until evidence of reinstated or replacement coverage is provided to Owner.

- G.3.7 Certificate(s) of Insurance: As evidence of the insurance coverage required by this Contract, the Contractor shall furnish certificate(s) of insurance to the Owner prior to execution of the Contract. The certificate(s) will specify all of the parties who are additional insureds or loss payees for this contract. Insurance coverage required under this Contract shall be obtained from insurance companies or entities acceptable to the Owner and that are eligible to provide such insurance under Oregon law. Eligible insurers include admitted insurers that have been issued a certificate of authority from the Oregon Department of Consumer and Business Services authorizing them to conduct an insurance business and issue policies of insurance in the state of Oregon, and certain non-admitted surplus lines insurers that satisfy the requirements of applicable Oregon law and which are subject to approval by the Owner. The Contractor shall be financially responsible for all deductibles, self-insured retentions and/or self-insurance included hereunder. Any deductible, self-insured retention and/or self-insurance in excess of \$50,000 shall be subject to approval by the Owner in writing and shall be a condition precedent to the effectiveness of this Contract.

SECTION H SCHEDULE OF WORK

H.1 CONTRACT PERIOD

- H.1.1 Time is of the essence. The Contractor shall at all times carry on the Work diligently, without delay and punctually fulfill all requirements herein. If required by the Contract Documents, Contractor shall commence Work on the site within fifteen (15) Days of Notice to Proceed, unless directed otherwise.
- H.1.2 Unless specifically extended by Change Order, all Work shall be complete by the date contained in the Contract Documents. The Owner shall have the right to accelerate the completion date of the Work, which may require the use of overtime. Such accelerated Work schedule shall be an acceleration in performance of Work under Section D.1.2 (f) and shall be subject to the provisions of Section D.1.
- H.1.3 The Owner shall not waive any rights under the Contract by permitting the Contractor to continue or complete in whole or in part the Work after the date described in Section H.1.2 above.

H.2 SCHEDULE

H.2.1 Contractor shall provide, by or before the pre-construction conference, the initial as-planned schedule for review and acceptance by the Owner. The submitted schedule must illustrate Work by project components, with labor trades, and long lead items broken down by building and/or floor where applicable. If Owner shall so elect, Contractor shall provide the schedule in CPM format showing the graphical network of planned activities, including i) a reasonably detailed list of all activities required to complete the Work; ii) the time and duration that each activity will take to completion; and iii) the dependencies between the activities. Schedules lacking adequate detail, or unreasonably detailed, will be rejected. The schedule shall include the following: Notice to Proceed or the date the Work commences, if no Notice to Proceed is issued by Owner, Substantial Completion, and Final Completion. Schedules shall be updated monthly, unless otherwise required by the Contract Documents, and submitted with the monthly application for payment. Acceptance of the Schedule by the

Owner does not constitute agreement by the Owner as to the Contractor's sequencing, means, methods, or durations. Any positive difference between the Contractor's scheduled completion and the Contract completion date is float owned by the Owner. Owner reserves the right to negotiate the float if it is deemed to be in Owner's best interest to do so. In no case shall the Contractor make a claim for delays if the Work is completed within the Contract Time but after Contractor's scheduled completion. **H.3 PARTIAL OCCUPANCY OR USE**

H.3.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage, provided such occupancy or use is consented to by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have reasonably accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, insurance or self-insurance, maintenance, heat, utilities, and damage to the Work, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents with respect to such portion of the Work. Approval by the Contractor to partial occupancy or use shall not be unreasonably withheld. Immediately prior to such partial occupancy or use, the Owner and Contractor shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work. Partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

SECTION I CORRECTION OF WORK

I.1 CORRECTION OF WORK BEFORE FINAL PAYMENT

The Contractor warrants to the Owner that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects, and that the Work will conform to the requirements of the Contract Documents. Work failing to conform to these requirements shall be deemed defective. Contractor shall promptly remove from the premises and replace all defective materials and equipment as determined by the Owner, whether incorporated in the Work or not. Removal and replacement shall be without loss or expense to the Owner, and Contractor shall bear the cost of repairing all Work destroyed or damaged by such removal or replacement. Contractor shall be allowed a period of no longer than thirty (30) Days after Substantial Completion for completion of defective (Punch List) work. At the end of the thirty-day period, or earlier if requested by the Contractor, Owner shall arrange for inspection of the Work by the Architect/Engineer. Should the work not be complete, and all corrections made, the costs for all subsequent reinspections shall be borne by the Contractor. If Contractor fails to complete the Punch List work within the thirty (30) Day period, Owner may perform such work and Contractor shall reimburse Owner all costs of the same within ten (10) Days after demand without affecting Contractor's obligations.

I.2 WARRANTY WORK

I.2.1 Neither the final certificate of payment nor any provision of the Contract Documents shall relieve the Contractor from responsibility for defective Work and, unless a longer period is specified, Contractor shall correct all defects that appear in the Work within a period of one year from the date of issuance of the written notice of Substantial Completion by the Owner except for latent defects which will be remedied by the Contractor at any time they become apparent. The Owner shall give Contractor notice of defects with reasonable promptness. Contractor shall perform such warranty work within a reasonable time after Owner's demand. If Contractor fails to complete the warranty work within such period as Owner

determines reasonable, or at any time in the event of warranty work consisting of emergency repairs, Owner may perform such work and Contractor shall reimburse Owner all costs of the same within ten (10) Days after demand, without affecting Contractor's obligations. The Contractor shall perform the warranty Work by correcting defects within twenty-four (24) hours of notification by Owner, unless otherwise specified in the Contract Documents. Should the Contractor fail to respond within the specified response time, the Owner may, at its option, complete the necessary repairs using another contractor or its own forces. If Owner completes the repairs using Owner's own forces, Contractor shall pay Owner at the rate of one and one-half (1½) times the standard hourly rate of Owner's forces, plus related overhead and any direct non-salary costs. If Owner completes the repairs using another contractor, Contractor shall pay Owner the amount of Owner's direct costs billed by the other contractor for the work, plus the direct salary costs and related overhead and direct non-salary expenses of Owner's forces who are required to monitor that contractor's work. Work performed by Owner using Owner's own forces or those of another contractor shall not affect the Contractor's contractual duties under these provisions, including warranty provisions.

- I.2.2 Nothing in this Section I.2 shall negate guarantees or warranties for periods longer than one year including, without limitation, such guarantees or warranties required by other sections of the Contract Documents for specific installations, materials, processes, equipment or fixtures.
- I.2.3 In addition to Contractor's warranty, manufacturer's warranties shall pass to the Owner and shall not take effect until such portion of the Work covered by the applicable warranty has been accepted in writing by the Owner.
- I.2.4 The one-year period for correction of Work shall be extended with respect to portions of Work performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work, and shall be extended by corrective Work performed by the Contractor pursuant to this Section, as to the Work corrected. The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.
- I.2.5 Nothing contained in this Section I.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the period for correction of Work as described in this Section I.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.
- I.2.6 If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Price will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

SECTION J SUSPENSION AND/OR TERMINATION OF THE WORK

J.1 OWNER'S RIGHT TO SUSPEND THE WORK

J.1.1 The Owner has the authority to suspend portions or all of the Work due to the following causes:

- (a) Failure of the Contractor to correct unsafe conditions;
- (b) Failure of the Contractor to carry out any provision of the Contract;
- (c) Failure of the Contractor to carry out orders;
- (d) Conditions, in the opinion of the Owner, which are unsuitable for performing the Work;
- (e) Time required to investigate differing site conditions;
- (f) Any reason considered to be in the public interest.

J.1.2 The Owner shall notify Contractor and the Contractor's Surety in writing of the effective date and time of the suspension, and Owner shall notify Contractor and Contractor's surety in writing to resume Work.

J.2 CONTRACTOR'S RESPONSIBILITIES

- J.2.1 During the period of the suspension, Contractor is responsible to continue maintenance at the project just as if the Work were in progress. This includes, but is not limited to, protection of completed Work, maintenance of access, protection of stored materials, temporary facilities, and clean-up.
- J.2.2 When the Work is recommenced after the suspension, the Contractor shall replace or renew any Work damaged during the suspension, remove any materials or facilities used as part of temporary maintenance, and complete the Work in every respect as though its prosecution had been continuous and without suspension.

J.3 COMPENSATION FOR SUSPENSION

- J.3.1 Depending on the reason for suspension of the Work, the Contractor or the Owner may be due compensation by the other party. If the suspension was required due to acts or omissions of Contractor, the Owner may assess the Contractor actual costs of the suspension in terms of administration, remedial work by the Owner's forces or another contractor to correct the problem associated with the suspension, rent of temporary facilities, and other actual costs related to the suspension. If the suspension was caused by acts or omissions of the Owner, the Contractor may be due compensation which shall be defined using Section D, Changes in Work. If the suspension was required through no fault of the Contractor or the Owner, neither party shall owe the other for the impact.

J.4 OWNER'S RIGHT TO TERMINATE CONTRACT

- J.4.1 The Owner may, without prejudice to any other right or remedy, and after giving Contractor seven (7) Days' written notice and an opportunity to cure, terminate the Contract in whole or in part under the following conditions:
 - (a) If Contractor should, voluntarily or involuntarily, seek protection under the United States Bankruptcy Code and Contractor as debtor-in-possession or the Trustee for the estate fails to assume the Contract within a reasonable time;
 - (b) If Contractor should make a general assignment for the benefit of Contractor's creditors;
 - (c) If a receiver should be appointed on account of Contractor's insolvency;
 - (d) If Contractor should repeatedly refuse or fail to supply an adequate number of skilled workers or proper materials to carry on the Work as required by the Contract Documents, or otherwise fail to perform the Work in a timely manner;

- (e) If Contractor should repeatedly fail to make prompt payment to Subcontractors or for material or labor, or should disregard laws, ordinances or the instructions of the Owner; or
- (f) If Contractor is otherwise in breach of any part of the Contract.
- (g) If Contractor is in violation of Applicable Laws, either in the conduct of its business or in its performance of the Work.

J.4.2 At any time that any of the above occurs, Owner may exercise all rights and remedies available to Owner at law or in equity, and, in addition, Owner may take possession of the premises and of all materials and appliances and finish the Work by whatever method it may deem expedient. In such case, the Contractor shall not be entitled to receive further payment until the Work is completed. If the Owner's cost of finishing the Work exceeds the unpaid balance of the Contract Price, Contractor shall pay the difference to the Owner.

J.5 TERMINATION FOR CONVENIENCE

- J.5.1 Owner may terminate the Contract in whole or in part whenever Owner determines that termination of the Contract is in the best interest of Owner or the public.
- J.5.2 The Owner shall provide the Contractor with seven (7) Days prior written notice of a termination for Owner's or for public convenience. After such notice, the Contractor shall provide the Owner with immediate and peaceful possession of the premises and materials located on and off the premises for which the Contractor received progress payment under Section E. Compensation for Work terminated by the Owner under this provision will be according to Section E. In no circumstance shall Contractor be entitled to lost profits for Work not performed due to termination.

J.6 ACTION UPON TERMINATION

- J.6.1 Upon receiving a notice of termination, and except as directed otherwise by the Owner, Contractor shall immediately cease placing further subcontracts or orders for materials, services, or facilities. In addition, Contractor shall terminate all subcontracts or orders to the extent they relate to the Work terminated and, with the prior written approval of the Owner, settle all outstanding liabilities and termination settlement proposals arising from the termination of subcontracts and orders.
- J.6.2 As directed by the Owner, Contractor shall, upon termination, transfer title and deliver to the Owner all Record Documents, information, and other property that, if the Contract had been completed, would have been required to be furnished to the Owner.

- I.6.3 Upon Owner's notice of termination pursuant to either Section J.4 or J.5, if Owner shall so elect, Contractor shall assign to the Owner such subcontracts and orders as Owner shall specify. In the event Owner elects to take assignment of any such subcontract or order, Contractor shall take such action and shall execute such documents as Owner shall reasonably require for the effectiveness of such assignment and Contractor shall ensure that no contractual arrangement between it and its subcontractors or suppliers of any tier or sub-tier shall prevent such assignment.

SECTION K CONTRACT CLOSE OUT

K.1 RECORD DOCUMENTS

As a condition of final payment (and subject to the provisions of section E.6), Contractor shall comply with the following: Contractor shall provide Record Documents for the entire project to Owner. Record Documents shall depict the project as constructed and shall reflect each and every change, modification, and deletion made during the construction. Record Documents are part of the Work and shall be provided prior to the Owner's issuance of final payment. Record Documents include all modifications to the Contract Documents, unless otherwise directed, and accurate MWESB Reports.

K.2 OPERATION AND MAINTENANCE MANUALS

As part of the Work, Contractor shall submit two completed operation and maintenance manuals ("O & M Manuals") for review by the Owner prior to submission of any pay request for more than 75% of the Work. Owner's receipt of the O & M Manuals shall be a condition precedent to any payment thereafter due. The O & M Manuals shall contain a complete set of all submittals, all product data as required by the specifications, training information, telephone list and contact information for all consultants, manufacturers, installer and suppliers, manufacturer's printed data, record and shop drawings, schematic diagrams of systems, appropriate equipment indices, warranties and bonds. The Owner shall review and return one O & M Manual for any modifications or adjustments required. Prior to submission of its final pay request, Contractor shall deliver three complete and approved sets of O & M Manuals in paper form and one complete and approved set in electronic form to the Owner and Owner's receipt of the O & M Manuals shall be a condition precedent to Owner's obligation to make final payment.

K.3 COMPLETION NOTICES

K.3.1 Contractor shall provide Owner written notice of both Substantial and Final Completion. The certificate of Substantial Completion shall state the date of Substantial Completion, the responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and the time within which the Contractor shall finish all items on the Punch List accompanying the Certificate. Both completion notices must be signed by the Contractor and the Owner to be valid. The Owner shall provide the final signature on the approved notices. The notices shall take effect on the date they are signed by the Owner.

K.3.2 Substantial Completion of a facility with operating systems (e.g., mechanical, electrical, HVAC) shall be that degree of completion that has provided a minimum of thirty (30) continuous Days of successful, trouble-free operation, which period shall begin after all performance and acceptance testing has been successfully demonstrated to the Owner. All equipment contained in the Work, plus all other components necessary to enable the Owner to operate the facility in the manner that was intended, shall be complete on the Substantial Completion date. The Contractor may request that a Punch List be prepared by the Owner with submission of the request for the Substantial Completion notice.

K.4 TRAINING

As part of the Work, and prior to submission of the final application for payment, the Contractor shall schedule with the Owner training sessions for all equipment and systems as required by the Contract Documents. Contractor shall schedule training sessions at least two weeks in advance of the date of training to allow Owner to provide its personnel with adequate notice. The O & M Manual shall be used as a basis for training. Training shall be a formal session conducted at the Work site, or as required by the Contract Documents, after the equipment and/or system is completely installed and operational in its normal operating environment.

K.5 EXTRA MATERIALS

As part of the Work, Contractor shall provide spare parts, extra maintenance materials, and other materials or products in the quantities specified in the Contract Documents prior to final payment. Delivery point for extra materials shall be designated by the Owner.

K.6 ENVIRONMENTAL CLEAN-UP

As part of the Final Completion notice, or as a separate written notice submitted with or before the notice of Final Completion, the Contractor shall notify the Owner that all environmental and pollution clean-up, remediation and closure have been completed in accordance with all Applicable Laws and pursuant to the authority of all agencies having jurisdiction, and Contractor shall provide Owner with any and all documentation related to the same, including but not limited to directives, orders, letters, certificates and permits related to or arising from such environmental pollution. The notice shall reaffirm the indemnification given under Section F.5.1 above. Contractor's completion of its obligations under this Section K.6 and Owner's receipt of documents evidencing such completion shall be a condition precedent to Owner's obligation to make final payment.

K.7 CERTIFICATE OF OCCUPANCY

Owner's receipt of an unconditioned certificate of occupancy from the appropriate state and/or local building officials shall be a condition precedent to Owner's obligation to make final payment, except to the extent failure to obtain an unconditional certificate of occupancy is due to the fault or neglect of Owner.

K.8 OTHER CONTRACTOR RESPONSIBILITIES

The Contractor shall be responsible for returning to the Owner all property of Owner issued to Contractor during construction such as keys, security passes, site admittance badges, and all other pertinent items. Upon notice from Owner, Contractor shall be responsible for notifying the appropriate utility companies to transfer utility charges from the Contractor to the Owner. The utility transfer date shall not be before Substantial Completion and may not be until Final Completion, if the Owner does not take beneficial use of the facility and the Contractor's forces continue with the Work.

K.9 SURVIVAL

All warranty and indemnification provisions of this Contract, and all of Contractor's other obligations under this Contract that are not fully performed by the time of Final Completion or termination, shall survive Final Completion or any termination of the Contract.

OREGON UNIVERSITY SYSTEM
STANDARD PUBLIC IMPROVEMENT CONTRACT
PERFORMANCE BOND

Bond No. _____
Solicitation _____
Project Name _____

_____ (Surety #1)	Bond Amount No. 1:	\$ _____
_____ (Surety #2)*	Bond Amount No. 2:*	\$ _____
<i>* If using multiple sureties</i>	Total Penal Sum of Bond:	\$ _____

We, _____ as Principal, and the above identified Surety(ies), authorized to transact surety business in Oregon, as Surety, hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns firmly by these presents to pay unto the State of Oregon, acting by and through the State Board of Higher Education, on behalf of the OUS (OUS), the sum of (Total Penal Sum of Bond)

(Provided, that we the Sureties bind ourselves in such sum “jointly and severally” as well as “severally” only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety), and

WHEREAS, the Principal has entered into a contract with the OUS, the plans, specifications, terms and conditions of which are contained in the above-referenced Solicitation;

WHEREAS, the terms and conditions of the contract, together with applicable plans, standard specifications, special provisions, schedule of performance, and schedule of contract prices, are made a part of this Performance Bond by reference, whether or not attached to the contract (all hereafter called “Contract”); and

WHEREAS, the Principal has agreed to perform the Contract in accordance with the terms, conditions, requirements, plans and specifications, and all authorized modifications of the Contract which increase the amount of the work, the amount of the Contract, or constitute an authorized extension of the time for performance, notice of any such modifications hereby being waived by the Surety:

NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH that if the Principal herein shall faithfully and truly observe and comply with the terms, conditions and provisions of the Contract, in all respects, and shall well and truly and fully do and perform all matters and things undertaken by Contractor to be performed under the Contract, upon the terms set forth therein,

and within the time prescribed therein, or as extended as provided in the Contract, with or without notice to the Sureties, and shall indemnify and save harmless the OUS, and _____ (name of institution and any other Owner agency), and members thereof, its officers, employees and agents, against any direct or indirect damages or claim of every kind and description that shall be suffered or claimed to be suffered in connection with or arising out of the performance of the Contract by the Principal or its subcontractors, and shall in all respects perform said contract according to law, then this obligation is to be void; otherwise, it shall remain in full force and effect.

Nonpayment of the bond premium will not invalidate this bond, nor shall the State of Oregon or the OUS, be obligated for the payment of any premiums.

This bond is given and received under authority of ORS Chapters 279C and 351, the provisions of which hereby are incorporated into this bond and made a part hereof.

IN WITNESS WHEREOF, WE HAVE CAUSED THIS INSTRUMENT TO BE EXECUTED AND SEALED BY OUR DULY AUTHORIZED LEGAL REPRESENTATIVES.

Dated this _____ day of _____, 20__.

PRINCIPAL: _____

By _____
Signature

Official Capacity
Attest: _____
Corporation Secretary

SURETY: _____
[Add signatures for each surety if using multiple bonds]

BY ATTORNEY-IN-FACT:
[Power-of-Attorney must accompany each surety bond]

Name

Signature

Address

City State Zip

Phone Fax

OREGON UNIVERSITY SYSTEM

STANDARD PUBLIC IMPROVEMENT CONTRACT

PAYMENT BOND

Bond No. _____
Solicitation _____
Project Name _____

_____ (Surety #1) Bond Amount No. 1: \$ _____
_____ (Surety #2)* Bond Amount No. 2:* \$ _____
** If using multiple sureties* Total Penal Sum of Bond: \$ _____

We, _____, as Principal, and the above identified Surety(ies), authorized to transact surety business in Oregon, as Surety, hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns firmly by these presents to pay unto the State of Oregon, acting by and through the State Board of Higher education, on behalf of the Oregon University System (OUS), the sum of (Total Penal Sum of Bond) _____ (Provided, that we the Sureties bind ourselves in such sum “jointly and severally” as well as “severally” only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety), and

WHEREAS, the Principal has entered into a contract with the OUS, the plans, specifications, terms and conditions of which are contained in above-referenced Solicitation;

WHEREAS, the terms and conditions of the contract, together with applicable plans, standard specifications, special provisions, schedule of performance, and schedule of contract prices, are made a part of this Payment Bond by reference, whether or not attached to the contract (all hereafter called “Contract”); and

WHEREAS, the Principal has agreed to perform the Contract in accordance with the terms, conditions, requirements, plans and specifications, and schedule of contract prices which are set forth in the Contract and any attachments, and all authorized modifications of the Contract which increase the amount of the work, or the cost of the Contract, or constitute authorized extensions of time for performance of the Contract, notice of any such modifications hereby being waived by the Surety:

NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH that if the Principal shall faithfully and truly observe and comply with the terms, conditions and provisions of the Contract, in all respects, and shall well and truly and fully do and perform all matters and things by it undertaken to be performed under said Contract and any duly authorized modifications that are made, upon the terms set forth therein, and within the time prescribed therein, or as extended therein as provided in the Contract, with or without notice to the Sureties, and shall indemnify and save harmless the OUS and _____ (name of institution and any other Owner agency), and members thereof, its officers, employees and agents, against any claim for direct or indirect damages of every kind and description that shall be suffered or

claimed to be suffered in connection with or arising out of the performance of the Contract by the Contractor or its subcontractors, and shall promptly pay all persons supplying labor, materials or both to the Principal or its subcontractors for prosecution of the work provided in the Contract; and shall promptly pay all contributions due the State Industrial Accident Fund and the State Unemployment Compensation Fund from the Principal or its subcontractors in connection with the performance of the Contract; and shall pay over to the Oregon Department of Revenue all sums required to be deducted and retained from the wages of employees of the Principal and its subcontractors pursuant to ORS 316.167, and shall permit no lien nor claim to be filed or prosecuted against the State on account of any labor or materials furnished; and shall do all things required of the Principal by the laws of this State, then this obligation shall be void; otherwise, it shall remain in full force and effect.

Nonpayment of the bond premium will not invalidate this bond, nor shall the State of Oregon, or the OUS be obligated for the payment of any premiums.

This bond is given and received under authority of ORS Chapters 279C and 351, the provisions of which hereby are incorporated into this bond and made a part hereof.

IN WITNESS WHEREOF, WE HAVE CAUSED THIS INSTRUMENT TO BE EXECUTED AND SEALED BY OUR DULY AUTHORIZED LEGAL REPRESENTATIVES:

Dated this _____ day of _____, 20__.

PRINCIPAL: _____

By _____
Signature

Official Capacity

Attest: _____
Corporation Secretary

SURETY: _____

[Add signatures for each if using multiple bonds]

BY ATTORNEY-IN-FACT:

[Power-of-Attorney must accompany each bond]

Name

Signature

Address

City State Zip

Phone Fax

PREVAILING WAGE RATES

for

Public Works Contracts in Oregon



OREGON BUREAU OF LABOR AND INDUSTRIES

**Brad Avakian
Commissioner
Bureau of Labor and Industries**

Effective: January 1, 2014

SECTION 003100 - AVAILABLE PROJECT INFORMATION

PART 1 GENERAL

1.1 EXISTING CONDITIONS

- A. Certain information relating to existing surface and subsurface conditions and structures is available to bidders:
- B. Geotechnical Report: Soils Exploration Report by Marquess & Associates, Inc. dated October 15, 2013.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION



YOUR PROFESSIONAL ENGINEERING TEAM SINCE 1957

P 541-772-7115 F 541-779-4079 1120 EAST JACKSON PO BOX 490 MEDFORD, OR 97501
EMAIL: info@marquess.com WEB: www.marquess.com

October 15, 2013

Drew Gilliland
Southern Oregon University
351 Walker Avenue
Ashland, Oregon 97520

**RE: SOILS EXPLORATION REPORT
SOU FOOTBALL FIELD AND TRACK
ASHLAND, OREGON
MAI JOB NO. 13-1166**

Dear Mr. Gilliland:

Introduction

We are pleased to present our soils exploration report of the Football Field and Track at Southern Oregon University in Ashland, Oregon. The purpose of this investigation was to explore and define the existing soil conditions at the field. A site plan of the track and field is shown on the attached Drawing 1, Site Plan.

As presented in our proposal letter dated October 7, 2013, the scope of services for this phase of work was to include a review of available geotechnical information for the site area, exploratory test pits, laboratory testing of soil samples, and the preparation of a written report summarizing our findings.

This report has been prepared for the specific use of Southern Oregon University and their consultants in accordance with generally accepted soil and foundation engineering principles and practices. No other warranty, either expressed or implied, is made.

Three exploratory test pits were excavated with a rubber-tire backhoe at the approximate locations shown on Drawing 1. A key describing the soil classification system and soil consistency terms used in this report is presented on Drawing 2. Logs of the exploratory pits are presented on Drawing 3. Samples of the soil materials from the pits were returned to our laboratory for classification and testing. The results of moisture content and percent finer than No. 200 sieve (percent silt and clay) are shown on the pit logs.

Subsurface Conditions

Test Pits 1 and 2 were excavated somewhat beyond the end zones of the football field and Test Pit 3 was excavated near the visitors' bleachers and adjacent to the east side of the track.

Test Pits 1 and 2 encountered about one foot of topsoil materials consisting of a 5 inch thick sod layer followed by loose to medium dense silty sand to a depth of 1.0 feet. The topsoil layer contained organic materials that declined progressively with depth. The topsoil layer in both test pits was underlain by an intermediate layer of medium dense silty sand to depths of about 3.2 feet and 2.7 feet, respectively, in Pits 1 and 2. This soil layer did not contain visible organic material. The silty sand at Pit 2 contained trace clay, layered (indicating that it is old artificial fill), and very moist. At Pit 1, the intermediate layer was followed by very dense silty sand (this very dense silty sand was hard enough to slow the backhoe digging). At Pit 2, the intermediate layer was underlain by medium dense, very moist silty sand. This soil had an organic smell and it is believed the odor was due to trapped groundwater rather than organic materials.

Test Pit 3 encountered different soil conditions relative to Pits 1 and 2. The surficial soils consisted of sod and topsoil underlain by loose to medium dense, moist to very moist silty sand and clayey sand to a depth of 3.0' feet below existing grade. This soil appeared to be old artificial fill since it was dark gray with brown spots. This soil was underlain by medium dense very clayey sand to the depth explored (6.2 feet).

Groundwater was observed in Pit 3 at a depth of 4.0 feet during excavation. Groundwater was not observed in Pits 1 and 2.

The geologic map reviewed (Beaulieu and Hughes, 1977, Land Use Geology of Central Jackson County, Oregon, Bulletin 94, DOGAMI) indicates the field is underlain by Quaternary alluvial fan deposits.

In general, the soils observed in Pits 1 and 2 were drier, contained fewer silt and clay fines, and were denser than the soils observed in Pit 3.

Please contact this office if you have any questions regarding this report.



Very truly yours,

MARQUESS & ASSOCIATES, INC.

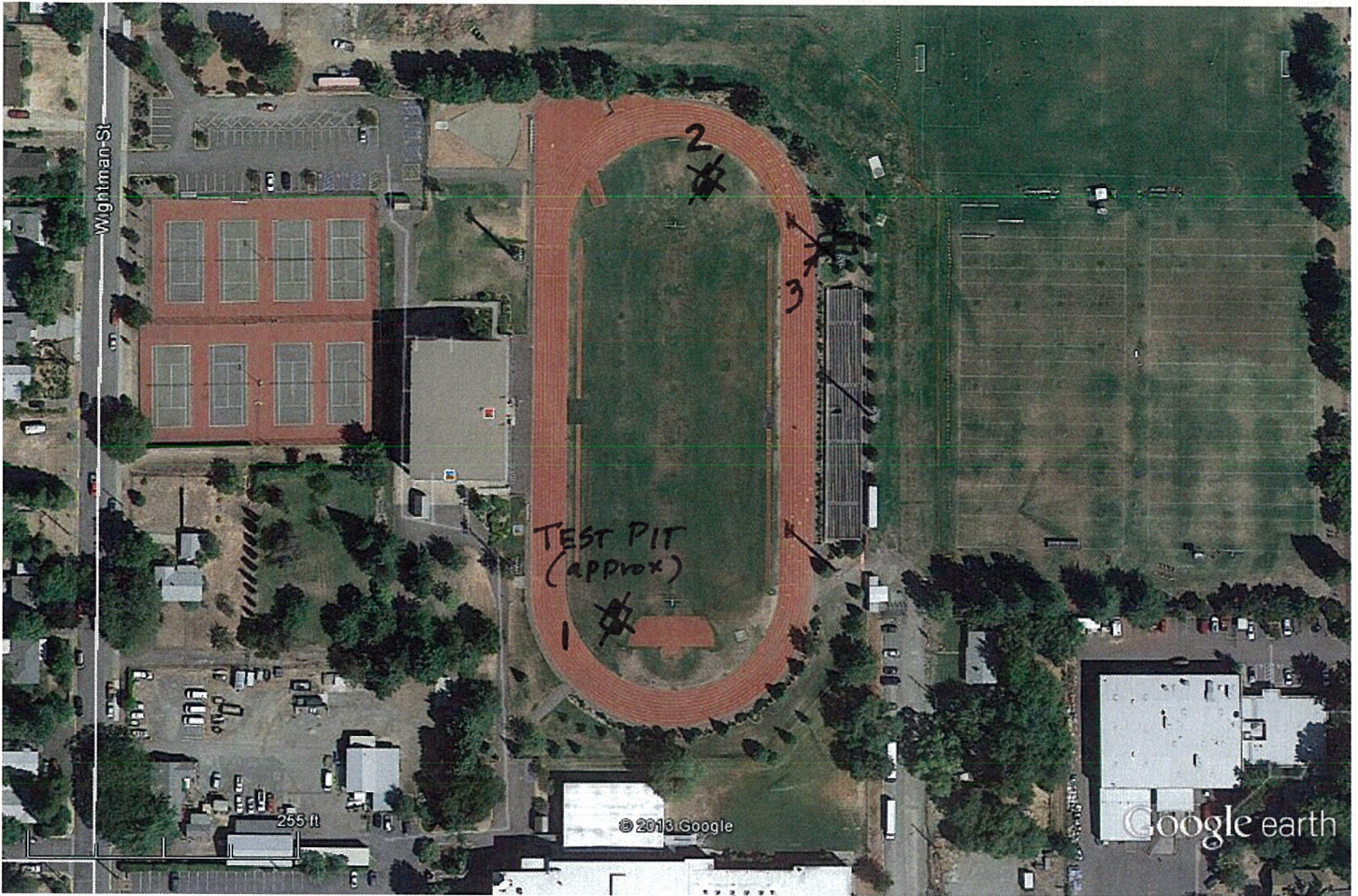
A handwritten signature in blue ink, appearing to read "Rick Swanson".

Rick Swanson, P.E., G.E.
Civil Engineer 16885

RS/ler

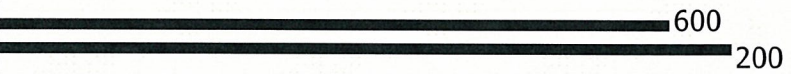
Copies: Addressee (2)

Attachments: Site Plan, Drawing 1
Key to Boring and Test Pit Logs, Drawing 2
Logs of Pits 1-3, Drawing 3



Google earth

feet
meters



Site Plan
Drawing 1/3
SOU Football Field and Track
Job No. 13-1166

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN No. 200 SIEVE SIZE	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN No. 4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels, or gravel-sand mixtures, little or no fines.
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN No. 4 SIEVE	CLEAN SANDS (LESS THAN 5% FINES)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines
			SC	Clayey sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN No. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT IS LESS THAN 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS LIQUID LIMIT IS GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487)

		U.S. STANDARD SERIES SIEVE			CLEAR SQUARE SIEVE OPENINGS			
		200	40	10	4	3/4"	3"	12"
SILTS AND CLAYS	SAND			GRAVEL		COBBLES	BOULDERS	
	FINE	MEDIUM	COARSE	FINE	COARSE			

GRAIN SIZES

SANDS & GRAVELS	BLOWS/FOOT [†]
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

SILTS & CLAYS	STRENGTH [‡]	BLOWS/FOOT [†]
VERY SOFT	0 - 1/4	0 - 2
SOFT	1/4 - 1/2	2 - 4
FIRM	1/2 - 1	4 - 8
STIFF	1 - 2	8 - 16
VERY STIFF	2 - 4	16 - 32
HARD	OVER 4	OVER 32

RELATIVE DENSITY

CONSISTENCY

[†] Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1-3/8 inch I.D.) split spoon (ASTM D-1586).

[‡] Unconfined compressive strength in tons/sq. ft. as determined by laboratory testing or approximated by the standard penetration test (ASTM D-1586), pocket penetrometer, torvane, or visual observation.



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 MEDFORD, OR 97501
 EMAIL: info@marquess.com
 WEB: www.marquess.com

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STRUCTURAL | MECHANICAL | ELECTRICAL
CIVIL | GEOTECHNICAL | MARINE | CONSTRUCTION TESTING

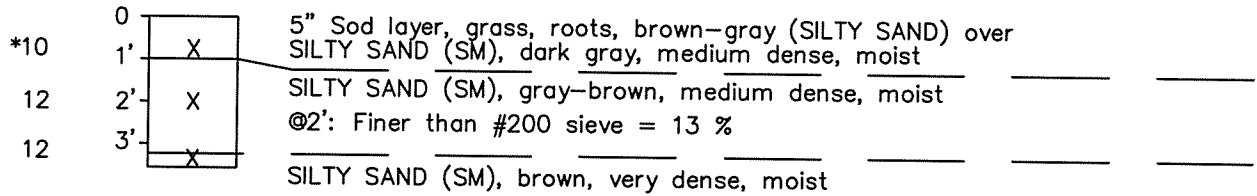
KEY TO BORING AND PIT LOGS			
SOU Football Field and Track			
Ashland		Oregon	
MAI JOB NO.	13-1166	DRAWN	RS
ISSUE DATE	Oct 2013	CHECKED	RS

DRAWING

2

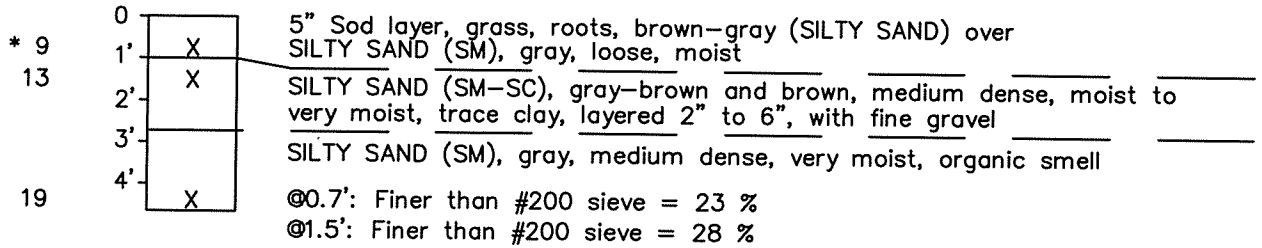
OF 3 DWGS

TEST PIT 1



Bottom of test pit = 3.4'

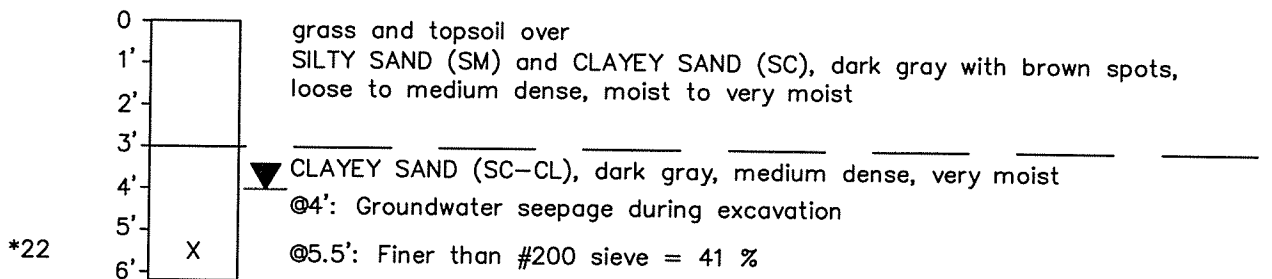
TEST PIT 2



Note sod layer contained rounded gravels, gravel-sized concrete fragments, brown 3/4"-0 crushed rock, and rusty 3" nail in one trenchwall

Bottom of test pit = 4.8'

TEST PIT 3



Bottom of test pit = 6.2'

*moisture content in percent



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LOG OF PITS 1 - 3
SOU Football Field and Track

Ashland Oregon

MAI JOB NO.	13-1166	DRAWN	RS
ISSUE DATE	Oct 2013	CHECKED	RS

DRAWING

3

OF 3 DWGS

SECTION 011000 - SUMMARY

PART 1 GENERAL

1.1 PROJECT

- A. Project Name: SOU Artificial Turf and Track Improvements.
- B. Owner's Name: Southern Oregon University.
- C. Owner's Representative's Name: Drew Gilliland.
- D. The Project consists of the construction of synthetic running track, asphalt paving, synthetic turf field, subdrainage, concrete walks, landscape repair, irrigation, fences, and utilities.

1.2 CONTRACT DESCRIPTION

- A. Contract Type: A single prime contract based on a Stipulated Price.

1.3 OWNER OCCUPANCY

- A. Owner intends to occupy the Project upon Substantial Completion.
- B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- C. Schedule the Work to accommodate Owner occupancy.

1.4 CONTRACTOR USE OF SITE

- A. Provide access to and from site as required by law and by Owner:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.

1.5 PRIME BIDDER QUALIFICATIONS

- A. Prime Bidders must have successfully completed at least one or more projects of similar size and scope. Similar projects are defined as project which included either a track, synthetic turf athletic field, or natural turf athletic field for high school levels of competition or higher. Provide project name, description, and contact person at Owner's request.

1.6 GENERAL ITEMS

- A. Third party entities hired by the Owner may include, but are not limited to, the following:

1. Certified Arborist services
 2. Special inspections and testing
 3. Geotechnical Consultant
- B. Permit fees with the City of Ashland will be paid for by Southern Oregon University except for electrical permit fees. Refer to Section 260010.
- C. NO disposal or recycling on university property outside construction area(s) unless approved by PM.
- D. NO burying of any demolition or construction materials on site.
- E. NO stockpiling of waste on-site beyond the period necessary for sorting and accumulation of practical quantities for transport off-site. Remove stockpiled debris on no more than a weekly basis.
- F. Description of work times may be limited beyond requirements set by city codes.

END OF SECTION

SECTION 012000 - PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Sum and Contract Time.
- C. Change procedures.
- D. Correlation of Contractor submittals based on changes.
- E. Procedures for preparation and submittal of application for final payment.

1.2 SCHEDULE OF VALUES

- A. Form to be used: AIA G703 - Continuation Sheet.
- B. Electronic media printout only. Forms filled out by hand will not be accepted.
- C. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- D. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify site mobilization and bonds and insurance.
- E. Revise schedule to list approved Change Orders, with each Application For Payment.

1.3 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Form to be used: AIA G702 - Application and Certificate for Payment.
- C. Execute certification by signature of authorized officer.
- D. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.
- E. Submit three copies of each Application for Payment.
- F. Include the following with the application:
 - 1. Transmittal letter as specified for Submittals in Section 013000.
 - 2. Construction progress schedule, revised and current as specified in Section 013000.

3. Wage certificates for the billing period.

G. When Owner's Representative requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.4 MODIFICATION PROCEDURES

A. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Owner's Representative will issue instructions directly to Contractor as Architect's Supplemental Information.

B. For clarifications or interpretations the Contractor shall send a Request for Information to the Owner's Representative.

C. For other required changes, Owner's Representative will issue a Construction Change Directive document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.

1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.

2. Promptly execute the change.

D. For changes for which advance pricing is desired, Owner's Representative will issue a Request for Proposal document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 7 days.

E. Contractor may propose a change by submitting a request for change to Owner's Representative, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 016000.

F. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.

G. Substantiation of Costs: Provide full information required for evaluation.

1. On request, provide following data:

a. Quantities of products, labor, and equipment.

b. Taxes, insurance, and bonds.

c. Overhead and profit.

d. Justification for any change in Contract Time.

e. Credit for deletions from Contract, similarly documented.

2. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

- H. Execution of Change Orders: Owner's Representative will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- I. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- J. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
- K. Promptly enter changes in Project Record Documents.

1.5 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
 - 1. All closeout procedures specified in Section 017000.
 - 2. All keys checked out to the Contractor must be returned to Owner's Representative.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 012200 - UNIT PRICES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. List of unit prices, for use in preparing Bids.
- B. Measurement and payment criteria applicable to Work performed under a unit price payment method.

1.2 COSTS INCLUDED

- A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

1.3 UNIT QUANTITIES SPECIFIED

- A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount.

1.4 MEASUREMENT OF QUANTITIES

- A. Take all measurements and compute quantities. Measurements and quantities will be verified by Owner's Representative.
- B. Assist by providing necessary equipment, workers, and survey personnel as required.
- C. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.

1.5 PAYMENT

- A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Owner's Representative, multiplied by the unit price.

1.6 SCHEDULE OF UNIT PRICES

- A. Over excavation and disposal off-site of unsuitable subgrade and providing, placement, and compaction of 3/4" - 0 Rock.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 012300 - ALTERNATES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Description of alternates.

1.2 ACCEPTANCE OF ALTERNATES

- A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted alternates will be identified in the Owner-Contractor Agreement.
- B. Coordinate related work and modify surrounding work to integrate the Work of each alternate.

1.3 SCHEDULE OF ALTERNATES

- A. Alternate No. 1 - Resilient Underlayment:
 - 1. Base Bid: No Resilient Underlayment beneath synthetic turf.
 - 2. Alternate Bid Item: Include Resilient Underlayment beneath synthetic turf as specified in Section 321823.29 and Detailed.
- B. Alternate No. 2 - Center logo in synthetic turf field:
 - 1. Base Bid: No center logo in synthetic turf field.
 - 2. Alternate Bid Item: Install center logo in synthetic turf field as shown on Drawings and Specified.
- C. Alternate No. 3 - Endzone logos in synthetic turf field:
 - 1. Base Bid: No endzone logos in synthetic turf field.
 - 2. Alternate Bid Item: Install endzone logos in synthetic turf field as shown on Drawings and Specified.
- D. Alternate No. 4 - Improvements at Shot Put perimeter:
 - 1. Base Bid: No improvements at shot put perimeter.
 - 2. Alternate Bid Item: Construct perimeter curb improvements at shot put as shown on Drawings.
- E. Alternate No. 5 - Upgrade synthetic running track to a Sandwich System:
 - 1. Base Bid: Install base mat structural spray track system as specified in Section 321823.33.
 - 2. Alternate Bid Item: Install sandwich track system as specified in Section 321823.33.
- F. Alternate No. 6 - Upgrade synthetic running track to a Full Pour System:

1. Base Bid: Install base mat structural spray track system as specified in Section 321823.33.
2. Alternate Bid Item: Install full pour track system as specified in Section 321823.33.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 013000 - ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Preconstruction meeting.
- B. Progress meetings.
- C. Construction progress schedule.
- D. Submittals for review, information, and project closeout.
- E. Submittal procedures.

1.2 RELATED REQUIREMENTS

- A. Section 017000 - Execution and Closeout Requirements: Additional coordination requirements.
- B. Section 017800 - Closeout Submittals: Project record documents.

1.3 PROJECT COORDINATION

- A. During construction, coordinate use of site and facilities through the Owner's Representative.
- B. Coordinate field engineering and layout work under instructions of the Project Coordinator.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PRECONSTRUCTION MEETING

- A. Owner's Representative will schedule a meeting after Notice of Award.
- B. Attendance Required:
 - 1. Owner's Representative.
 - 2. Contractor.
 - 3. Primary sub-contractors.
- C. Agenda:

1. Designation of key personnel and complete list of sub-contractors with contact information.
 2. Construction schedule.
 3. Completion of SOU EHS checklist at meeting.
 4. Owner occupancy, schedule, and activities requiring accommodation and/or coordination.
 5. Impacts to building operations, building systems, and/or building occupants.
 6. Site safety and access specific to project.
 7. Critical work sequencing and long-lead items.
 8. Procedures for processing field decisions, Change Orders, RFI's, testing & inspecting, applications for payment, submittals, etc.
 9. Distribution of Contract Documents as needed.
 10. Use of the site, campus premises, and existing building(s).
 11. Work restrictions.
 12. Temporary facilities and controls.
 13. Parking availability.
 14. Office, work, and storage areas.
 15. Equipment deliveries and priorities.
 16. te security.
 17. progress cleaning.
 18. Submittal schedule.
 19. All shut-off locations.
 20. Utility meter removals or connections.
 21. Owner items include but are not limited to the following:
 - a. List of emergency contacts and contact information.
 - b. Process for accessing emergency assistance.
 - c. process for spills & clean-up.
 - d. Owner expectations regarding maintaining safe conditions for SOU employees, students, visitors, construction workers, etc. including odors, egress, avoidance of fire alarms, etc.
 - e. Owner expectations regarding compliance with erosion control permits.
- D. Landscape Architect will record minutes and distribute copies within two days after meeting to participants, with two copies to Owner's Representative, Owner, participants, and those affected by decisions made.

3.2 CONSTRUCTION PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at minimum bi-weekly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings, record minutes.

- C. Meeting locations shall be on-site and conducted by the Contractor.
- D. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Owner's Representative, as appropriate to agenda topics for each meeting.
- E. Agenda (list is subject to change as needed):
 - 1. Review minutes of previous meetings.
 - 2. Review of Work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems that impede, or will impede, planned progress.
 - 5. Overall construction schedule progress and status.
 - 6. 2 to 3 week detailed schedule of coming weeks' activities
 - 7. Owner schedule and activities requiring accommodation and/or coordination.
 - 8. Review of submittals schedule and status of submittals.
 - 9. Review of off-site fabrication and delivery schedules.
 - 10. Maintenance of quality and work standards.
 - 11. Effect of proposed changes on progress schedule and coordination.
 - 12. Site access and utilization and any changes due to construction or delivery activities.
 - 13. Work hours and notification of evening or weekend events needing notification to campus.
 - 14. RFI progress, status, and/or outstanding responses.
 - 15. Proposal Request progress, status, and outstanding questions/responses.
 - 16. Pending changes and effect of proposed changes on schedule and coordination.
 - 17. Other business relating to Work.
- F. Contractor to record minutes and distribute copies within two days after meeting to participants, with two copies to Owner's Representative, Owner, participants, and those affected by decisions made.

3.3 CONSTRUCTION PROGRESS SCHEDULE

- A. Within 10 days after date of the Agreement, submit preliminary schedule .
- B. Schedule to be created using Microsoft Project.
- C. All Owner activities and milestones to be listed.
- D. All OFCI/OFOI items, delivery dates, and completion dates are to be listed.
- E. All required shut downs must be requested by the Contractor a minimum of one week in advance.

- F. For all disruptive, noise, odor, etc. work within occupied building (or close neighboring buildings) the Contractor must notify the Owner for distribution of such notice to campus a minimum of 48 hours prior to start of such work.
- G. Submit updated schedule with each Application for Payment.

3.4 SUBMITTALS FOR REVIEW

- A. All submittals shall be electronic in PDF format.
- B. Owner will provide the Contractor with a list of submittal items that require concurrent Owner and Landscape Architect review and approval prior to official submittal acceptance. This list consist of, but is not limited to the following items:
 - 1. Soils.
- C. When the following are specified in individual sections, submit them for review:
 - 1. Product data.
 - 2. Shop drawings.
 - 3. Samples for selection.
 - 4. Samples for verification.
- D. Submit to Owner's Representative for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- E. Samples will be reviewed only for aesthetic, color, or finish selection.

3.5 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 - 1. Design data.
 - 2. Certificates.
 - 3. Test reports.
 - 4. Inspection reports.
 - 5. Manufacturer's instructions.
 - 6. Manufacturer's field reports.
 - 7. Other types indicated.
- B. Submit for Owner's Representative's knowledge as contract administrator or for Owner.

3.6 SUBMITTALS FOR PROJECT CLOSEOUT

- A. When the following are specified in individual sections, submit them at project closeout:
 - 1. Project record documents.

2. Operation and maintenance data.
3. Warranties.
4. Bonds.
5. Other types as indicated.

B. Submit for Owner's benefit during and after project completion.

3.7 NUMBER OF COPIES OF SUBMITTALS

A. Submittals to be in electronic pdf format.

B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Owner's Representative.

1. After review, produce duplicates.
2. Retained samples will not be returned to Contractor unless specifically so stated.

3.8 SUBMITTAL PROCEDURES

A. Transmit each submittal with a copy of approved submittal form.

B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.

C. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.

D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

E. Schedule submittals to expedite the Project, and coordinate submission of related items.

F. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.

G. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.

H. Provide space for Contractor and Owner's Representative review stamps.

I. When revised for resubmission, identify all changes made since previous submission.

J. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

K. Submittals not requested will not be recognized or processed.

END OF SECTION

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. References and standards.
- B. Quality assurance submittals.
- C. Mock-ups.
- D. Control of installation.
- E. Tolerances.
- F. Testing and inspection services.
- G. Manufacturers' field services.

1.2 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements: Submittal procedures.
- B. Section 016000 - Product Requirements: Requirements for material and product quality.

1.3 REFERENCE STANDARDS

- A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008.
- B. ASTM C1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation; 2013a.
- C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2012.
- D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2012a.
- E. ASTM E329 - Standard Specification for Agencies Engaged Construction Inspection and/or Testing; 2011.
- F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2009.
- G. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2010.

1.4 SUBMITTALS

- A. Testing Agency Qualifications:
 - 1. Prior to start of Work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
 - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
- B. Test Reports: After each test/inspection, promptly submit electronic pdf copies of report to Owner's Representative and to Contractor.
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test/inspection.
 - h. Date of test/inspection.
 - i. Results of test/inspection.
 - j. Conformance with Contract Documents.
 - k. When requested by Owner's Representative, provide interpretation of results.
 - 2. Test report submittals are for Owner's Representative's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Owner's information.
- C. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Owner's Representative, in quantities specified for Product Data.
 - 1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- D. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- E. Manufacturer's Field Reports: Submit reports for Owner's Representative's benefit as contract administrator or for Owner.
 - 1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

1.5 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Owner's Representative before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Owner's Representative shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.6 TESTING AND INSPECTION AGENCIES

- A. Owner will employ services of an independent testing agency to perform certain specified testing and inspection to include tests and inspections described in Specification section and Special Inspections and Testing required by the building department.
- B. Contractor shall employ and pay for services of an independent testing agency to perform other specified testing and inspection.
- C. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- D. Contractor Employed Agency:
 - 1. Testing agency: Comply with requirements of ASTM E 329, ASTM E 543, ASTM C 1021, ASTM C 1077, and ASTM C 1093.
 - 2. Inspection agency: Comply with requirements of ASTM D3740 and ASTM E329.
 - 3. Laboratory Qualifications: Accredited by IAS according to IAS AC89.
 - 4. Laboratory: Authorized to operate in Oregon.
 - 5. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
 - 6. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Owner's Representative before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have Work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.2 MOCK-UPS

- A. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.
- B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- C. Accepted mock-ups shall be a comparison standard for the remaining Work.
- D. Where mock-up has been accepted by Owner's Representative and is specified in product specification sections to be removed, remove mock-up and clear area when directed to do so.

3.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Owner's Representative before proceeding.

- C. Adjust products to appropriate dimensions; position before securing products in place.

3.4 TESTING AND INSPECTION

- A. See individual specification sections for testing required.
- B. Testing Agency Duties:
 - 1. Test samples of mixes submitted by Contractor.
 - 2. Provide qualified personnel at site. Cooperate with Owner's Representative and Contractor in performance of services.
 - 3. Perform specified sampling and testing of products in accordance with specified standards.
 - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 5. Promptly notify Owner's Representative and Contractor of observed irregularities or non-conformance of Work or products.
 - 6. Perform additional tests and inspections required by Owner's Representative.
 - 7. Attend preconstruction meetings and progress meetings.
 - 8. Submit reports of all tests/inspections specified.
- C. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:
 - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 - 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 - 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
 - 4. Notify Owner's Representative and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
 - 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 - 6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

- E. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Owner's Representative.
- F. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.

3.5 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, as applicable, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.6 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not conforming to specified requirements.
- B. If, in the opinion of Owner's Representative, it is not practical to remove and replace the Work, Owner's Representative will direct an appropriate remedy or adjust payment.

END OF SECTION

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary utilities.
- B. Temporary telecommunications services.
- C. Temporary sanitary facilities.
- D. Temporary Controls: Barriers, enclosures, and fencing.
- E. Security requirements.
- F. Vehicular access and parking.
- G. Waste removal facilities and services.
- H. Project identification sign.
- I. Field offices.

1.2 GENERAL REQUIREMENTS

- A. Unless written approval is obtained, construction must not obstruct private or public streets, driveways, pedestrian walkways, ADA routes, fire lanes, egress of occupied buildings, etc.
- B. Coordinate construction detour routes for bikes, pedestrians, vehicles, etc. with Owner's Representative and as needed by Campus public Safety.
- C. Restore permanent facilities used during construction to their specified and/or original condition.

1.3 TEMPORARY UTILITIES

- A. All shut-off locations are to be documented for emergency purposes prior to pre-construction meeting.
- B. Documentation of locations is to be distributed to Owner's Representative who will distribute to other campus entities.
- C. Existing facilities may be used.
- D. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.4 TEMPORARY ELECTRICAL

- A. The Owners electric power may be used during construction and be obtained from the Owner's electric system where adequate capacity and switching is available, and where the normal operation of any of the Owner's facilities will not be adversely affected. in such case, no charge will be make by the Owner for electric power.
- B. The Contractor shall take all reasonable measures to conserve electricity.
- C. provide flexible power cords as required for portable construction tools and equipment.
- D. Where use of the Owner's electric power system is not possible or is not allowed, the Contractor shall be responsible for obtaining a source of electric power for construction. Cost of electric power in this case shall be bourne by the Contractor.
- E. Maintain Owners panels and meters for the duration of the Work and provide means of securing temporary power elements from weather and vandal damage.
- F. The temporary electric power installation shall meet the construction safety requirements of OSHA, the State, and other governing agencies.
- G. The Contractor shall insure the protection of Owner and property. Any damage or injury caused be the Contractor's actions shall be the responsibility of the Contractor to repair or compensate the affected party.

1.5 TELECOMMUNICATIONS SERVICES

- A. Telecommunications services shall include:
 - 1. Cell phone numbers for the:
 - a. Contractor's Project Manager.
 - b. On-Site superintendent / foreman.
 - c. Emergency off-hours contact phone number for Contractor.
 - 2. Option Internet Connections: Minimum of one; DSL modem or faster.
 - 3. Email: Account/address for project use.

1.6 TEMPORARY WATER

- A. The Owner's water may be used during construction and be obtained from the Owner's water system, where the normal operation of any of the Owner's facilities will not be adversely affected.
- B. The Contractor shall take all reasonable measures to conserve water.
- C. The source for construction water is limited to accommodate a typical hose bib in capacity.
- D. Subcontractors shall provide for their own distribution of water beyond these sources.

1.7 TEMPORARY SANITARY FACILITIES

- A. Provide at the time of mobilization and maintain required facilities and enclosures. Provide facilities approved for use at construction sites by OSHA and the Jackson County Health Department.
- B. Use of existing facilities located at SOU Campus is not permitted.
- C. Maintain daily in clean and sanitary condition.

1.8 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.9 FENCING

- A. Construction fence shall be a commercial grade chain link fence.
- B. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.10 SECURITY

- A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.
- B. Coordinate with Owner's security program.

1.11 VEHICULAR ACCESS AND PARKING

- A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- B. Contractor may purchase vendor parking permits from the SOU Parking Office to park in any SOU parking lot. Parking on adjacent City streets is available on a first come, first served basis.
- C. Coordinate access and haul routes with governing authorities and Owner.
- D. Provide and maintain access to fire hydrants, free of obstructions.

- E. Provide means of removing mud from vehicle wheels before entering streets.
- F. Designated existing on-site roads may be used for construction traffic.
- G. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.
- H. Vehicle parking only allowed on existing pavement.

1.12 WASTE REMOVAL

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Provide containers with lids. Remove trash from site weekly.
- C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

1.13 PROJECT IDENTIFICATION

- A. Only two types of signs fixed to construction fencing are allowed:
 - 1. One sign to identify the project, project purpose, project rendering and design team.
 - 2. One sign to list the general and sub-contractors.
- B. All signs must adhere to City of Ashland signage standards.

1.14 FIELD OFFICES

- A. Office (at Contractor's option): Weathertight, with lighting, electrical outlets, heating, ventilating equipment, and equipped with sturdy furniture .
- B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.
- C. Locate offices a minimum distance of 30 feet from existing and new structures.

1.15 SMOKING AREA

- A. Smoking is not permitted on the SOU Campus.

1.16 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.

- B. Remove underground installations to a minimum depth of 2 feet. Grade site as required by contract documents.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition.

1.17 TREE AND PLANT PROTECTION AND PRESERVATION

- A. For Tree Removal see Section 311000 - Site Clearing.
- B. Meet City of Ashland requirements.
- C. No storage, stockpiling, parking, etc is permitted within the zones of protection.
- D. Zone of Protection is defined as the area within the drip line (canopy) of the tree.
- E. Tree protection fencing:
 - 1. Minimum protection will be a rigid 6-foot chain link fence.
 - 2. No snow fencing is allowed.
 - 3. Fencing sections to be anchored into the ground.
 - 4. Fencing is to remain through the duration of the construction to final completion.
 - 5. Fencing may not be moved or removed without prior Arborist, Landscape Architect, or Owner approval.
- F. The following requirements prevent damage to plant materials including trees, ground covers, root system, soil, bark, foliage, branches, and limbs due to construction activities that include, but are not limited to:
 - 1. Soil contamination, erosion and compaction.
 - 2. Excessive wetting, ponding and construction run-off.
 - 3. Alteration of grade, stockpiling of soil, debris and materials.
 - 4. Damage to soil, roots, bark, trunk, limbs, branches, foliage.
 - 5. Unauthorized cutting, breaking, skinning, and abrasion of roots, branches, and bark.
- G. Zones of Protection
 - 1. Notices will be posted on Zones of Protection fencing listing prohibited activities without prior approval. These notices will remain in place until authorization is granted by the Landscape Architect, Arborist, and Owner.
 - 2. Contractor shall submit requests to work within the Zones of Protection following procedures established by the Landscape Architect and Owner must be notified and consulted before work occurs.
 - 3. The following activities are prohibited in the Zones of Protection without prior written approval from the Landscape Architect and Owner:
 - a. Removal or moving of protective fencing.
 - b. Parking and driving of vehicles.

- c. Excavations.
 - d. Flooding and cleanup of equipment, tools, etc.
 - e. Storing or Operation of equipment.
 - f. Staging of materials.
 - g. Trenching.
 - h. Stockpiling.
 - i. Altering Drainage.
4. When fencing is removed all protection requirements still apply.
 5. During any excavation, No roots larger than 1 inch in diameter will be cut without prior approvals from the Landscape Architect, Arborist, and Owner.
 6. All cuts will be made with clean, sharp, cutting tools only.
 7. No root tearing, ripping, or abrasions are allowed.
 8. Exposed roots will be kept moist and protected from sun and frost at all times.
 9. Damages to any trees that are to remain and protected:
 - a. Tree values will be assessed by the Landscape Architect and Owner per ISA standards and posted to the tree at start of construction. Compensation of any and all harm, damage, destruction, etc. to the tree will be assessed based on the tree value.
 - b. OR
 - c. Fines of five-hundred dollars (\$500.00) per tree, per incident will be assessed for violation of these requirements.
 10. Damages can be waived only by the Landscape Architect and Owner if the tree is replaced with the like species and size and has a full one year unconditional guarantee.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. General product requirements.
- B. Re-use of existing products.
- C. Transportation, handling, storage and protection.
- D. Product option requirements.
- E. Substitution limitations and procedures.
- F. Maintenance materials, including extra materials, spare parts, tools, and software.

1.2 SUBMITTALS

- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.1 EXISTING PRODUCTS

- A. Reused Products: Reused products include materials and equipment previously used in this or other construction, salvaged and refurbished as specified.

2.2 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by the Contract Documents.
- B. Where all other criteria are met, Contractor shall give preference to products that:
 - 1. Are extracted, harvested, and/or manufactured closer to the location of the project.

2. Have longer documented life span under normal use.
3. Result in less construction waste.
4. Are made of vegetable materials that are rapidly renewable.

2.3 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.4 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.1 SUBSTITUTION PROCEDURES

- A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.
- B. Substitutions after the bid process will only be considered if the specified product(s) become unavailable through no fault of the contractor.
- C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- D. A request for substitution constitutes a representation that the submitter:
 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 2. Will provide the same warranty for the substitution as for the specified product.
 3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
 4. Waives claims for additional costs or time extension that may subsequently become apparent.
 5. Will reimburse Owner and Owner's Representative for review or redesign services associated with re-approval by authorities.

- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- F. Substitution Submittal Procedure:
 - 1. Submit request for substitution for consideration in electronic pdf format. Limit each request to one proposed substitution.
 - 2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
 - 3. The Owner's Representative will notify Contractor in writing of decision to accept or reject request.

3.2 TRANSPORTATION AND HANDLING

- A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- B. Transport and handle products in accordance with manufacturer's instructions.
- C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- D. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
- F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.3 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

- G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- H. Prevent contact with material that may cause corrosion, discoloration, or staining.
- I. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- J. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SUBSTITUTION REQUEST FORM

TO: SOUTHERN OREGON UNIVERSITY

PROJECT: TURF AND TRACK REPLACEMENT

We hereby submit for your consideration the following product instead of the specified item for the above project:

SECTION	PARAGRAPH	SPECIFIED ITEM
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Proposed Substitution:

Attach complete technical data, including laboratory tests, if applicable. Include complete information on changes to Drawings and/or Substitutions which proposed substitution will require for its proper installation. Fill in the blanks below:

A. Does the substitution affect dimensions on Drawings?

B. Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution?

C. What affect does the substitution have on other trades?

D. Differences between proposed substitution and specified item?

E. Manufacturer's guarantees of the proposed and specified items are:

Same Different (explain on attachment)

The undersigned states that the function, appearance and quality are equivalent or superior to the specified item.

Submitted by:

Signature

Firm:

Address:

Date:

Telephone:

Fax Number:

Email:.

FOR USE BY DESIGN CONSULTANT

- Accepted
- Accepted As Noted
- Not Accepted
- Received Too Late

By:

Date:

Remarks:

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Pre-installation meetings.
- C. Cutting and patching.
- D. Surveying for laying out the work.
- E. Cleaning and protection.
- F. Demonstration and instruction of Owner personnel.
- G. Closeout procedures, except payment procedures.

1.2 RELATED REQUIREMENTS

- A. Section 014000 - Quality Requirements: Testing and inspection procedures.
- B. Section 015000 - Temporary Facilities and Controls: Temporary exterior enclosures.

1.3 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
 - 1. On request, submit documentation verifying accuracy of survey work.
 - 2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in conformance with Contract Documents.
 - 3. Submit surveys and survey logs for the project record.
- C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate Contractor.
- D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.4 QUALIFICATIONS

- A. For survey work, employ a land surveyor registered in Oregon and acceptable to Owner's Representative. Submit evidence of Surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate.

1.5 PROJECT CONDITIONS

- A. Use of explosives is not permitted.
- B. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- C. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- D. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- E. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
- F. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
 - 1. Minimize amount of bare soil exposed at one time.
 - 2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
 - 3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
 - 4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- G. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
 - 1. Outdoors: Limit conduct of especially noisy exterior work to the hours of 8 am to 5 pm.
- H. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.6 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

- B. Notify affected utility companies and comply with their requirements.
- C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. Coordinate completion and clean-up of work of separate sections.
- F. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.1 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 016000.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.3 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Owner's Representative four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of examination, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Owner's Representative, Owner, Landscape Architect, participants, and those affected by decisions made.

3.4 LAYING OUT THE WORK

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Owner's Representative of any discrepancies discovered.
- C. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- D. Promptly report to Owner's Representative the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

- E. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Owner's Representative.
- F. Utilize recognized engineering survey practices.
- G. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
- H. Periodically verify layouts by same means.
- I. Maintain a complete and accurate log of control and survey work as it progresses.

3.5 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.6 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. Perform whatever cutting and patching is necessary to:
 - 1. Complete the work.
 - 2. Fit products together to integrate with other work.
 - 3. Provide openings for penetration of mechanical, electrical, and other services.
 - 4. Match work that has been cut to adjacent work.
 - 5. Repair areas adjacent to cuts to required condition.
 - 6. Repair new work damaged by subsequent work.
 - 7. Remove samples of installed work for testing when requested.
 - 8. Remove and replace defective and non-conforming work.
- C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

- D. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- E. Restore work with new products in accordance with requirements of Contract Documents.
- F. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- G. Patching:
 - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 - 2. Match color, texture, and appearance.
 - 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.7 DAILY CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Collect waste material which may constitute a fire hazard, place in closed metal containers, and remove daily from site.
- C. After cutting and boring, Contractor is required to clean the space of all debris, water, and concrete.
- D. Collect and remove waste materials, debris, and trash/rubbish from site daily and dispose off-site; do not burn or bury.

3.8 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Prohibit traffic from landscaped areas.
- F. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.9 DEMONSTRATION AND INSTRUCTION

- A. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
- B. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of owner personnel.

3.10 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.11 FINAL CLEANING

- A. Use cleaning materials that are nonhazardous.
- B. Comply with manufacturer's instructions for cleaning of all system components, equipment, and materials installed into the project.
- C. Prior to the time the Contractor requests Substantial Completion Inspection:
 - 1. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
 - 2. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
 - 3. Clean exposed hard-surfaced finishes including glass, metals, stone, concrete, painted surfaces, plastics, tile, wood, special coatings, and similar surfaces, to a dirt free condition, free of dust, stains, films, and similar noticeable distracting substances.
 - 4. Restore all surrounding property to its original condition.
 - 5. No marking, soiling, or other defacing of finished surfaces. In the event that finished surfaces become defaced, all costs for cleaning and restoring such surfaces to their originally intended condition shall be the responsibility and cost of the Contractor.
- D. Prior to Contractor request of Final Acceptance:
 - 1. Turn the work over in immaculate condition
 - 2. Clean all work on the premises including walks, drives, curbs, paving, fences, grounds, and walls. Cleanup shall include removal of smudges, marks, stains, fingerprints, soil, dirt, paint, dust, lint, labels, discolorations, and other foreign materials.
 - 3. Remove temporary structures, fences, surplus materials, and rubbish of every kind from the site of the work. Repair these areas to be compatible with the surrounding finished conditions.
- E. Clean site; sweep paved areas, rake clean landscaped surfaces.
- F. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.12 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
 - 1. Provide copies to Owner's Representative.
- B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in Contractor's Notice of Substantial Completion.
- C. Notify Owner's Representative when work is considered ready for Substantial Completion.
- D. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Owner's Representative's review.
- E. Correct items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Owner-occupied areas.
- F. Notify Owner's Representative when work is considered finally complete.
- G. Complete items of work determined by Owner's Representative's final inspection.

3.13 CONSTRUCTION WASTE MANAGEMENT

- A. Salvage and Recycling Requirements: Our goal is to salvage and recycle as much non-hazardous demolition and construction waste as possible including any demolition and/or construction waste.
- B. Submittals:
 - 1. Recycling Plan: Prior to preparation of the Waste Management Plan, submit the recycling plan to the PM and Architect for approval
 - 2. Waste Management Plan: E-mail PDF of plan within 30 days of the Notice to Proceed.
 - 3. Waste Reduction Calculations: Before request for Substantial Completion, submit three copies of calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste in weight generated by the Work
- C. Record Keeping:
 - 1. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether or not the organization is tax exempt.
 - 2. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices. Include documentation for back-charge fees (if any) for improperly segregated waste.
 - 3. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

- D. Provide recycling education and recycling information to Contractor and Subcontractor employees working on the project.
- E. Waste Management Plan Implementation:
 - 1. Provide containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
 - 2. Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
 - 3. Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - a. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 - b. Comply with project requirements for controlling dust and dirt, environmental protection, and noise control.
- F. Closeout delivery of any and all closeout and/or overstock items to the PM requires formal transmittals for project records; including O&M manuals, extra materials, custom finish knives, etc.

3.14 GENERAL CONTRACTOR AS-BUILT DOCUMENT REQUIREMENTS / DELIVERABLES

- A. With all the following listed items, give particular attention to concealed products and portions of the work that are not clearly identified in the original submittal or cannot otherwise be readily discerned at a later date by direct observation.
- B. Original permit set of documents with sign off of inspections. Contractor should make copies of these sign offs for their records
- C. 1 complete full-size, reproducible drawing set on bond paper.
- D. 1 complete set of as-built specifications.
- E. 1 complete reproducible CD of as-built drawings and specifications in 'pdf' file format.
- F. 1 complete full-size reproducible drawing & specification set of Contractor's red-lines on bond paper.

3.15 OPERATION AND MAINTENANCE MANUALS

- A. 2 complete physical hard copies of ALL listed items.
- B. 1 complete reproducible CD of ALL listed items in 'pdf' file format.
- C. ALL part numbers of manufacturers and suppliers.
- D. Total quantities installed under the contract.

- E. Manufacturer and supplier names and addresses.
- F. Complete manufacturer's serial number(s) or other identity symbol(s).
- G. Parts lists that clearly identify every part in the item of equipment with the proper manufacturer's name, part nomenclature and number, local source, and list price.
- H. Recommended Spare Parts:
 - 1. Furnish a list of recommended spare parts for each equipment item that will be needed to support that item of equipment for a 12-month period.
 - 2. The quantities of spare parts recommended shall be based upon the quantity of like equipment items installed under the contract.
 - 3. Storage shelf life of part, in months, if the part has a limited life.
 - 4. Recommended quantity of part(s) to inventory and support the installed quantity of equipment in which the part appears for a period of 12 months.
 - 5. Name, address, and phone number of the nearest supplier for the part.
- I. System Drawings: Detailed drawings, where applicable, that clearly show wiring diagrams, control diagrams, system schematics, etc., which pertain to the unit function. Drawings are required to show modifications to another manufacturer's standard unit which is incorporated into the assembly or packaged unit.
 - 1. The Contractor shall provide diagrammatic drawings for each installed system, which shall show the placement of the system in relation to the building, and the physical location of each item or equipment installed within the system. Each installed item of equipment shown on the drawing will be identified by the equipment item model and/or serial/part number.
 - 2. Special Tools and Test Equipment: Furnish a detailed list of the special tools and test equipment needed to perform repair and maintenance for each equipment item. The list shall contain the special tool and test equipment part number, size, quantity, price, manufacturer's name and address, and local supplier's name and address.
 - 3. Warranties and Guarantees: Within each tabbed section of the O&M, include an executed copy of the specified warranty/guarantee covering the particular system, equipment item, or material.
 - a. This is to include both the manufacturer's warranty and the installing contractor's guarantee for workmanship and system operation. This copy of the particular warranty/guarantee is in addition to the original signed copies that are to be bound together separately.
 - b. Provide a separate binder containing all original project warranties and guarantees.
 - 4. Field records on excavations, foundations, underground construction, wells, and similar work; if not already included in as-built drawings / documentation.
 - 5. Accurate survey showing locations and elevations of underground lines, including invert elevations of drainage piping; if not already included in as-built drawings / documentation.
 - 6. Surveys establishing lines and levels of buildings; if not already included in as-built drawings /documentation.

7. Load and/or performance testing.
8. Final inspection and deficiency corrections.
9. Prior to date of substantial completion the Architect and PM shall determine which (if any) samples or mock-ups are to be transmitted to the PM for record purposes.
10. With all the above listed items, give particular attention to concealed products and portions of the work that are not clearly identified in the original submittal or cannot otherwise be readily discerned at a later date by direct observation.

3.16 WARRANTY REQUIREMENTS:

- A. Minimum warranty for all material and workmanship for a minimum of 1-year after date of substantial completion OR for the extended period of time required by the individual specification section or determined by the manufacturer's guarantee.
- B. Extended warranties may be required for specific items as noted in the following document.
- C. Correct immediately any failure caused by poor material or workmanship during warranty period; within 72 hours of notice.
- D. If the Owner are required to proceed with repairs, the responsible party of the warranty will be billed for costs and damages when failing to comply.

END OF SECTION

SECTION 024100 - DEMOLITION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Selective demolition of built site elements.

1.2 RELATED REQUIREMENTS

- A. Section 011000 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 015000 - Temporary Facilities and Controls:
- C. Section 017000 - Execution and Closeout Requirements:
- D. Section 311000 - Site Clearing: Vegetation and existing debris removal.
- E. Section 312323 - Fill: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.1 SCOPE

- A. Remove existing paving, curbs, fence, football goal posts, irrigation, vegetation, soil, rock, and utilities as required to accomplish new work.
- B. Refer to Section 311000 - Site Clearing for stripping and stockpiling of soil.
- C. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as required for subsequent improvements..

3.2 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Provide, erect, and maintain temporary barriers and security devices.
 - 2. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
 - 3. Conduct operations to minimize effects on and interference with adjacent structures and occupants.

4. Do not close or obstruct roadways or sidewalks without permit.
 5. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
- B. Do not begin removal until receipt of notification to proceed from Owner.
- C. Do not begin removal until built elements to be salvaged or relocated have been removed.
- D. Protect existing structures and other elements that are not to be removed.
1. Provide bracing and shoring.
 2. Prevent movement or settlement of adjacent structures.
 3. Stop work immediately if adjacent structures appear to be in danger.
- E. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

3.3 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Concrete formwork.
- B. Slabs on grade.
- C. Concrete reinforcement.
- D. Joint devices associated with concrete work.
- E. Concrete curing.
- F. Concrete curbs, gutters, mowstrips, headers, etc.

1.2 RELATED REQUIREMENTS

- A. Section 116833.43 - Track and Field Equipment.
- B. Section 276001 - Emergency Telephone System.
- C. Section 312323 - Fill.
- D. Section 321823.29 - Synthetic Field Sport Surfacing.
- E. Section 321823.33 - Synthetic Running Track Surfacing.
- F. Section 323113 - Chainlink Fences and Gates.

1.3 REFERENCE STANDARDS

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; American Concrete Institute International; 2010.
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International; 1991 (Reapproved 2002).
- C. ACI 301 - Specifications for Structural Concrete; American Concrete Institute International; 2010.
- D. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International; 2004 (Errata 2007).
- E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International; 2000.

- F. ACI 305R - Hot Weather Concreting; American Concrete Institute International; 2010.
- G. ACI 306R - Cold Weather Concreting; American Concrete Institute International; 2010.
- H. ACI 308R - Guide to Curing Concrete; American Concrete Institute International; 2001 (Reapproved 2008).
- I. ACI 347 - Guide to Formwork for Concrete; American Concrete Institute International; 2004.
- J. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon Billet-Steel Bars for Concrete Reinforcement; 2012.
- K. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2013.
- L. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2012a.
- M. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2013.
- N. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2012.
- O. ASTM C150/C150M - Standard Specification for Portland Cement; 2012.
- P. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2007.
- Q. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2012.
- R. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.
- S. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2013.
- T. ASTM D994/D994M - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type); 2011.
- U. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2011.

1.4 SUBMITTALS

- A. See Section 013000 - Administrative Requirements.
- B. Action Submittals:
 - 1. Submit plant mix design.
 - 2. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
 - 3. Samples: Submit samples of underslab vapor retarder to be used.

C. Informational Submittals:

1. Submit delivery tickets for ready-mixed concrete which include the following information:
 - a. Supplier's name, delivery date, and mixing time.
 - b. Quantities of cement, water, and aggregate.
 - c. Type and quantity of admixtures.
2. Test results.

1.5 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
 1. Maintain one copy of each document on site.
- B. Follow recommendations of ACI 305R when concreting during hot weather.
- C. Follow recommendations of ACI 306R when concreting during cold weather.

1.6 COORDINATION

- A. Coordinate with other trades affecting or affected by Work of this Section.
- B. Ensure base aggregate has been installed and compacted in accordance with Specifications.
- C. At Concrete to Receive Synthetic Track Surfacing: Coordinate installation with synthetic surfacing installer. Review products and installation procedures to ensure finished concrete is compatible with synthetic track surface material and installation.

1.7 MOCK-UP

- A. Construct sample of typical exterior concrete slab showing surface finish.
 1. Size: 2 feet x 2 feet minimum.
 2. Locate to allow for Owner's Authorized Representative to review mock up.
- B. Accepted mock-up panel is considered basis of quality for the finished work. Keep mock-up exposed to view for duration of concrete work.

1.8 TESTS

- A. Sampling and testing will be done by an independent testing laboratory selected and paid for by the Owner. Cooperate fully in taking of test samples. See Section 014500 - Quality Control.

1.9 REVIEWS

- A. Notify Owner's Authorized Representative at least 48 hours in advance for review of formwork prior to placing concrete. Mark score joint locations on the formwork.

PART 2 PRODUCTS

2.1 FORMWORK

- A. Formwork Design and Construction: Comply with guidelines of ACI 347 to provide formwork that will produce concrete complying with tolerances of ACI 117.
- B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
 - 1. Form Facing for Exposed Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
 - 2. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
 - 3. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

2.2 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M Grade 60 (420).
 - 1. Type: Deformed billet-steel bars.
 - 2. Finish: Unfinished.
- B. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gage.
 - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.

2.3 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type I - Normal Portland type.
 - 1. Acquire all cement for entire project from same source.
 - 2. Color: Gray.
- B. Fine and Coarse Aggregates: ASTM C 33.
 - 1. Washed clean and free of deleterious substances.
- C. Fly Ash: ASTM C618, Class C or F.
- D. Calcined Pozzolan: ASTM C618, Class N.
- E. Water: Clean and not detrimental to concrete.

2.4 ADMIXTURES

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- B. Air Entrainment Admixture: ASTM C260.
- C. Water Reducing Admixture: ASTM C494/C494M Type A.

2.5 ACCESSORY MATERIALS

- A. Underslab Vapor Retarder: Multi-layer, fabric-, cord-, grid-, or aluminum-reinforced polyethylene or equivalent, 10mm thick, complying with ASTM E 1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. Single ply polyethylene is prohibited.
 - 1. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations in vapor retarder.
 - 2. Products:
 - a. Griffolyn Type 105 by REEF Industries..
 - b. Substitutions: See Section 016000 - Product Requirements.
- B. Chemical Hardener: Fluosilicate solution designed for densification of cured concrete slabs.
- C. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
 - 1. Minimum Compressive Strength at 48 Hours: 2,400 psi.
 - 2. Minimum Compressive Strength at 28 Days: 7,000 psi.
 - 3. Flowable Products:
 - a. SIKA Chemical Corp..
 - b. Master Builders.
 - c. Anti-Hydro Company.
 - d. FEB America Inc.
 - e. Substitutions: See Section 016000 - Product Requirements.
- D. Moisture-Retaining Cover: ASTM C171; regular curing paper, white curing paper, clear polyethylene, white polyethylene, or white burlap-polyethylene sheet.
 - 1. Acceptable Products:
 - a. HydraCure S16 by PNA Construction Technologies; www.pna-inc.com.
 - b. Substitutions: See Section 016000 - Product Requirements.
- E. Liquid Curing Compound: ASTM C 309, Type 2, white pigmented. Do not apply curing compound to concrete which is to receive synthetic track surface.
- F. Rubber Cushion @ shot put curb (Alternate #4): 23-3/4 x 23-3/4x3/4 inch thick rubber cushion, cut to fit design; color: black.
 - 1. Acceptable Products:

- a. Cushion Walk Paver by Dinoflex MFG. Ltd.
- b. Substitutions: See Section 01 60 00 - Product Requirements.

- G. Rubber Cushion Adhesive: Suitable for exterior applications and compatible with Rubber Cushion to permanently adhere to concrete surface.

2.6 BONDING AND JOINTING PRODUCTS

- A. Epoxy Bonding System: Complying with ASTM C 881/C 881M and of Type required for specific application.
- B. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with minimum 1 inch diameter holes for conduit or rebars to pass through at 6 inches on center; ribbed steel stakes for setting.
 - 1. Provide removable plastic cap strip that forms wedge-shaped joint for sealant installation.
 - 2. Height: To suit slab thickness.
 - 3. Do not use at concrete to receive synthetic track surfacing.
- C. Joint Filler: Preformed; non-extruding bituminous type (ASTM D1751) or sponge rubber cork (ASTM D1752). Do not use at concrete to receive synthetic track surfacing.
 - 1. Thickness: 1/2 inch.
 - 2. Depth: Full depth of slab less 3/4 inch.
 - 3. Substitutions: See Section 016000 - Product Requirements.
- D. Joint Sealing Compound: Sonneborn Sonoclastic Paving Joint Sealant polyurethane sealant by BASF. Do not use at concrete to receive synthetic track surfacing.
 - 1. Substitutions: See Section 016000 - Product Requirements.

2.7 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
 - 1. For trial mixtures method, employ independent testing agency acceptable to Owner's Representative for preparing and reporting proposed mix designs.
- C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer and as approved by the synthetic track manufacturer.
- D. Normal Weight Concrete:
 - 1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 3,500 psi.
 - 2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
 - 3. Calcined Pozzolan Content: Maximum 10 percent of cementitious materials by weight.

4. Water-Cement Ratio: Maximum 40 percent by weight.
5. Total Air Content: 4 percent, determined in accordance with ASTM C173/C173M.
6. Maximum Slump: 3 inches for flatwork; 4 inches for all others.
7. Maximum Aggregate Size: 1 1/2 inch and not larger than 1/5 of narrowest space between forms, 1/3 of slab depth, nor 3/4 of minimum clear space between reinforcing bars.

2.8 MIXING

- A. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify aggregate base is acceptable and compacted to specifications.
- B. Verify lines, levels, and dimensions before proceeding with work of this section.
- C. Verify gradients and elevations are correct.

3.2 PREPARATION

- A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.
- B. Notify Owner's Authorized Representative a minimum of 24 hours prior to commencement of concreting operations.
- C. Verify that forms are clean and free of rust before applying release agent.
- D. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- E. At track and field equipment: Install in-ground track and field equipment following manufacturer's instructions.
- F. Install vapor barrier at concrete paving under synthetic track surfacing. Install vapor barrier as detailed and following manufacturer's installation instructions. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.
 1. Vapor Retarder Over Granular Fill: Install compactible Aggregate Base before placing vapor retarder as shown on the drawings. Do not use sand.

3.3 FORMING

- A. Place and secure forms to correct location, dimension, profile, and gradient.
- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.4 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- A. Place reinforcement as indicated.
- B. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

3.5 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

3.6 JOINTS

- A. Align curb, gutter, and sidewalk joints.
- B. Place 3/8 inch wide expansion joints at 50 foot intervals and to separate paving from vertical surfaces and other components and in pattern indicated.
 - 1. Form joints with joint filler extending from bottom of pavement to within 1/2 inch of finished surface.
- C. Provide scored joints:
 - 1. As shown on Drawings.

3.7 CONCRETE FINISHING

- A. Concrete Paving to receive synthetic track surfacing: Light broom, texture perpendicular to pavement direction.
- B. Sidewalk Paving: coarse broom with troweled and radiused edge 1/4 inch radius.
- C. Curbs and Gutters: Light broom, texture parallel to pavement direction.

- D. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.

3.8 CURING AND PROTECTION

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Surfaces not receiving synthetic surfacing or throw circles:
 - 1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
 - 2. Final Curing: Begin after initial curing but before surface is dry.
 - a. Moisture-Retaining Cover: Seal in place with waterproof tape or adhesive.
 - b. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.
- D. Surfaces receiving synthetic surfacing and throw circles:
 - 1. Cover surface with Curing Blanket in widest lengths and widths as practical. Lap sides and ends a minimum of 6 inches; seal with waterproof tape. Saturate cover with water and keep wet. Immediately repair any punctures or tears with cover material and waterproof tape.
 - 2. Maintain wet cure for a minimum of 7 days.

3.9 RUBBER CUSHION INSTALLATION AT SHOT PUT CURBS

- A. Install Rubber Cushion as detailed. Place factory edge of material at top of concrete. Trim as necessary.

3.10 TOLERANCES

- A. Maximum Variation of Surface Flatness: 1/8 inch in 10 ft.
- B. Tolerances for Concrete at Track Edges and Concrete to Receive Synthetic Track Surfacing:
 - 1. The finished elevation of installed concrete features at the track events and soccer field edges shall not deviate (tolerance-to-grade) by more than +0 or -1/4 inch (.02 feet) from designated grade elevations when checked by survey. Surface shall also not indicate any deviation more than 1/4 inch in 10 feet in any direction when placed under a 10 foot straight edge.
 - 2. These tolerances are required for the entire length of concrete track curbs/headers (both interior and exterior) and concrete track edges including in ground track and field equipment, slot or trench drains, and the perimeter of the "D" zone.

3. Surface elevations of the items noted above shall be verified by means of a survey, performed by a licensed surveyor, utilizing a maximum grid size spacing of 10 feet along the concrete edges, curbs, and headers. Provide a printed copy of the survey to the Owner's Authorized Representative prior to installation of any of the following improvements: AC Paving, Synthetic Turf, and Synthetic Running Track Surfacing.
4. Remove and replace any concrete elements not in compliance. Provide additional survey documentation and replacement for affected areas until compliance is achieved prior to installing adjacent Work noted above.

3.11 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 014000.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
- D. Compressive Strength Tests: ASTM C39/C39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.
- E. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C 143/C 143M.
- F. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.12 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to Owner's Representative and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Owner's Representative. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Owner's Representative for each individual area.

3.13 PROTECTION

- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.

- B. Do not permit pedestrian or vehicular traffic over pavement for 7 days minimum after finishing.

END OF SECTION

SECTION 116833.43 - TRACK AND FIELD EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. In ground track and field equipment.

1.2 RELATED REQUIREMENTS

- A. Section 033000 - Cast-in-Place Concrete.
- B. Section 321500 - Aggregate Surfacing.
- C. Section 321823.33 - Synthetic Running Track Surface.

1.3 REFERENCE STANDARDS

- A. NCAA Track and Field - Rule 1; latest edition.
- B. Manufacturer's installation procedures.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a meeting one week before starting improvements related to track and field equipment for coordination.
 - 1. Include representatives of Contractor, concrete contractor, and equipment supplier.
 - 2. Notify Owner's Representative at least 2 weeks prior to meeting.

1.5 SUBMITTALS

- A. See Section 013000 - Administrative Requirements.
- B. Action Submittals:
 - 1. Product Data: For all manufactured equipment provide manufacturer's product data showing materials of construction, compliance with specified standards, and installation procedures.
 - 2. Shop Drawings: Detailed scale drawings showing dimensions and installation procedures for in ground track and field equipment.
- C. Informational Submittals:
 - 1. Maintenance Data: Provide manufacturer's recommended maintenance instructions and list of replaceable parts for each equipment item, with address and phone number of source of supply.
 - 2. Manufacturer's Field Report.

3. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Company having experienced foreman and crew with experience installing in ground track and field equipment.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store equipment to project site in accordance with manufacturer's recommendations.
- B. Store materials in a dry, covered area, elevated above grade.

PART 2 PRODUCTS

2.1 TRACK AND FIELD EQUIPMENT

- A. All track and field equipment shall meet, at a minimum, current NCAA specifications.

B. LONG AND TRIPLE JUMP

1. Take Off Board System - Wood: Aluminum tray, steel leveling board, replaceable take off and foul board, and tray lid designed to be flush with the surrounding track surface.
 - a. Model No. 4350 by Gill Athletics.
 - b. Model No. 519-2100 by UCS.
2. Sand Trap Cover: Galvanized steel or aluminum grating each with a perforated rubber mat, securely attached to grating, able to be lifted for access to sand trap.
 - a. Size: 18 x 36 x 1-5/8 inches.
 - b. Model No. 730149 by Gill Athletics.
3. See Section 016000 - Product Requirements for substitutions.

C. POLE VAULT

1. Pole Vault Box: Cast aluminum, powder coated white.
 - a. Model No. 505 by Gill Athletics.
 - b. Model No. 711-1100 by UCS.
2. Provide removable polyurethane plug matching the track surface at each pole vault box.
3. See Section 016000 - Product Requirements for substitutions.

D. STEEPLECHASE WATER JUMP

1. Water Jump Pit Form System and Equipment Assembly: Assembly includes powder coated aluminum pit form, water jump pit cover, adjustable water jump barrier, and water jump barrier seal meeting NCAA requirements.
 - a. Model No. 506-6100 by UCS; www.ucsspirit.com.

- b. Water Jump Barrier Seal: Powder coat black with "SOUTHERN OREGON UNIVERSITY" word mark shown on Drawings. Obtain SOU Graphic Identity Standards from Owner's Representative. provide color Shop Drawing submittal for approval.
 2. See Section 016000 - Product Requirements for substitutions.
- E. SYNTHETIC TURF BOX
 1. In ground electrical/communication box with an open bottom, lid capable of receiving synthetic turf, 2 hand holes, and gaskets to separate infill material from opening.
 - a. Model No. Combox Plus 3500 by Sportsfield Specialties, or approved.
 2. See Section 016000 - Product Requirements for substitutions.
- F. SLOT DRAIN
 1. Polymer concrete slot drain system designed for use in track applications, radiused sections, and inline catch basins.
 2. Approved Product: System 3000 by ACO Sport, or approved.
- G. TRENCH DRAIN
 1. Polymer concrete trench drain system with galvanized steel grate rated for Class C load, heel-proof, and ADA compliant.
 2. Approved Product: K100 KlassikDrain, 4" width, with type 411Q perforated grate, or approved.

PART 3 EXECUTION

3.1 LAYING OUT THE WORK

- A. Stake the location of all track and field equipment for review by Owner's Authorized Representative.

3.2 EXAMINATION

- A. Verify existing conditions. Allow for compliance with manufacturer's installation instructions.
- B. Notify Owner's Authorized Representative of conflicts between manufacturer's installation instructions and Drawings/Details prior to beginning installation.

3.3 INSTALLATION

- A. Install track and field equipment following manufacturer's installation instructions.
- B. Install track and field equipment at locations shown on drawings.
- C. Install the following items to allow for application of synthetic surfacing that achieves a uniform elevation with surrounding track surface.

1. Long/Triple Jump Tray Lid.
 2. Steeplechase Cover.
- D. Sand Trap Cover System: Install per manufacturer's installation instructions.
1. Securely attach rubber mat to grate to lie flat and aligned with each grate section to allow for access to sand trap channel.
 2. Cut sections to fit sand trap channel.
- E. Provide polyurethane plug at pole vault box.
- F. Install Synthetic Turf Box for installation of synthetic turf that achieves uniform elevation with surrounding synthetic turf.

3.4 FIELD QUALITY CONTROL

- A. Obtain the services of the equipment manufacturer's field representative to review the finished installation for compliance with specified requirements and with design criteria to the extent known to the Contractor; submit report of field review.
- B. Repair or replace rejected work until compliance is achieved.

3.5 CLEANING

- A. Restore adjacent existing areas that have been damaged from the construction.
- B. Remove excess and waste material and dispose of off-site in accordance with requirements of authorities having jurisdiction.
- C. Remove debris and excess material from inside in-ground equipment.

3.6 PROTECTION

- A. Protect installed products until Substantial Completion.
- B. Replace damaged products before Substantial Completion.

END OF SECTION

SECTION 260100 - GENERAL ELECTRICAL PROVISIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Description of System.
- B. Coordination Requirements

1.02 CONTRACT CONDITIONS

- A. Work of this Section is bound by General Conditions, Supplementary Conditions, and Division 1 bound herewith in addition to this Specification and accompanying Drawings.
- B. The Drawings and Specifications are complimentary and what is called for by one shall be as binding as if called for by both.
- C. The Contractor shall inspect the job site prior to bidding and become familiarized with existing conditions which will affect the work.
- D. Prior to start of work, obtain "As built," "Record," or other Drawings showing existing conditions or underground utilities.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Comply with requirements herein where other Divisions call for Work under this Division of Specifications. Electrical Work required by other Divisions not shown on Electrical Drawings or specified in this Division of Specification shall be provided by trade or sub-trade requiring Electrical Work.

1.03 QUALITY ASSURANCE

- A. Qualifications of Installers:
 - 1. For actual fabrication, installation and testing of Work of this Section, use only thoroughly trained and experienced personnel familiar with requirements for this Work and with installation recommendations of Manufacturers of specified items.
- B. Design Criteria:
 - 1. Conform Work with conditions shown and specified.
 - 2. Where adjustments or modifications of Work are necessary for fabrication and installation of items, or for resolution of conflicts between items, make such adjustments at no added expense to Owner.
 - 3. Submit adjustments or modifications of Work affecting functional or aesthetic design of Work to Architect for review.
- C. Select equipment to meet design conditions stated. Contractor is responsible for meeting technical data and performance requirements of system.
- D. Satisfy requirements of regulatory agencies or codes having jurisdiction over project. Provide U.L. labels for all equipment falling under testing capabilities of U.L.

- E. Procure licenses and permits, and pay fees, deposits, assessments and tax charges required for Electrical Work.
- F. Arrange for and pay for inspections and tests required by codes and ordinances during construction.

1.04 REFERENCE STANDARDS

- A. The following specifications and standards, except as hereinafter modified, are incorporated herein by reference and from a part of this specification to the extent indicated by the references thereto. Except where a specific date is given, the issue in effect (including amendments, addenda, revisions, supplements, and errata) on the date of Invitation for Bids shall be applicable. In text such specifications and standards are referred to by basic designation only.
 - 1. Underwriters Laboratories (UL).
 - 2. National Fire Protection Association (NFPA), Specifically:
 - a. NFPA 70 - National Electric Code.
 - 3. National Electrical Safety Code.
 - 4. National Electrical Manufacturer's Association (NEMA).
 - 5. American National Standards Institute (ANSI).
 - 6. Occupational Safety and Health Administration (OSHA).
 - 7. City, County, and State Codes and Ordinances.

1.05 SUBMITTALS

- A. Provide shop drawings and product data for the Work of this Division.
- B. Submittal material sent by facsimile machine will not be accepted.
- C. Provide product data for materials and equipment as required by individual sections.
- D. Provide Shop Drawings for materials and equipment as required by individual sections.

1.06 SUBSTITUTIONS

- A. Substitution requests will not be considered unless they are submitted in writing. Requests shall include substitution request form and be submitted as outlined in Division 1.
- B. Products specified herein are so specified to establish a minimum level of product quality. Except where indicated that no substitutions are allowable, equivalent quality products may be submitted to the Architect for approval.
- C. Substitution requests will not be considered unless they include the following:
 - 1. Model numbers of proposed substitutions.
 - 2. Options which are required to make the proposed substitution comply with Specifications.
 - 3. Summary of modifications of the Work which are required to accommodate the proposed substitution.

1.07 OPERATION AND MAINTENANCE MANUALS, INSTRUCTION AND TRAINING

- A. Manual:
 - 1. Provide in accordance with Division 1. Scope: Following installation of electrical equipment, and prior to acceptance of Electrical Work, prepare manuals describing operations, servicing, and maintenance requirements of electrical equipment and systems

installed.

2. Equipment described in manual:
 - a. Equipment listed under "Submittals."
 - b. Other auxiliary miscellaneous systems.
3. Information contained in manual:
 - a. Catalog data on each item including complete parts lists, catalog numbers, maintenance information and wiring diagrams.
 - b. Service organizations for equipment.
 - c. Manufacturer's recommended servicing instructions.
 - d. Diagrams complete for each system installed.
4. Presentation:
 - a. Provide information on neat, clean 8-1/2 inch x 11 inch sheets.
 - b. Provide drawings, accordion folded to letter size.
 - c. Divide manual into chapters which follow section sequence of Specifications of this Division.
5. Cover:
 - a. Enclose each manual in hardboard post-type binder.
 - b. Imprint front of binder with following:
 - 1) "Electrical Equipment."
 - 2) Name of Owner.
 - 3) Year completed.
 - 4) Names of Architect, Engineer and Contractor.
 - c. Imprint outside end cover of binder with following:
 - 1) "Electrical Equipment."
 - 2) Name of building.
 - 3) Name of Owner.
 - 4) Year of completion of building.

B. Instruction and Training:

1. Contractor responsibilities:
 - a. Train Owner personnel in operation and maintenance of all installed electrical equipment and systems.
 - b. Submit proposed scope of training materials and instruction schedule to Architect for review and approval 30 days prior to scheduled completion of building.
 - c. Arrange mutually agreeable dates for training with Owner.
 - d. Include classroom and on-the-job instruction by qualified installation and maintenance personnel.

1.08 RECORD DRAWINGS

- A. Provide in accordance with Division 1.

1.09 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Make inspection of equipment for possible damage at time of delivery to avoid future delays in construction due to replacement or repair.
- B. Protect against damage, theft and deterioration.
1. Store in original factory containers.
 2. Do not expose equipment to dust, powder, abrasive, wetness, excessive dampness or temperature extremes, unless equipment approved for that use.

- C. In event of damage, immediately make all repairs and/or replacements necessary to approval of Architect, at no additional expense to Owner.

1.10 PROTECTION

- A. Suitably protect any unfinished Work from potential physical damage.
- B. Do not leave unfinished Work unattended, which would pose life safety hazard.
- C. Protect other Work against damage and discoloration caused by Work of this Section.

1.11 COORDINATION

- A. Provide coordination for the Work of this Division in accordance with Division 1.
- B. Report any discrepancies discovered between existing job conditions and Work to be installed. Fully resolve such discrepancies prior to continuation of work.
- C. Coordinate sequencing of equipment installation and energizing with other trades.
- D. Consult Architect prior to installing equipment in area which obviously exceeds, or will exceed, ambient operating requirements such as for temperature and humidity.

1.12 WARRANTY

- A. Warrant all Work included in this Specification for period of one year from date of substantial completion, under provisions of Division 1.
- B. During warranty period, remedy without delay or expense to Owner any defects providing, in judgment of Engineer, that such defects are not result of misuse or abuse on part of Owner.
- C. Warrant that all equipment and installations are in compliance with OSHA regulations.

PART 2 - PRODUCTS

2.01 MATERIAL

- A. Provide new material and equipment items that are standard products of Manufacturers regularly engaged in production of such materials and equipment. Architect reserves right to reject items not in accordance with Specifications.
- B. For each type of equipment, use same manufacturer throughout.
- C. Provide corrosion protection for ferrous metalwork exposed to weather by hot dip galvanizing, or factory painted finish suitable for outdoor installations.
- D. Verify all materials are acceptable to Authority having jurisdiction, as suitable for the use intended.

PART 3 - EXECUTION

3.01 COMPLETION

- A. Complete each system as shown or specified herein and place in operation, except where only roughing-in or partial systems are called for.
- B. Outlets or equipment shown on the plans, with no supply conduit or conductors indicated, shall be completed in the same methods and manner as similar or like outlets or equipment shown on the drawings.

3.02 SCHEDULING OF WORK

- A. Schedule Work with all other Contractors to maintain job progress schedule, and avoid conflicts in installation of Work by various trades.
- B. Coordinate with General Contractor to provide adequate access for installing large equipment.

3.03 EXCAVATION

- A. Contact utilities before starting any excavation to locate underground services on site or in adjacent streets.
- B. Locate and protect any existing underground services.
- C. Repair any services damaged.

3.04 TRENCHING AND BACKFILLING

- A. See Division 31.
- B. Provide trenching and backfilling to depth required for underground conduit, per NEC and/or Utility requirements, 36 inches minimum.
- C. Backfilling prior to inspection of installation by Architect's representative and serving Utility not permitted.
- D. Minimum backfill requirements:
 - 1. Raceway runs beneath areas to be paved and beneath sidewalks.
 - a. Use 1/4 inch to 1 inch diameter, crushed or clean round river rock.
 - 2. Underground raceway runs at all other locations.
 - a. Backfill in compacted layers not exceeding 6 inches in depth.
 - b. Use sand or "clean" earth free from rock larger than 1 inch diameter and debris.
 - 3. Provide one continuous #14 copper conductor as a tracing conductor for locating the conduits in the future. Install the tracing conductor at the center line of the upper-most conduit in the trench. Install one tracing conductor in each conduit trench for each 4-foot trench width and one for each additional trench width of less than 4 feet wide. (i.e., provide one for a trench up to 4-feet wide, two for 5-8 feet wide, three for 9-12 feet wide, etc.). Provide a 6 foot coil of tracing wire at each end of the trench clearly marked on an identification tag: "TRENCH TRACING CONDUCTOR". Also include the tracing conductor destination and a description of the conduits/conductors in the trench. The identification tag shall be machine generated text, enclosed in a waterproof clear plastic seal, and attached to the coil by means of a tywrap.

- E. Trenching and Backfilling for Services:
 - 1. Coordinate with all utilities for joint trench service Work.
 - 2. Uncover existing utilities by hand digging only.
 - 3. Size to accommodate all utility service conduits and accessories.
 - 4. See joint trench detail on drawings for additional information.
- F. Power digging only in direction away from existing facilities.
- G. Route trenching in manner to avoid weakening footings.
- H. Restore, to Architect's satisfaction at no additional expense, any sidewalks, landscaping, or other existing structure damaged due to excavation.

3.05 SLEEVES AND OPENINGS

- A. Provide through existing electrical enclosure walls for Electrical Work.
- B. Coordinate with General Contractor and other trades involved.
- C. Patch and seal around all openings, both sides of material penetrated where possible.

3.06 CUTTING AND PATCHING

- A. Inform General Contractor of all concrete cutting required for installation of Work.

3.07 MANUFACTURER'S INSTALLATION DETAILS

- A. Follow exactly, where available.
- B. Provide special wiring or fittings as required.

3.08 ACCESSIBILITY OF EQUIPMENT

- A. Install equipment accessible for operation, maintenance or repair as required by NEC.
- B. Inaccessible Equipment:
 - 1. Where the Owner's representative determines that the Contractor has installed equipment not conveniently accessible for operation and maintenance, equipment shall be removed and reinstalled as directed, at no additional cost to the Owner.
 - 2. "Conveniently accessible" is defined as being capable of being reached without the use of ladders, or without climbing or crawling under or over obstacles.

3.09 COORDINATION

- A. Coordinate installation of field lighting system with successful field lighting vendor.
- B. Coordinate conduit, junction boxes, supporting equipment, etc. Affecting normal operating and maintenance activities related to mechanical equipment, piping, valves, accessories, etc.

3.10 TESTS

- A. Fully test and adjust equipment installed under this specifications prior to Owner's personnel instruction. Each system shall be left in proper operation free of faults, shorts or unintentional grounds.

- B. Do not test or operate for any other purpose, such as checking motor rotation, any item of equipment until fully checked in accordance with Manufacturer's instructions.
- C. Demonstrate essential features of the field lighting and site lighting control system.
- D. Submit to engineer certificate of completed demonstration countersigned by Architect.

3.11 CLEANING OF ELECTRICAL INSTALLATION

- A. See Division 1.
- B. Prior to acceptance of building, thoroughly clean all exposed portions of electrical installation.
- C. Remove all nonessential labels and traces of foreign substances.
- D. Use only cleaning solution approved by Manufacturer.
- E. Avoid any damage to finished surfaces.

END OF SECTION

SECTION 260519 - WIRE AND CABLE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Building wire.
- B. Cable.
- C. Wiring connections and terminations.

1.02 SUBMITTALS

- A. Submit shop drawings and product data under the provisions of Section 260100.
- B. Submit manufacturer's instructions.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - WIRE

- A. Rome.
- B. Excell
- C. General Cable
- D. Southwire
- E. General Electric
- F. Anaconda - Erickson
- G. Substitutions: Under provisions of Section 260100.

2.02 BUILDING WIRE

- A. Feeders and Branch Circuit:
 - 1. Copper conductor.
 - 2. 600 volt insulation.
 - 3. THHN/THWN.
 - 4. Not less than 98% conductivity.
 - 5. Stranded conductor.
- B. Control Circuits:
 - 1. Copper.
 - 2. Stranded conductor
 - 3. 600 volt insulation, THHN/THWN.

C. Color Coding:

1. 120/208 Volt System:
 - a. A phase - black.
 - b. B phase - red.
 - c. C phase - blue.
 - d. Neutral - white.
 - e. Travelers - purple.
 - f. Switch leg - pink.
 - g. Ground - green.
2. 277/480 Volt System:
 - a. A phase - brown.
 - b. B phase - orange.
 - c. C phase - yellow.
 - d. Neutral – white or gray with identifying stripe.
 - e. Travelers - purple.
 - f. Switch leg - pink.
 - g. Ground – green

PART 3 - EXECUTION

3.01 GENERAL WIRING METHODS

- A. Place an equal number of conductors for each phase of a circuit in same raceway or cable.
- B. Splice only in junction or outlet boxes.
- C. Neatly train and lace wiring inside boxes, equipment, and panelboards using cable ties.
Manufacturer: T&B Ty-Rap, or approved.

3.02 WIRING INSTALLATION IN RACEWAYS

- A. Pull all conductors into a raceway at the same time. Thoroughly swab raceway system before installing conductors.
- B. Use UL listed wire pulling lubricant for pulling 4 AWG and larger wires. Polywater or Clear Aqua Gel.
- C. Install wire in raceway after interior of building has been physically protected from the weather and all mechanical work likely to injure conductors has been completed.
- D. Equipment Grounding Conductors:
 1. Provide a separate, insulated equipment grounding conductor in feeder and receptacle branch circuits.
 2. Terminate each end on a grounding lug, bus, or bushing.
 3. Provide individual ground wire in flexible conduit and non-metallic raceways.

3.03 WIRING CONNECTIONS AND TERMINATIONS

- A. #8 Copper Wire and Smaller:
 - 1. Use solderless spring connectors with insulating covers.
 - 2. Manufacturer: Buchanan, Ideal, Scotch, or approved.
 - 3. Connection by means of wire binding screws or studs and nuts having upturned lugs or equivalent shall be permitted for No. 10 solid or smaller conductors only.
- B. #6 Copper Wire and Larger:
 - 1. Use pressure lug terminals and splicing connectors or compression lug terminals and connectors rated for the material of the terminals and conductor and properly installed.
 - 2. Manufacturer: Burndy, IlSCO, OZ/Gedney, or approved.
 - 3. Cover uninsulated conductors and connectors with an insulating device suitable for the purpose and 150 percent of the insulation value of conductors.
- C. Thoroughly clean wires before installing lugs and connectors.
- D. Make splices, taps, and terminations to carry full ampacity of conductors without perceptible temperature rise.
- E. Terminate spare conductors with electrical tape.

3.04 FIELD QUALITY CONTROL

- A. Inspect wire and cable for physical damage and proper connection.
- B. Torque test conductor connections and terminations to manufacturer's recommended values.
- C. Perform continuity test on all power and equipment branch circuit conductors. Verify proper phasing connections.

END OF SECTION

SECTION 260530 - CONDUIT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Rigid metal conduit and fittings.
- B. Electrical metallic tubing and fittings.
- C. Non-metallic conduit and fittings.

PART 2 - PRODUCTS

2.01 RIGID STEEL CONDUIT

- A. Standard pipe with screwed joints for electrical raceway use.
- B. Zinc coated by hot dip galvanizing or sherardizing.
- C. Manufacturer: Allied Tube and Conduit, Triangle PWC Inc., Western Tube & Conduit, or approved.

2.02 ELECTRIC METALLIC TUBING (EMT)

- A. Zinc coated by hot dip galvanizing or sherardizing.
- B. Manufacturer: Allied Tube and Conduit, Triangle PWC Inc., or approved.

2.03 PVC (RIGID PLASTIC) CONDUIT

- A. Heavy wall, high impact plastic, Schedule 40 Polyvinyl Chloride.
- B. Manufacturer: Carlon, PW Pipe, Triangle PWC, or approved.

2.04 CONNECTIONS AND FITTINGS

- A. Especially for purpose used.
- B. Same material and finish as raceway.

2.05 UNION JOINTS FOR RIGID STEEL CONDUIT

- A. Split coupling.
- B. Running threads not allowed.
- C. Insulated throat.
- D. Manufacturer: O.Z. Gedney type "SSP," or approved.

2.06 COUPLINGS AND CONNECTORS FOR ELECTRICAL METALLIC TUBING (EMT)

- A. Exterior: Raintight compression type, employing split corrugated ring and tightening nut.

- B. Manufacturer: Appleton, Raco, Thomas & Betts, or approved.
- C. Cast connectors and couplings are not allowed.

2.07 CONDUIT HANGERS AND SUPPORTS

- A. One-hole or two-hole push-on straps or one-hole clamps.
 - 1. Manufacturer: Appleton, Raco, Thomas & Betts, or approved.

PART 3 - EXECUTION

3.01 CONDUIT SIZING AND ARRANGEMENT

- A. Size conduit for Type THW conductors. Minimum conduit size for home runs and backbone conduit system is 3/4 inch. Individual branch circuits from backbone junction boxes to device or fixture locations may be run in 1/2 inch conduit.

3.02 CONDUIT INSTALLATION

- A. Cut conduit square using a saw; de-burr cut ends.
- B. Bring conduit to the shoulder of fittings and couplings and fasten securely.
- C. Use conduit hubs or sealing locknuts for fastening conduit to cast boxes, and for fastening conduit to sheet metal boxes in damp or wet locations.
- D. Install no more than the equivalent of four 90 degree bends between boxes.
- E. Use conduit bodies to make sharp changes in direction, as around beams.
- F. Use hydraulic one-shot conduit bender or factory elbows for bends in conduit larger than 1-1/4 inch size.
- G. Avoid moisture traps where possible; where unavoidable, provide junction box with drain fitting at conduit low point.
- H. Avoid condensation between moist warm locations and cool locations by blocking air flow in conduit with "Duct Seal" or similar material.
- I. Thoroughly clean interior of conduits.
- J. Use suitable conduit caps to protect installed conduit against entrance of dirt and moisture.
- K. Provide No. 12 AWG insulated conductor or suitable pull string in empty conduit, except sleeves and nipples.
- L. Install expansion joints where conduit crosses building expansion or seismic joints.

3.03 RIGID PVC

- A. Use limited to underground installations. PVC may not be used above grade.
- B. Schedule 40.
- C. Provide ground wire full length of circuit.

- D. Use rigid steel factory elbows for conduit sweeps and ells.
- E. Wipe plastic conduit clean and dry before joining. Apply full even coat of cement to entire area that will be inserted into fitting. Let joint cure for 20 minutes minimum.
- F. 1/2" and 3/4" PVC conduit risers shall terminate in a coupling flush with grade. PVC above grade or slab not permitted.

3.04 RIGID STEEL CONDUIT

- A. Exposed indoor runs where subject to damage up to 8 feet above finished floor.
- B. Exposed outdoor locations including area under grandstand.

3.05 UNDERGROUND DUCT BANK INSTALLATION

- A. Install top of duct bank minimum 24 inches below finished grade.
- B. Install conduit with minimum grade of 3 inches per 100 feet.
- C. Terminate conduit in end bell at manhole entries.
- D. Stagger conduit joints in concrete encasement 6 inches minimum vertically.
- E. Use suitable separators and chairs installed not greater than 4 feet on centers. Band conduit together with suitable banding devices. Securely anchor conduit to prevent movement during concrete placement.
- F. Conduit stub-ups to equipment shall be rigid steel.
- G. Rigid steel shall extend a minimum 10 feet outside building foundation line and 5 feet outside outdoor concrete pads.
- H. Terminate conduit with insulated grounding bushing.
- I. Upon completion of duct bank installation, perform the following:
 - 1. Pull an standard 12" long mandrel, 1/2" smaller than inside duct diameter through each duct.
 - 2. After mandrel has been pulled, a brush with stiff bristles shall be pulled to remove loosened particles.
 - 3. Seal ducts at building entrances and outdoor equipment terminations with moisture resistant non-hardening compound.
- J. Clearances Between Individual Ducts:
 - 1. For Like Services: Not less than 2 inches.
 - 2. For High Voltage and Signal Services: Not less than six inches.
 - 3. For Power / Signal Services and Water: Not less than twelve inches.
 - 4. Provide plastic spacers to maintain clearances.
 - 5. Provide nonferrous tie wires to prevent duct displacement during pouring of concrete. Tie wires shall not act as substitute for spacers.

END OF SECTION

SECTION 260532 - OUTLET, PULL AND JUNCTION BOXES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Pull and junction boxes.

1.02 PROJECT CONDITIONS

- A. Verify Field measurements are as shown on drawings.

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 260100.
- B. Provide product data showing configurations, finishes, dimensions, and manufacturer's instructions.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - PULL BOXES

- A. Quazite.
- B. Substitutions: under provisions of Section 260100.

2.02 PULL BOXES

- A. Polymer concrete pull boxes: As detailed on Drawings.
- B. Concrete polymer cover with skid resistant surface. Embossed label as identified in schedule.
- C. Minimum Dimensions – as indicated in schedule.

2.03 ACCEPTABLE MANUFACTURERS - JUNCTION BOXES

- A. Carson.
- B. Substitutions: under provisions of Section 260100.

2.04 JUNCTION BOXES

- A. Nema 3R, nonmetallic junction boxes mounted inside pull boxes.
- B. Minimum size as noted in pull box schedule.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Provide Nema 3R electrical junction boxes inside pull boxes as scheduled below. Install pull boxes as detailed on Drawings, and provide internal junction boxes as required for splices, taps, wire pulling, equipment connections, and code compliance.
- B. Locate and install junction boxes to allow access. Locate pull boxes per Landscape Architect's Drawings.

3.02 PULL BOX SCHEDULE

LABEL	SIZE	INTERNAL JUNCTION BOXES	COVER LABEL
PB1	24" x 24" x 24"D	12"x12"x12" NEMA 3R Splice Box	POWER
PB2	24" x 24" x 24"D	12" x 12" x 6" NEMA 3R Junction Box	COMMUNICATION
PB3	12" x 24" x 18"D	(2) 6" x 6" x 6" NEMA 3R Junction Boxes	ELECTRICAL
PB4	12" x 24" x 18"D	(2) 6" x 6" x 6" NEMA 3R Junction Boxes	ELECTRICAL

END OF SECTION

SECTION 260553 - ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Nameplates.
- B. Wire and cable markers.
- C. Pull box and junction box identification.
- D. Device plate identification.

1.02 RELATED SECTIONS

- A. Section 262726 - Wiring Devices.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Nameplates:
 - 1. Engraved three-layer laminated plastic.
 - 2. White letters.
 - 3. Black background.
- B. Wire and Cable Markers:
 - 1. Cloth markers split sleeve or tubing type.
- C. Device plate identification:
 - 1. Provide stick on label at all devices indicating panel and circuit number.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Degrease and clean surfaces to receive nameplates.
- B. Install nameplates parallel to equipment lines.
- C. Secure nameplates to equipment fronts using screws or drive rivets.
 - 1. Secure nameplate to inside face of recessed panelboard doors in finished locations.
 - 2. Secure nameplate to inside face of panelboard doors in unfinished locations.
- D. Use stick-on labels for identification of individual wall switch and receptacle cover plates indicating panel and circuit number.

3.02 WIRE IDENTIFICATION

- A. Provide wire markers on each conductor in panelboards, gutters, pull boxes, and at load connection.
- B. Identify with branch circuit or feeder number for power and lighting circuits.
- C. Identify control wire number as indicated on equipment manufacturer's shop drawings.

3.03 NAMEPLATE ENGRAVING SCHEDULE

- A. Identify all electrical distribution and control equipment and disconnect switches at loads served.
- B. Letter Height:
 - 1. 1/8 inch for individual switches and loads served.
 - 2. 1/4 inch for distribution and control equipment identification.
 - 3. 1/8 inch identifying voltage rating and source.

3.04 PULL BOX AND JUNCTION BOX IDENTIFICATION

- A. Identify each junction box with complete system description. Examples:
 - 1. 480 V system.
 - 2. 208 V system.
 - 3. Communication
- B. Method:
 - 1. Stick on labels.
- C. Locations:
 - 1. On outside of box cover where concealed.
 - 2. In exposed box locations, locate on inside of box cover.
 - 3. Identify main pull boxes by number and indicate numbers on record drawings.

END OF ELECTRICAL IDENTIFICATION

SECTION 27 60 01 - EMERGENCY TELEPHONE SYSTEM

PART 1 - GENERAL

1.01 RELATED SECTIONS

- A. Section 26 05 30 Conduit.

1.02 DESCRIPTION

- A. Provide a complete intercommunication system for two way voice communication at emergency call stations.
- B. System shall be interconnected and shall be custom designed to accomplish and comply with the communications operation as called for on the drawings and herein.
- C. The intercommunication network shall be complete with all required components, equipment, and wiring to provide the communications system and perform the functions outlined.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Gaitronics Model 234 Series Free Standing Stanchion with Red Alert Emergency Telephone.

2.02 EQUIPMENT

- A. System Features Shall Include:
 - 1. Freestanding emergency phone tower with concrete base as detailed.
 - 2. Continuously let blue LED indicator light. Light shall flash when emergency call is initiated.
 - 3. Continuously illuminated emergency Phone LED Panel Light.
 - 4. Vandal resistant structure with high gloss corrosion resistant finish.
 - 5. Flush mount single button auto dial emergency phone: Gaitronics Red Alert model 397-001.
 - 6. ADA Compliant.
 - 7. 3/16" inch steel construction. 10" x 10" x 114.75" nominal dimensions.
 - 8. Powder Coated epoxy finish.
- B. System Wire:
 - 1. Provide power and communication wiring in separate conduit per manufacturer's recommendations.
 - 2. Telephone wiring shall terminate on RJ 11 jack inside the enclosure. Use outdoor rated Category 6 cable for telephone wiring.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All wiring installed in conduit.
- B. Systems shall be complete in every detail and installation shall meet all functional requirements.

- C. Shop Drawings shall include complete wiring schematics and details.
- D. Mount pedestal on concrete base as detailed on drawings.
- E. Test category 6 cable for grounds, shorts, continuity of circuit conductors and shields, reversals and transpositions.
- F. Category 6 cable shall be rated for underground installation.

3.02 TESTING AND DEMONSTRATION

- A. Submit equipment catalog information and test reports for conductors in O & M manuals.
- B. Demonstrate system operation to Owner at project closeout.

3.03 CONCRETE BASE INSTALLATION

- A. Install pedestal base per details on drawings.
- B. See Division 3 for concrete requirements.
- C. Use anchor bolts as recommended by Call station manufacturer. Obtain template from manufacturer for anchor bolt placement.

END OF SECTION

SECTION 311000 - SITE CLEARING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Clearing and protection of vegetation.
- B. Removal of existing debris.
- C. Site Stripping and Stockpiling.

1.2 RELATED REQUIREMENTS

- A. Section 015000 - Temporary Facilities and Controls:
- B. Section 024100 - Demolition.
- C. Section 312500 - Erosion and Sediment Control.

1.3 PROTECTION

- A. Prior to construction, conduct site review with Owner's Representative to confirm vegetation to remain and protect and vegetation to be removed.
- B. Protect existing improvements and growth in areas to remain undisturbed until completion of project. Leave in as good condition as found.
- C. Maintain benchmarks, monuments, and other reference points. If disturbed or destroyed replace as directed.
- D. Contract utility locate service prior to Work. Known utilities are shown on Drawings. Protect active utilities and maintain in continuous operation during site preparation and construction. Repair damage to known and located utilities at Contractor's expense. Repair of damage to unknown utilities will be by Owner.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.1 SITE CLEARING AND STOCKPILING

- A. Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

- B. Mark cut lines and notify Owner's Representative for approval prior to cutting.
- C. Strip and dispose of all existing lawn sod to 4" depth where new pavements and synthetic turf is installed.
- D. Stockpile Topsoil for reuse. Coordinate location with Owner's Representative. Implement Erosion Control measures as required.

3.2 EXISTING UTILITIES AND BUILT ELEMENTS

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Protect existing structures and other elements that are not to be removed.

3.3 VEGETATION

- A. Scope: Remove trees, shrubs, brush, and stumps shown to be removed on Drawings.
- B. Install highly visible fences at least 6 feet high to prevent inadvertent damage to vegetation to remain:
 - 1. Around trees to remain within vegetation removal limits; locate no closer to tree than at the drip line.
- C. Vegetation Removed: Do not burn, bury, landfill, or leave on site, except as indicated.
 - 1. Existing Stumps: Treat as specified for other vegetation removed; remove stumps and roots to depth of 18 inches.
 - 2. Fill holes left by removal of stumps and roots, using suitable fill material, with top surface neat in appearance and smooth enough not to constitute a hazard to pedestrians.
- D. Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to Owner.

3.4 DEBRIS

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 31 2213

ROUGH GRADING

PART 1 - GENERAL

1.1 SUMMARY

- A. Includes But Not Limited To:
 - 1. Perform rough grading work required to prepare site for construction as described in Contract Documents.
- B. Related Requirements:
 - 1. Section 31 1000: 'Site Clearing'
 - 2. Section 31 2213: 'Rough Grading' for rough grading and preparation of natural soil subgrades below fill and aggregate base material.
 - 3. Section 31 2316: 'Excavation'.
 - 4. Section 31 2500: 'Erosion and Sedimentation control'

1.2 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conference:
 - 1. Participate in pre-installation conference.
 - 2. In addition to agenda items specified in Section 01 3000, review following:
 - a. Identify benchmark to be used in establishing grades and review Contract Document requirements for grades, fill materials, and topsoil.
 - b. Examine site to pre-plan procedures for making cuts, placing fills, and other necessary work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Materials used for fill shall be as specified for backfill in Section 31 2323 'Fill'.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification Of Conditions:
 - 1. Verify elevations of rough grading are correct before compacted fill, fine grading, aggregate base or landscape grading are placed.

3.2 PREPARATION

- A. Protection Of In-Place Conditions:
 - 1. When existing grade around existing plants to remain is higher than new finish grade, perform regrading by hand.
 - 2. Do not expose or damage shrub or tree roots.
- B. Surface Preparation:
 - 1. Before making cuts, remove topsoil over areas to be cut and filled that were not previously removed by stripping.

3.3 PERFORMANCE

- A. Subgrade (Natural Soils):
 - 1. Subgrade beneath compacted fill or aggregate base under asphalt or concrete paving shall be constructed smooth and even.
- B. Special Techniques:
 - 1. Compact fills as specified in Section 31 2323 'Fill'.
 - 2. If soft spots, water, or other unusual and unforeseen conditions affecting grading requirements are encountered, stop work and notify Owner's Representative.
- C. Tolerances:
 - 1. Maximum variation from required grades shall be 1/10 of one foot (28 mm).

END OF SECTION

SECTION 31 2316

EXCAVATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Includes But Not Limited To:
 - 1. Perform Project excavating and trenching as described in Contract Documents, except as specified below.
 - 2. Procedure and quality for excavating and trenching performed on Project under other Sections unless specifically specified otherwise.

- B. Related Requirements:
 - 1. Section 31 1000: 'Site Clearing'.
 - 2. Section 31 2213: 'Rough Grading' for rough grading and preparation of natural soil subgrades below fill and aggregate base materials.
 - 3. Section 31 2323: 'Fill' for compaction procedures and tolerances for base.
 - 4. Section 31 2500: 'Erosion and Sedimentation control'
 - 5. Performance of excavating inside and outside of building required for electrical and mechanical work is responsibility of respective Section doing work unless arranged differently by Contractor.

1.2 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conference:
 - 1. Participate in pre-installation conference.
 - 2. In addition to agenda items, review following:
 - a. Review protection of existing utilities requirements.

PART 2 - PRODUCTS: Not Used

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification Of Conditions:
 - 1. Carefully examine site and available information to determine type soil to be encountered.
 - 2. Discuss problems with Architect before proceeding with work.

3.2 PREPARATION

- A. Protection of Existing Utilities:
 - 1. Protect existing utilities identified in Contract Documents during excavation.
 - 2. If existing utility lines not identified in Contract Documents are encountered, contact Architect before proceeding.

3.3 PERFORMANCE

- A. Interface With Other Work:
 - 1. Pavement And Miscellaneous Cast-In-Place Concrete:
 - a. Excavate as necessary for proper placement and forming of concrete site elements and pavement structure. Remove vegetation and deleterious material and remove from site.
 - b. Backfill over-excavated areas with compacted base material specified in Section 31 2323.
 - c. Remove and replace exposed material that becomes soft or unstable.
 - 2. Utility Trenches:
 - a. Unless otherwise indicated, excavation shall be open cut. Short sections of trench may be tunneled if pipe or duct can be safely and properly installed and backfill can be properly tamped in tunnel sections and if approved by Architect.
 - b. Excavate to proper alignment, depth, and grade. Excavate to sufficient width to allow adequate space for proper installation and inspection of utility piping.
 - c. If trenches are excavated deeper than required, backfill until trench bottom is proper depth with properly compacted native material.
 - d. Pipe 4 Inches (100 mm) In Diameter Or Larger:
 - 1) Grade bottom of trenches to provide uniform bearing and support for each section of pipe on undisturbed soil at every point along its length.
 - 2) Except where rock is encountered, take care not to excavate below depths indicated.
 - a) Where rock excavations are required, excavate rock with minimum over-depth of 4 inches (100 mm) below required trench depths.
 - b) Backfill over-depths in rock excavation and unauthorized over-depths with loose, granular, moist earth, thoroughly compacted.
 - 3) Whenever wet or unstable soil incapable of properly supporting pipe, as determined by Architect, occurs in bottom of trench, remove soil to depth required and backfill trench to proper grade with coarse sand, fine gravel, or other suitable material acceptable to Architect.
 - 3. If unusual excavating conditions are encountered, stop work and notify Architect.

3.4 REPAIR / RESTORATION

- A. Repair damage to other portions of the Work resulting from work of this Section at no additional cost to Owner. On new work, arrange for damage to be repaired by original installer.

3.5 CLEANING

- A. Debris and material not necessary for Project are property of Contractor and are to be removed before completion of Project. However, if material necessary for Project is hauled away, replace with specified fill / backfill material.

END OF SECTION

SECTION 31 2323

FILL

PART 1 - GENERAL

1.1 SUMMARY

- A. Includes But Not Limited To:
 - 1. Perform Project backfilling and compacting as described in Contract Documents, except as specified below.
 - 2. Procedure and quality for backfilling and compacting performed on Project under other Sections unless specifically specified otherwise.

- B. Related Requirements:
 - 1. Section 01 4000: 'Quality Requirements' for administrative and procedural requirements for quality assurance and quality control.
 - 2. Section 31 1000: 'Site Clearing'.
 - 3. Section 31 2213: 'Rough Grading' for grading and preparation of natural soil subgrades below fill and aggregate base materials.
 - 4. Section 31 2316: 'Excavation'.
 - 5. Section 32 9000: 'Planting' for topsoil evaluation and placement required for topsoil grading.
 - 6. Performance of backfilling and compacting inside and outside of building required for electrical and mechanical work is responsibility of respective Section doing work unless arranged differently by Contractor.

1.2 REFERENCES

- A. Association Publications:
 - 1. American Concrete Institute, Farmington Hills, MI www.concrete.org. Abstracts of ACI Periodicals and Publications.
 - a. ACI 229R-99, *Controlled Low-Strength Materials* (Reapproved 2005).
 - 2. Council of American Structural Engineers. CASE Form 101: *Statement of Special Inspections*. Washington, DC: CASE, 2001. (c/o American Council of Engineering Companies, 1015 15th St., NW, Washington, DC 20005; 202-347-7474; www.acec.org).
 - 3. International Code Council (IBC):
 - a. IBC Chapter 17, 'Structural Tests and Special Inspections'.

- B. Definitions (Following are specifically referenced for testing):
 - 1. Accreditation: Process in which certification of competency, authority, or credibility is presented. Verify that laboratories have an appropriate quality management system and can properly perform certain test methods (e.g., ANSI, ASTM, and ISO test methods) and calibration parameters according to their scopes of accreditation.
 - 2. Approved: To authorize, endorse, validate, confirm, or agree to.
 - 3. Field Quality Control: Testing, Inspections, Special Testing and Special Inspections to assure compliance to Contract Documents.
 - 4. Inspection/Special Inspection: Inspection of materials, installation, fabrication, erection or placement of components and connections requiring special expertise to ensure compliance with approved construction documents and referenced standards:
 - a. Inspection: Not required by code provisions but may be required by Contract Documents.
 - b. Special Inspection: Required by code provisions and by Contract Documents.
 - c. Inspection-Continuous: Full-time observation of the Work requiring inspection by approved inspector who is present in area where the Work is being performed.

- d. Inspection-Periodic: Part-time or intermittent observation of the Work requiring inspection by approved inspector who is present in area where the Work has been or is being performed and at completion of the Work.
 5. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform particular construction operation, including installation, erection, application, and similar operations.
 6. Observation: Visual observation of building / site elements or structural system by registered design professional for general conformance to approved construction documents at significant construction stages and at completion. Observation does not include or waive responsibility for performing inspections or special inspections.
 7. Owner's Representative: Owner's Designated Representative (Project Manager or Facilities Manager) who will have express authority to bind Owner with respect to all matters requiring Owner's approval or authorization.
 8. Preconstruction Testing: Tests and inspections that are performed specifically for Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
 9. Product Testing: Tests and inspections that are performed by testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
 10. Relative Compaction: Ratio of field dry density as determined by ASTM D6938 or ASTM D2216, and laboratory maximum dry density as determined by ASTM D698 or ASTM D1557.
 11. Quality Assurance: Testing, Inspections, Special Testing and Special Inspections provided for by Owner.
 12. Quality Control: Testing, Inspections, Special Testing and Special Inspections provided for by Contractor.
 13. Service Provider: Agency or firm qualified to perform required tests and inspections.
 14. Source Quality Control Testing: Tests and inspections that are performed at source, i.e., plant, mill, factory, or shop.
 15. Special Inspection: See Inspection.
 16. Special Inspector: Certified individual or firm that implements special inspection program for project.
 17. Special Test: See Test.
 18. Test/Special Test: Field or laboratory tests to determine characteristics and quality of building materials and workmanship.
 - a. Test: Not required by code provisions but may be required by Contract Documents.
 - b. Special Test: Required by code provisions and by Contract Documents.
 19. Testing Agency: Entity engaged to perform specific tests, inspections, or both.
 20. Testing Agency Laboratory: Agency or firm qualified to perform field and laboratory tests to determine characteristics and quality of materials and workmanship.
 21. Verification: Act of reviewing, inspecting, testing, etc. to establish and document that product, service, or system meets regulatory, standard, or specification requirements.
- C. Reference Standards:
1. ASTM International (Following are specifically referenced for fill and aggregate base testing):
 - a. ASTM D698-12, 'Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft³ (600 kN-m/m³))'.
 - b. ASTM D1556-07, 'Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method'.
 - c. ASTM D1557-12, 'Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))'.
 - d. ASTM D2167-08, 'Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method'.
 - e. ASTM D2216-10, 'Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass'.
 - f. ASTM D2487-11, 'Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)'.
 - g. ASTM D3666-11, 'Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials'.

- h. ASTM D3740-12a, 'Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction'.
- i. ASTM D6938-10, 'Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)'.
- j. ASTM E329-13a: 'Standard Specification for Agencies Engaged in Construction Inspection and/or Testing'.
- k. ASTM E543-13, 'Standard Specification for Agencies Performing Nondestructive Testing'.
- l. ASTM E1212-12, 'Standard Practice for Quality Management Systems for Nondestructive Testing Agencies'.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conferences:
 - 1. Participate in pre-installation conference.
 - 2. In addition to agenda items review following:
 - a. Review backfill requirements.
 - b. Review Geotechnical Evaluation Report.
 - c. Review Testing and Inspection administrative requirements and responsibilities and Field Quality Control tests and inspections required of this section.
 - 1) Review frequency of testing and inspections.
- B. Sequencing:
 - 1. Do not backfill against bituminous dampproofing for twenty four (24) hours after application of dampproofing.
 - 2. Before backfilling, show utility and service lines being covered on record set of Drawings. Do not backfill until utilities involved have been tested and approved by Architect and until instructed by Architect.
- C. Scheduling:
 - 1. Notify Testing Agency and Architect seventy two (72) hours minimum before installation of fill / engineered fill to perform proctor and plasticity index tests on proposed fill or subgrade.
 - 2. Notify Testing Agency and Architect twenty four (24) hours minimum before installation of fill / engineered fill to allow inspection.
 - 3. Allow special inspector to review all subgrades and excavations to determine if site has been prepared in accordance with geotechnical report prior to placing any fill (or concrete).
 - 4. Allow inspection and testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after inspections and test results for previously compacted work comply with requirements.

1.4 SUBMITTALS

- A. Closeout Submittals:
 - 1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
 - a. Record Documentation:
 - 1) Testing and Inspection Reports:
 - a) Testing Agency Testing and Inspecting Reports of fill / engineered fill.

1.5 QUALITY ASSURANCE

- A. Testing and Inspection.
 - 1. Owner will provide Testing and Inspection for fill / engineering fill.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Site Material:
 - 1. Existing excavated material on site is suitable for use as fill and backfill to meet Project requirements.
- B. Imported Fill / Backfill:
 - 1. Well graded material conforming to ASTM D2487 free from debris, organic material, frozen materials, brick, lime, concrete, and other material which would prevent adequate performance of backfill.
 - a. Under Building Footprint And Paved Areas: Fill shall comply with soil classification groups GW, GP, GM, SW, SP, or SM. Fill may not contain stones over 6 inches (150 mm) diameter and ninety (90) percent minimum of fill shall be smaller than 1-1/2 inch (38 mm) in any direction.
 - b. Under Landscaped Areas:
 - 1) Fill more than 36 inches (900 mm) below finish grade shall comply with soil classification groups GW, CL, GP, GM, SW, SP, or SM. Fill may not contain stones over 6 inches (150 mm) diameter and ninety (90) percent minimum of fill shall be smaller than 1-1/2 inch (38 mm) in any direction.
 - 2) Fill less than 36 inches (900 mm) below finish grade shall comply with soil classification groups SW, SP, SM, or SC. Fill may not contain stones larger than 1-1/2 inches (38 mm) in any direction and ninety (90) percent minimum of fill shall be smaller than 3/8 inch (4.7 mm) in any direction.
- C. Engineered Fill:
 - 1. 6" of 3/4"- 0" crushed rock and 12" of 4" base rock.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before placing fill, aggregate base, or finish work, prepare existing subgrade as follows:
 - 1. Do not place fill or aggregate base over frozen subgrade.
 - 2. Under Driveways, Parking Areas And Track:
 - a. Scarify subgrade 6 inches (150 mm) deep, moisture content between optimum and four (4) percent over optimum, and mechanically tamp to ninety (90) percent minimum of relative compaction.
 - 3. Under Miscellaneous Concrete Site Elements And Outside Face of Foundation Walls
 - a. Scarify subgrade 6 inches (150 mm) deep, moisture content between optimum and four (4) percent over optimum, and mechanically tamp to ninety (90) percent minimum of relative compaction.
 - 4. Landscape Areas:
 - a. Compact subgrade to eighty five (85) percent relative compaction.

3.2 PERFORMANCE

- A. Interface With Other Work:
 - 1. Section 31 2213: 'Rough Grading' for rough grading and preparation of natural soil subgrades below fill and aggregate base materials.
- B. Fill / Backfill:
 - 1. General:

- a. Around Buildings And Structures: Slope grade away from building as specified in Section 31 2216. Hand backfill when close to building or where damage to building might result.
 - b. Site Utilities:
 - 1) In Landscape Areas: Use backfill consisting of on-site soil.
 - 2) Under Pavement and Concrete Site Elements: Extend excavatable flowable fill / backfill to elevation of subgrade. Do not place aggregate base material until excavatable flowable fill / backfill has cured seventy two (72) hours.
 - c. Do not use puddling or jetting to consolidate fill areas.
2. Compacting:
- a. Fill / Backfill And Aggregate Base:
 - 1) All fill material shall be well-graded granular material with maximum size less than 4 inch (76 mm) and with not more than fifteen (15) percent passing No. 200 sieve.
 - 2) Under Driveways, Parking Areas And Track:
 - a) Place in 8 inch (200 mm) maximum layers, dampen but do not soak, and mechanically tamp to ninety (90) percent minimum of maximum laboratory density as established by ASTM D698 or ASTM D1557.
 - 3) Under Miscellaneous Concrete Site Elements And Outside Face of Foundation Walls:
 - a) Place in 8 inch (200 mm) maximum layers, dampen but do not soak, and mechanically tamp to ninety (90) percent minimum of maximum laboratory density as established by ASTM D698 or ASTM D1557.
 - 4) Utility Trenches:
 - a) Site:
 - (1) Place fill in 12 inch (300 mm) layers and moisture condition to plus or minus two (2) percent of optimum moisture content.
 - (2) Compact fill to ninety (90) percent minimum relative compaction to within 12 inches (300 mm) of finish grade.
 - (3) Compact fill above 12 inches (300 mm) to eighty five (85) percent relative compaction.
 - b) Under Slabs:
 - (1) Under Slabs: Place fill in 6 inch (150 mm) layers, moisture condition to plus or minus two (2) percent of optimum moisture content, and compact to ninety five (95) percent minimum relative compaction to within 4 inches (100 mm) of finish grade.
 - (2) Final 4 inches (100 mm) of fill shall be aggregate base as specified in Section 31 1123.
 - 5) Fill Slopes: Compact by rolling or using sheepsfoot roller.
 - 6) Backfill Under Footings: Not allowed.
 - 7) Landscape Areas:
 - a) Compact fill to eighty five (85) percent minimum relative compaction.
 - 8) Other Backfills: Place other fills in 12 inch (300 mm) layers and compact to 90 percent relative compaction.
 - 9) Loose material from compacted subgrade surface shall be immediately removed before placing compacted fill or aggregate base course.
 - b. Engineered Fill:
 - 1) 6" of 3/4" -0 crushed rock and 12" of 4" base rock.

3.3 REPAIR / RESTORATION

- A. Repair damage to other portions of the Work resulting from work of this Section at no additional cost to Owner. On new work, arrange for damage to be repaired by original installer.

3.4 FIELD QUALITY CONTROL

- A. Field Tests and Inspections:
 1. Fill / Engineered Fill:
 - a. Testing Agency shall provide testing and inspection for fill.

- b. Number of tests may vary at discretion of Architect.
- c. Testing Agency is to provide one (1) moisture-maximum density relationship test for each type of fill material.
- d. Prior to placement of engineered fill, inspector shall determine that site has been prepared in accordance with geotechnical report.
- e. Footing subgrade: At footing subgrades Certified Inspector is to verify that soils conform to geotechnical report.
- f. Testing Agency will test compaction of soils according to ASTM D1556, ASTM D2167, and ASTM D6938, as applicable. Lift thicknesses shall comply with geotechnical report. Inspector shall determine that in-place dry density of engineered fill material complies with geotechnical report. Tests will be performed at following locations and frequencies:
 - 1) Paved Areas: At each compacted fill and backfill layer, at least one (1) test for every 10,000 sq. ft. (930 sq. m) or less of paved area but in no case less than three (3) tests.
 - 2) Building Slab Areas: At each compacted fill and backfill layer, at least on test for every 2,500 sq. ft. (232 sq. m) or less of building slab area but in no case less than three (3) tests.
 - 3) Foundation Wall/Continuous Footing Backfill: At each compacted backfill layer, at least one (1) test for each 40 linear feet (12 linear m) or less of wall length, but no fewer than two (2) tests.
 - 4) Trench Backfill: At each 12 inch (305 mm) compacted lift for each 100 linear feet (30.5 linear m) or less of trench length but no fewer than two (2) tests.
 - 5) Sidewalks, Curbs, Gutters, Exterior Pads: Minimum of one (1) test for each lift for each 40 lineal feet (12 linear m) or one (1) test for every 5,000 sq. ft. (465 sq. m) or less of pad area but no fewer than three (3) tests.
- g. Required verification and inspection of soils as referenced in 2009 IBC Table 1704.7. Periodic and continuous inspections include:
 - 1) Verify materials below shallow foundations are adequate to achieve design bearing capacity (periodic).
 - 2) Verify excavations are extended to proper depth and have reached proper material (periodic).
 - 3) Perform classification and testing of compacted fill materials (periodic).
 - 4) Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill (continuous).
 - 5) Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly (periodic).

3.5 CLEANING

- A. Debris and material not necessary for Project are property of Contractor and are to be removed before completion of Project. However, if material necessary for Project is hauled away, replace with specified fill / backfill material.

END OF SECTION

SECTION 31 2500

EROSION AND SEDIMENTATION CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. Includes But Not Limited To:
 - 1. Provide permanent erosion and sedimentation controls as described in Contract Documents.
- B. Related Requirements:
 - 1. Section 01 4000: 'Quality Requirements' for administrative and procedural requirements for quality assurance and quality control.
 - 2. Section 02 4100: Demolition.
 - 3. Section 31 1000: Site Clearing.
 - 4. Section 32 9000: Planting.

1.2 REFERENCES

- A. References:
 - 1. United States Environmental Protection Agency:
 - a. EPA Document 832/R-92-005 (Sep 1992), 'Storm Water Management for Construction Activities.'

1.3 SUBMITTALS

- A. Informational Submittals:
 - 1. Delegated Design Submittals:
 - a. Sediment and erosion control plan, specific to site, meeting following objectives:
 - 1) Prevent loss of soil, including soil stockpiled for reuse, by storm water runoff and wind erosion.
 - 2) Prevent sedimentation of storm sewers and receiving streams.
 - 3) Prevent air pollution by dust and particulate matter.

1.4 QUALITY ASSURANCE

- A. Regulatory Agency Sustainability Approvals:
 - 1. Sediment and erosion control shall conform to EPA Document 832/R-92-005, Chapter 3, or local erosion and sedimentation control standards, whichever is more stringent.
- B. Qualifications:
 - 1. Supervisor of erosion control operations shall be thoroughly familiar with types of erosion control materials being installed and best methods for their installation. Supervisor shall be present when work of this Section is being performed and shall direct work performed under this Section.

PART 2 - PRODUCTS

2.1 SYSTEM

- A. Design Criteria:

1. Protect and maintain areas disturbed by the Work, so erosion is adequately controlled and silt and sediments are not allowed to flow into any watercourse, onto adjacent properties, or into storm drains.

B. Materials:

1. Hay And Straw Mulch:
 - a. General:
 - 1) Reasonably free from swamp grass, weeds, twigs, debris and other deleterious materials, and free from rot, mold, primary noxious weed seeds, and rough or woody materials.
 - 2) Mulches containing mature seed of species which would volunteer and be detrimental to permanent seeding, or would result in over-seeding, or would produce growth which is aesthetically unpleasing, is not permitted.
 - b. Hay Mulch:
 - 1) Properly aired native hay, Sudan grass hay, broom sedge hay, legume hay, or similar hay or grass mowings.
 - 2) Apply at 2 to 3 tons (2.03 to 3.05 metric tons) per acre unnetted or stabilized, or at 1.5 tons (1.52 metric ton) per acre when net or mulch stabilizer is used. When air-dried and in loose state, contents of representative bale shall lose not more than 15 percent of resulting air-dry weight of bale.
 - c. Straw Mulch:
 - 1) Threshed plant residue of oats, wheat, barley, rye, or rice from which grain has been removed.
 - 2) Apply at 2 to 3 tons (2.03 to 3.05 metric tons) per acre unnetted or stabilized, or at 1.5 tons (1.52 metric ton) per acre (4 047 cu m) when net or mulch stabilizer is used.
 - d. Matting:
 - 1) Jute Matting:
 - a) Undyed and unbleached jute yarn woven into uniform open, plain weave mesh and furnished in rolled strips. Matting shall conform to following physical requirements:
 - b) 48 inch (1 200 mm) wide, plus or minus one inch (25 mm).
 - c) 78 warp ends per width of cloth.
 - d) 41 weft ends per yard.
 - e) 1.22 lbs to 1.80 lbs (0.55 kg to 0.82 kg) per lineal yard, plus or minus 5 percent.
 - e. Excelsior Matting:
 - 1) Uniform web of interlocking wood excelsior fibers with a backing of mulch net fabric on one side only and furnished in rolled strips. Mulch net shall be woven of either twisted paper or cotton cord. Matting shall conform to following physical requirements:
 - a) 36 inches (900 mm) wide, plus or minus one inch (25 mm).
 - b) 0.8 lbs (0.36 kg) per sq yd, plus or minus 5 percent.
 - f. Soil Erosion Matting:
 - 1) Type Two Acceptable Products.
 - a) 'Enkamat Type 7020' by American Enka Company.
 - b) Equal as approved by Architect before use. See Section 01 6200.
 - g. Erosion Control Mulching Blanket:
 - 1) Type Two Acceptable Products.
 - a) 'Hold/Gro' by Gulf States Paper Corp.
 - b) Equal as approved by Architect before use. See Section 01 6200.
 2. Seed And Sod For Erosion Control:
 - a. For Temporary Control: Annual or perennial ryegrass.
 3. Hay Bales For Erosion Control:
 - a. Rectangular shaped bales of hay or straw, weighing at least 40 lbs (18 kg) per bale, free from primary noxious weed seeds and rough or woody materials.
 4. Silt Fences:
 - a. Type Two Acceptable Products
 - 1) 'Geofab Silt Fence' by Mercantile Development Inc.
 - 2) 'Mirafi 100X' by Celanese Fibers Marketing Co.
 - 3) Equal as approved by Architect before use. See Section 01 6200.

2.2 ACCESSORIES

- A. For Mulch:
 - 1. Mulch Stabilizers:
 - a. Type Two Acceptable Products
 - 1) 'Curasol' applied at 40 gallons (152 liters) per acre (4 047 cu m).
 - 2) Dow 'Mulch Binder' applied at 45 gallons (170 liters) per acre (4 047 cu m).
 - 3) Asphalt binder meeting requirements of AASHTO M140, Type SS-1 or RS-1 as applicable and applied at 400 gallons (1 514 liters) per acre (4 047 cu m).
 - 4) Equal as approved by Architect before use. See Section 01 6200.
 - 2. Temporary Type Mulch Nets: Paper yarn, approximately 0.05 inches (1.27 mm) in diameter, woven into net with openings of approximately 7/8 inch (22 mm) by 1/2 inch (12.7 mm) and weight of approximately 0.2 lbs (0.091 kg) per sq yd (0.84 cu m).
- B. For Matting / Blankets:
 - 1. Staples: 11 ga (3.05 mm) minimum plain iron wire, made from 12 inch (305 mm) minimum lengths of wire bent to form 'U' of 1-1/2 inches to 2 inches (38 mm to 50 mm) in width with equal legs of 5 inch to 5-1/4 inches (125 mm to 133 mm). Use longer staples for loose soils or where otherwise required.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General:
 - 1. Take every reasonable precaution to avoid erosion and to prevent silting of rivers, streams, lakes, reservoirs, impoundments, and drainage ditches and swales.
 - 2. Keep exposure of uncompleted cut slopes, embankments, trench excavations, and site graded areas as short as possible. Initiate seeding and other erosion control measures on each segment as soon as reasonably possible.
 - 3. Should it become necessary to suspend construction for any length of time, shape excavated and graded areas so runoff will be intercepted and diverted to points where minimal erosion will occur. Provide and maintain temporary erosion and sediment control measures, such as berms, dikes, slope drains, silt stops, and sedimentation basins, until permanent drainage facilities or erosion control features have been completed and are operative.
 - 4. Handle and treat fine material placed or exposed during The Work so as to minimize possibility of it reaching surface waters. Use diversion channels, dikes, sediment traps, or other effective control measures.
 - 5. Provide silt stops wherever erosion control measures may not be totally capable of controlling erosion, such as in drainage channels and where steep slopes may exist.
 - 6. Before water is allowed to flow in any ditch, swale, or channel, install permanent erosion control measures in waterway so waterway will be safe against erosion.
 - 7. Take precautions in using construction equipment to minimize erosion. Do not leave wheel tracks where erosion might begin.
 - 8. Unless specifically required in Contract Documents, operation of mechanized equipment in watercourses is not permitted. Where work is required in watercourses, minimize movement of equipment in the water and remove false work, pilings, debris, and other temporary work as soon as construction will allow.
 - 9. Wherever crossings of live streams are necessary, provide temporary culverts or bridges to allow equipment to cross them without fording. Disturbance of lands and waters outside limits of construction is prohibited, except as may be found necessary and approved in writing by Architect.
 - 10. Mulching shall follow seeding operations by no more than 24 hours.
 - 11. Continue erosion control measures until permanent measures have been sufficiently established and are capable of controlling erosion on their own.

B. Hay And Straw Mulching:

1. Install hay or straw mulch immediately after areas have been properly prepared.
 - a. When permanent seed or seed for temporary erosion control is sown prior to placing mulch, place mulch on seeded areas within 24 hours after seeding.
 - b. Architect may authorize blowing of chopped mulch provided that 95 percent of mulch fibers will be 6 inches (150 mm) or more in length and that mulch can be applied in so there will be a minimum amount of matting that would retard plant growth.
 - c. Hay mulch should cover ground enough to shade it, but should not be so thick that a person standing cannot see ground through mulch.
 - d. Remove matted mulch or branches.
2. Where mild winds that may blow mulch are probable, when ground slopes exceed 15 percent, or when otherwise required to maintain mulch firmly in place, apply a system of pegs and strings, a chemical stabilizer, or temporary type netting to mulch. Unless otherwise directed, remove strings and netting prior to acceptance of the Work.
3. Where high winds or heavy rainstorms are likely, where ground surfaces are steeper than 15 percent, or where other conditions require, apply temporary type netting over mulch and take whatever other measures are necessary to maintain mulch firmly in place.
4. Unless otherwise specified, use of permanent type netting is not permitted without prior written approval of Architect.

C. Matting:

1. General:
 - a. Use of mulch with matting is not permitted. However, 4 to 6 inch (100 to 150 mm) overlap of mulch over edge of matting is allowed.
 - b. Prepare surfaces of ditches and slopes to conform to grades, contours, and cross sections shown on Drawings. Finish to smooth, even condition with debris, roots, stone, and lumps raked out and removed. Loosen soil surface sufficient to permit bedding of matting. Unless otherwise noted, place seed prior to placement of matting.
 - c. Unroll matting parallel to direction of water flow and loosely drape, without folds or stretching, so continuous ground contact is maintained.
 - d. In ditches and swales and on slopes, place each upslope and each downslope end of each piece of matting in 6 inch trench, stapled at 12 inches (300 mm) on center, backfilled, and tamped. Similarly, bury edges of matting along edges of catch basins and other structures. Architect may require that other edges exposed to more than normal flow of water be buried in similar fashion.
 - e. Tightly secure matting to soil with staples driven approximately vertically into ground, flush with matting surface. Do not form depressions or bulges in matting surface with staples.
 - f. Increase specified spacing of staples when factors such as season of year or amount of water encountered or anticipated require additional anchoring.
2. Jute Matting:
 - a. Where strips are laid parallel or meet, as in a tee, overlap 4 inches (100 mm) minimum. Overlap ends 6 inches (150 mm) minimum, shingle fashion.
 - b. Space check slots built at right angles to direction of water flow so one check slot or one end occurs within each 50 feet (15 meters) of slope length. Construct check slots by placing tight fold of matting 6 inches (150 mm) minimum vertically into ground. Tamp these same as upslope ends.
 - c. Press jute matting onto ground with light lawn roller or other satisfactory means.
 - d. On slopes flatter than 4:1, place staples 36 inches (900 mm) apart maximum in three rows for each strip, with one row along each edge and one row alternately spaced down center. On grades 4:1 or steeper, place staples in the same three rows, but spaced 24 inches (600 mm) apart. On lapping edges, reduce spacing of staples by half. At ends of matting and at required check slots, space staples 12 inches (300 mm) apart. Staple matting placed adjacent to boulders or other obstructions with no spaces between staples.
 - e. Spread additional seed over jute matting, particularly those locations disturbed by building of slots.
3. Excelsior Matting:
 - a. Where strips of excelsior matting are laid end-to-end, butt adjoining ends.
 - b. When adjoining rolls of excelsior matting are laid parallel to one another, butt matting snugly.

- c. On slopes flatter than 4:1, place staples 36 inches (900 mm) maximum apart in three rows for each strip, with one row along each edge and one row alternately spaced down center. On grades 4:1 or steeper, place staples in same three rows, but spaced 24 inches (600 mm) apart. Space staples in ends of matting 12 inches (300 mm) apart. Staple matting placed adjacent to boulders or other obstructions with no spaces between staples.
4. Erosion Control Mulching Blanket:
 - a. Where one roll ends and second roll begins, bring end of upslope piece over end of downslope roll so there is 12 inch (300 mm) overlap. Place overlap in 4 inch (100 mm) deep trench, staple at 12 inches (300 mm) on center, and backfill and tamp.
 - b. On slopes where two or more widths of blanket are applied, overlap edges 4 inches (100 mm) and staple at 12 inch (300 mm) intervals along exposed edge of lap joint.
 - c. Staple body of blanket in grid pattern with staples 36 inches (900 mm) on center, each way.
- D. Seed For Erosion Control:
 1. Seeding for permanent erosion control shall be carried out in accordance with appropriate Section under 32 9300 heading.
 2. Areas that will be regraded or otherwise disturbed later during construction may be seeded with rye grass to obtain temporary control. Sow seed at one lb (0.45 kg) per 1,000 sq ft (93 sq m), on pure live seed basis.
- E. Hay Bales And Silt Fences:
 1. Provide hay bales or silt fences, as required, for temporary control of erosion and to stop silt and sediment from reaching surface waters, adjacent properties, or entering catch basins, or damaging the Work.
 2. Stake hay bales firmly in place. Use sufficient number of bales to accommodate runoff without causing flooding and to adequately store any silt, sediment, and debris reaching them.
 3. Erect silt fences and bury bottom edge in accordance with Manufacturer's recommended installation instructions. Provide sufficient length of fence to accommodate runoff without causing flooding and to adequately store any silt, sediment, and debris reaching it.

3.2 REPAIR / RESTORATION

- A. If any staple becomes loosened or raised, if any matting becomes loose, torn, or undermined, or if any temporary erosion and sediment control measures are disturbed, repair them immediately.
- B. If seed is washed out before germination, repair damage, refertilize, and reseed.
- C. Maintain mulched and matted areas, silt stops, and other temporary control measures until permanent control measures are established and no further erosion is likely.

END OF SECTION

SECTION 32 1216

ASPHALT PAVING: Marshall Method

PART 1 - GENERAL

1.1 SUMMARY

- A. Includes But Not Limited To:
 - 1. Furnish and install asphalt concrete paving in driveways and parking areas as described in Contract Documents including the following:
 - a. Tack coat: Application of asphaltic material to existing asphalt concrete or portland concrete surfaces before asphalt concrete pavement.
 - b. Blotter materials and procedures for absorbing excess asphalt as required.
- B. Related Requirements:
 - 1. Section 31 2500: 'Erosion and Sedimentation Controls'
 - 2. Section 32 1216: 'Asphalt Paving' Marshall Method.
 - 3. Section 32 5100: 'Aggregate Surfacing'

1.2 REFERENCES

- A. Association Publications:
 - 1. Asphalt Institute, 2696 Research Park Dr., Lexington, KY www.asphaltinstitute.org:
 - a. MS-2, '*Mix Design Methods*' (Sixth Edition, Reprinted 1997).
 - b. MS-4, '*The Asphalt Handbook*' (Seventh Edition).
 - c. MS-5, '*Introduction to Asphalt*' (Eighth Edition, Reprinted 2001).
 - d. MS-22, '*Construction of Hot Mix Asphalt Pavements*' (Second Edition, 2001 Reprinting).
 - 2. Council of American Structural Engineers:
 - a. CASE Form 101: *Statement of Special Inspections*. Washington, DC: CASE, 2001. (c/o American Council of Engineering Companies, 1015 15th St., NW, Washington, DC 20005; 202-347-7474; www.acec.org).
 - 3. Samples of Design Software Available (proprietary programs for life cycle cost analysis):
 - a. American Association of State and Highway Transportation Officials (AASHTO):
 - 1) '*DARWin-ME*' www.aashtoware.org.
 - a) Comprehensive pavement design and analysis tool, capable of providing support and insights to highway decision-makers, academia and consultants through the entire pavement structure life cycle, from design through maintenance.
 - b. American Concrete Pavement Association (ACPA):
 - 1) '*StreetPave*' www.acpa.org.
 - a) Engineering analyses for optimized concrete and asphalt pavement thicknesses for city, municipal, county, and state roadways.
 - 2) '*WINPAS12*':
 - a) Pavement thickness design according to 1993 AASHTO Guide for Design of Pavements Structures.
 - c. National Ready Mixed Concrete Association (NRMCA):
 - 1) '*Concrete Pavement Analyst*' (CPA) www.nrmca.org.
 - a) Parking area concrete design and cost comparison software that compares total ownership costs for asphalt paving and concrete paving.
 - 4. Federal Highway Administration (FHWA):
 - a. FHWA-NHI-131053, 'Superpave Fundamentals' (Training course to inform highway industry personnel of benefits of Superpave).
 - b. LTPP Bind:, Superpave (free) software for assisting in the selection of asphalt binder grades (available at <http://www.fhwa.dot.gov/pavement/ltpb/bind/download.cfm>) or <http://www.fhwa.dot.gov/pavement/ltpb/bind/download.cfm> or <http://www.ltpb-products.com/OtherProducts/OtherProducts.aspx>):

- 1) Ninety Eight (98) percent reliability is required.
 5. International Code Council (IBC):
 - a. IBC Chapter 17, 'Structural Tests and Special Inspections'.
 6. National Asphalt Pavement Association (NAPA):
 - a. IS 128, 'Pavement Mix Type Selection Guide'.
 7. U.S. Army Corps of Engineers (COE):
 - a. COE CRD-C 649-95. 'Standard Test Method for Unit Weight, Marshall Stability, and Flow of Bituminous Mixtures' (Issued 1 Dec. 1995).
 8. United States Department of Labor:
 - a. Occupational Safety & Health Administration (OSHA):
 - 1) CFR 1910.7, 'Nationally Recognized Testing Laboratories'.
- B. Definitions:
1. AASHTO: The American Association of State Highway and Transportation Officials. Organization of highway engineers from the 50 states that develops guides and standards.
 2. Admixture: Material other than water, cement, and aggregates.
 3. Aggregate: Hard inert mineral material, such as gravel, crushed rock, slag, or sand.
 - a. Coarse Aggregate: Aggregate retained on or above No. 8 (2.36 mm) sieve.
 - b. Coarse-Graded Aggregate: Aggregate having predominance of coarse sizes.
 - c. Dense-Graded Aggregate: Aggregate that is graded from maximum size down through filler with object of obtaining an asphalt mix with controlled void content and high stability.
 - d. Fine Aggregate: Aggregate passing No. 8 (2.36 mm) sieve.
 - e. Fine-Graded Aggregate: Aggregate having predominance of fine sizes.
 - f. Mineral Filler: Fine mineral product at least 70 percent of which passes a No. 200 (75µm) sieve.
 4. Air Voids: Total volume of small air pockets between coated aggregate particles in asphalt cement concrete (ACC); expressed as percentage of bulk volume of compacted paving mixture.
 5. Ambient Temperature: Temperature of surrounding air.
 6. Asphalt: "A dark brown to black cementitious material in which predominating constituents are bituminous which occur in nature or are obtained in petroleum processing". Asphalt is a constituent in varying proportions of most crude petroleum.
 7. Asphalt Cement Concrete (ACC): Controlled mix of aggregate and asphalt cement.
 8. Asphalt Pavement: Pavements consisting of surface course of mineral aggregate coated and cemented together with asphalt cement on supporting courses such as asphalt bases, crushed stone, slag, or gravel.
 9. Bitumen: Class of black or dark-colored (solid, semisolid, or viscous) cementitious substances, natural or manufactured, composed principally of high molecular weight hydrocarbons, of which Asphalts, tars, pitches, and asphaltites are typical.
 10. Bituminous Pavement: Designed combination of graded crushed stone, filler, and bituminous cement mixed in a central plant, laid and compacted while hot.
 11. Compaction: Densification of soil or hot mix asphalt (HMA) by mechanical means.
 12. Density: Ratio of mass to volume of substance. Usually expressed in kg/m³.
 13. Emulsified Asphalt: Emulsion of asphalt cement and water which contains small amount of emulsifying agent. Water forms continuous phase of emulsion, and minute globules of asphalt form discontinuous phase.
 14. Equivalent Single Axle Load (ESAL): Effect on pavement performance of any combination of axle loads of varying magnitude equated to number of 18,000-lb. (80-kN) single-axle loads that are required to produce an equivalent effect.
 15. ESAL (Equivalent Single Axle Loads): Measure of axle loads expressed relative to an 18,000 pound axle load.
 16. Gradation: (grain-size distribution): Proportions by mass of soil or fragmented rock distributed by particle size.
 17. Hot Mix Asphalt (HMA): High quality thoroughly controlled hot mixture of asphalt cement and well-graded, high quality aggregate. Form of Asphalt Cement Concrete that is mixed at contractor's Hot Mix Plant, transported to roadway in dump trucks, placed using paver, and compacted with Steel-wheel or Rubber-tired Rollers.
 18. Lot: Quantity of material to be controlled. May represent specified mass, specified number of truckloads, or specified time period during production.

19. Pavement Preservation: Sum of all activities undertaken to provide and maintain serviceable roadways. This includes corrective maintenance and preventive maintenance, as well as minor rehabilitation projects.
 20. Performance Graded (PG): Asphalt Binder grade designation used in Superpave™. Based on binder's mechanical performance at critical temperatures and aging conditions. Prefix followed by other numbers that designate asphalt binder designed to meet certain performance standards.
 21. Performance Graded Asphalt Binder (PGAB): Asphalt binder designed to produce HMA that meets certain performance standards. Designations for performance-graded asphalt binders are prefixed with PG. Each grade designation also includes two sets of numbers that denote temperature range. This is a range of climate temperatures to which road may be exposed and still be expected to give superior performance. PG numbers do not indicate viscosity as in conventional liquid asphalt designations.
 22. Pre-emergent Herbicide: Chemical that is applied before weeds emerge. It acts by killing weed seedlings and /or establishing layer of chemical on or near soil surface that is toxic to germinating seeds and young seedlings.
 23. Preventive Maintenance (PM): Planned strategy of cost effective treatments that preserves and maintains or improves roadway system without substantially increasing structural capacity.
 24. Reclaimed Asphalt Pavement (RAP): Existing asphalt mixture that has been pulverized, usually by milling, and is used like an aggregate in recycling of asphalt pavements.
 25. Subgrade (definition varies depending upon stage of construction and context of work being performed):
 - a. Prepared natural soils on which fill, aggregate base, or topsoil is placed.
 - or
 - b. Prepared soils immediately beneath paving.
 26. Tack Coat: Very light application of liquid asphalt, or asphalt emulsion diluted with water.
 27. Transverse Joint: Joint running across pavement.
- C. Definitions (Following are specifically referenced for testing):
1. Accreditation: Process in which certification of competency, authority, or credibility is presented. Verify that laboratories have an appropriate quality management system and can properly perform certain test methods (e.g., ANSI, ASTM, and ISO test methods) and calibration parameters according to their scopes of accreditation.
 2. Approved: To authorize, endorse, validate, confirm, or agree to.
 3. Field Quality Control: Testing, Inspections, Special Testing and Special Inspections to assure compliance to Contract Documents.
 4. Inspection/Special Inspection: Inspection of materials, installation, fabrication, erection or placement of components and connections requiring special expertise to ensure compliance with approved construction documents and referenced standards:
 - a. Inspection: Not required by code provisions but may be required by Contract Documents.
 - b. Special Inspection: Required by code provisions and by Contract Documents.
 - c. Inspection-Continuous: Full-time observation of the Work requiring inspection by approved inspector who is present in area where the Work is being performed.
 - d. Inspection-Periodic: Part-time or intermittent observation of the Work requiring inspection by approved inspector who is present in area where the Work has been or is being performed and at completion of the Work.
 5. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor to perform particular construction operation, including installation, erection, application, and similar operations.
 6. Non-Destructive Testing (NDT) – Testing methods usually performed on in-place construction materials that do not cause any damage to the materials being tested. In the context of pavement evaluation, NDT is Deflection testing, without destruction to the pavement, to determine pavement's response to pavement loading.
 7. Observation: Visual observation of building / site elements or structural system by registered design professional for general conformance to approved construction documents at significant construction stages and at completion. Observation does not include or waive responsibility for performing inspections or special inspections.
 8. Owner's Representative: Owner's Designated Representative (Project Manager or Facilities Manager) who will have express authority to bind Owner with respect to all matters requiring Owner's approval or authorization.

9. Preconstruction Testing: Tests and inspections that are performed specifically for Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
10. Product Testing: Tests and inspections that are performed by testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
11. Quality Assurance: Testing, Inspections, Special Testing and Special Inspections provided for by Owner.
12. Quality Control: Testing, Inspections, Special Testing and Special Inspections provided for by Contractor.
13. Service Provider: Agency or firm qualified to perform required tests and inspections.
14. Source Quality Control Testing: Tests and inspections that are performed at source, i.e., plant, mill, factory, or shop.
15. Special Inspection: See Inspection.
16. Special Inspector: Certified individual or firm that implements special inspection program for project.
17. Special Test: See Test.
18. Test/Special Test: Field or laboratory tests to determine characteristics and quality of building materials and workmanship.
 - a. Test: Not required by code provisions but may be required by Contract Documents.
 - b. Special Test: Required by code provisions and by Contract Documents.
19. Testing Agency: Entity engaged to perform specific tests, inspections, or both.
20. Testing Agency Laboratory: Agency or firm qualified to perform field and laboratory tests to determine characteristics and quality of materials and workmanship.
21. Verification: Act of reviewing, inspecting, testing, etc. to establish and document that product, service, or system meets regulatory, standard, or specification requirements.

D. Reference Standards:

1. American Association of State and Highway Transportation Officials:
 - a. AASHTO M 320-10, 'Standard Specification for Performance Graded Asphalt Binder'.
 - b. AASHTO M 323-13, 'Standard Specification for Superpave Volumetric Mix Design'.
 - c. AASHTO R 28-12, 'Standard Practice for Accelerated Aging of Asphalt Binder Using a Pressurized Aging Vessel (PAV)'.
 - d. AASHTO T 48-06 (2010), 'Standard Method of Test for Flash and Fire Points by Cleveland Open Cup'.
 - e. AASHTO T 240-13, 'Standard Method for Test for Effect of Heat and Air on a Moving Film of Asphalt (Rolling Thin Film Oven Test) (ASTM Designation: D2872-04)'.
 - f. AASHTO T 301-13, 'Standard Method of Test for Elastic Recovery Test of Asphalt Materials by Means of a Ductilometer'.
 - g. AASHTO T 304-11, 'Standard Method of Test for Uncompacted Void Content of Fine Aggregate'.
 - h. AASHTO T 313-12, 'Standard Method of Test for Determination the Flexural Creep Stiffness of Asphalt Binder Using the Bending Beam Rheometer (BBR)'.
 - i. AASHTO T 314-12, 'Standard Method of Test for Determination the Fracture Properties of Asphalt Binder in Direct Tension (DT)'.
 - j. AASHTO T 315-12, 'Standard Method of Test for Determination the Rheological Properties of Asphalt Binder Using Dynamic Shear Rheometer (DSR)'.
 - k. AASHTO T 316-13, 'Standard Method of Test for Viscosity Determination of Asphalt Binder Using Rotational Viscometer'.
2. ASTM International:
 - a. ASTM C131-06, 'Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine'.
 - b. ASTM D977-13, 'Standard Specification for Emulsified Asphalt'.
 - c. ASTM D979/D979M-12, 'Practice for Sampling Bituminous Paving Mixtures'.
 - d. ASTM D1188-07e1, 'Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples'.
 - e. ASTM D1883-07e2, 'Standard Test Method for CBR (California Bearing Ratio) of Laboratory-Compacted Soils'.

- f. ASTM D2041/D2041M-11, 'Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures'.
- g. ASTM D2397-12, 'Standard Specification for Cationic-Emulsified Asphalt'.
- h. ASTM D2419-09, 'Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate'.
- i. ASTM D2726/D2726M-13, 'Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures'.
- j. ASTM D2872-04, 'Standard Test Method for Effect of Heat and Air on a Moving Film of Asphalt (Rolling Thin-Film Oven Test)'.
- k. ASTM D2950/D2950M-11, 'Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods'.
- l. ASTM D3203/D3203M-11, 'Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures'.
- m. ASTM D3549/D3549M-11, 'Standard Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimens'.
- n. ASTM D3665-12, 'Standard Practice for Random Sampling of Construction Materials'.
- o. ASTM D4318-10, 'Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils'.
- p. ASTM D4791-10, 'Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate'...
- q. ASTM D5821-01(2006), 'Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate'.
- r. ASTM D6307-10, 'Standard Test Method for Asphalt Content of Hot-Mix Asphalt by Ignition Method'.
- s. ASTM D6926-10, 'Standard Practice for Preparation of Bituminous Specimens Using Marshall Apparatus'.
- t. ASTM E329-13b: 'Standard Specification for Agencies Engaged in Construction Inspection and/or Testing'.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conferences:
 - 1. Participate in pre-installation conference:
 - 2. In addition to agenda items, review following:
 - a. Review surveying and staking of parking areas and installation of sleeves.
 - b. Review proposed aggregate base schedule.
 - c. Review rough grading elevations before fine grading operations.
 - d. Review fine grading elevations of subgrade fine grading operations before placing aggregate base and paving.
 - e. Review proposed asphalt paving schedule.
 - f. Review asphalt paving mix design.
 - g. Review pre-emergent herbicide protection of adjoining property and planting area on site requirements, schedule and application requirements.
 - h. Review safety issues.
 - i. Review Testing and Inspection administrative requirements and responsibilities and Field Quality Control tests and inspections required of this section.
 - 1) Review frequency of testing and inspections.
- B. Scheduling: Notify Testing Agency and Architect twenty four (24) hours minimum before placing asphalt paving.

1.4 SUBMITTALS

- A. Action Submittals:
 - 1. Product Data:
 - a. Manufacturer's published product data on pre-emergent herbicide.

B. Informational Submittals:

1. Certificates:
 - a. Require mix plant to furnish delivery/load tickets for each batch of asphalt. Keep delivery tickets at job-site for use of Owner or his representatives. Tickets shall show following:
 - 1) Name of mix plant.
 - 2) Date.
 - 3) Name of contractor.
 - 4) Name and location of Project.
 - 5) Serial number of ticket.
 - 6) Asphalt mix type.
 - 7) Amount of asphalt.
 - 8) Time loaded and time out of plant.
 - 9) Identity of truck.
 - b. Installer to provide manufacturer's Certificate of Compliance stating material authenticity and properties for review and acceptance by Engineer before product use.
2. Design Data:
 - a. Design mix submittal shall follow format as indicated in MS-2, '*Asphalt Institute Manual*'.
 - b. Within thirty (30) days prior to asphalt construction, submit actual design mix to Architect, Civil Engineering Consultant of Record and Independent Testing Laboratory for review and approval.
 - c. Submit certification that mix design conforms as specified in this specification.
 - d. Mix designs over two (2) years old will not be accepted by Owner.
 - e. Mix design of asphalt paving mixture:
 - 1) Location and name of hot mix asphalt concrete production facility.
 - 2) Date of mix design. If older than two (2) years, recertify mix design.
 - 3) Asphalt mix type.
 - 4) Mix design method used.
 - 5) Optimum asphalt content in percent.
 - 6) Performance grade of asphalt binder.
 - 7) Paving asphalt source, type and chemical composition.
 - 8) Nominal maximum size of aggregate.
 - 9) Aggregate source and gradation.
 - 10) Mix properties and design parameters.
 - 11) Temperature of mix at plant and in the field for optimum field compaction.
 - 12) Amount of recycled asphalt pavement – RAP:
 - a) Allowed up to ten (10) percent by weight with no change in specified binder grade.
 - b) Allow from ten (10) percent to thirty (30) percent by weight if binder grade is adjusted according to AASHTO M 323 to meet specified binder grade.
 - 13) Mineral fillers, antistripping, and recycle agent percentages.
 - 14) Required field compaction density and test method to be used.
 - 15) Identify if warm mix technologies will be used.
3. Test And Evaluation Reports:
 - a. Copies of test results from tests conducted to assure compliance to Contract Document requirements.
4. Manufacturer Instructions:
 - a. Application instructions for pre-emergent herbicide.

C. Closeout Submittals:

1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
 - a. Record Documentation:
 - 1) Manufacturer's documentation:
 - a) Pre-emergent herbicide documentation.
 - b) Asphalt paving design.
 - c) Test reports.
 - d) Certificates from mix plant of delivery/load tickets.
 - 2) Testing and Inspection Reports:
 - a) Testing Agency Testing and Inspecting Reports of asphalt paving.

1.5 QUALITY ASSURANCE

- A. Qualifications. Requirements of Section 01 4301 applies but not limited to following:
1. Asphalt Paving:
 - a. Foreman of asphalt paving crew has completed at least three (3) projects of similar size and nature.
 2. Pre-emergent herbicide:
 - a. Applicator:
 - 1) Pre-emergent herbicide shall be applied by applicator certified by State in which Project is located as an applicator of agricultural chemicals.
 3. Testing Agency:
 - a. Independent Testing Agency with experience and capability to conduct testing and inspecting indicated for in-place asphaltic cement concrete courses for compliance with requirements for thickness, compaction, and surface smoothness.
 - b. Laboratory will hold certification of ASTM E329 issued by one of following accreditation agencies, and where required by authorities having jurisdiction, that is acceptable to authorities having jurisdiction (AHJ):
 - 1) Testing Laboratory:
 - a) AASHTO Materials Reference Laboratory (AMRL) Accreditation Program.
 - b) Nationally Recognized Testing Laboratory (NRTL): Nationally recognized testing laboratory according to 29 CFR 1910.7.
 - c) National Voluntary Laboratory (NVLAP): Testing Agency accredited according to National Institute of Standards and Technology (NIST) Technology Administration, U. S. Department of Commerce Accreditation Program.
 - d) American Association of Laboratory Accreditation (A2LA).
 - 2) Test Results:
 - a) Failing test results shall be provided within twenty four (24) hours to Architect and Civil Engineer of Record.
- B. Testing and Inspection.
1. Owner will provide Testing and Inspection for asphalt paving:

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery And Acceptance Requirements:
1. Asphalt Material:
 - a. Each shipment must:
 - 1) Be uniform in appearance and consistency.
 - 2) Show no foaming when heated to specified loading temperature.
 - b. Do not supply shipments contaminated with other asphalt types or grades than those specified:
 - 1) Do not use petroleum distillate as a release agent.
 2. Pre-emergent herbicide:
 - a. Materials shall be delivered in original, unopened packages with labels intact.
- B. Storage And Handling Requirements:
1. Asphalt Reinforcement Fiber:
 - a. Store fibers in dry environment.
 - b. Do not allow contact with moisture.
 2. Pre-emergent herbicide:
 - a. Do not freeze. Store in at temperatures above 41 deg F (5 deg C).
 - b. Follow Manufacturer's storage and handling requirements.

1.7 FIELD CONDITIONS

- A. Ambient Conditions:
1. Pre-emergent herbicide:

- a. Follow printed Manufacturers instruction for environmental hazards:
- b. Follow printed Manufacturers instruction ambient conditions for application of product.
2. Tack Coat:
 - a. Apply only when air and roadbed temperatures in shade are greater than 40 deg F (4.4 deg C). Temperature restrictions may be waived only upon written authorization from Architect or Civil Engineer.
 - b. Do not apply to wet surfaces.
 - c. Do not apply when weather conditions prevent tack coat from adhering properly.
3. Asphalt paving:
 - a. Do not perform work during following conditions:
 - 1) Ambient temperature is below 45 deg F (7.2 deg C).
 - 2) Temperature of aggregate base below 50 deg F (10 deg C).
 - 3) Presence of free surface water or weather is unsuitable.
 - 4) Over-saturated aggregate base and subgrade materials.
 - 5) Wind or ground cools mix material before compaction.

PART 2 - PRODUCTS

2.1 DESIGN CRITERIA:

- A. Asphalt Mix Site Adapt Design:
 1. Recycled Asphalt Pavement, RAP. Aggregate Restrictions include:
 - a. Allowed up to ten (10) percent by weight maximum providing grading, VMA and VFA are met with no change in specified binder grade. Allow from ten (10) percent to thirty (30) percent by weight if binder grade is adjusted according to AASHTO M 323 to meet specified binder grade.
 - 1) Greater than ten (10) percent requires separate mix design which includes binder design that indicates blend of RAP and Virgin binders meeting recommended SHRP binder grade specifications.
 - b. Adjust pavement asphalt grade to account for RAP binder viscosity where greater than ten (10) percent RAP is used.
- B. Aggregate Within Asphalt Mix:
 1. Aggregates:
 - a. Material:
 - 1) Clean, hard, durable, angular, sound, consisting of crushed stone, crushed gravel, slag, sand, or combination.
 - b. Source: Use following requirements to determine suitability of aggregate source and not for project control:
 - 1) Coarse Aggregate:
 - a) Angularity (fractured faces), ASTM D5821. At least one fracture as follows:
 - (1) 55 percent minimum if ESAL's are less than 0.3 million.
 - (2) 85 percent minimum if ESAL's are more than 0.3 million.
 - b) Hardness (toughness), ASTM C131: Retained above 2.36 mm sieve:
 - (1) 40 percent maximum if ESAL's are less than 0.3 million.
 - (2) 35 percent minimum if ESAL's are more than 0.3 million.
 - c) Flat and Elongated Particles, ASTM D4791:
 - (1) 20 percent maximum retained above 9.5 mm sieve has 3:1 length to width ratio.
 - 2) Fine Aggregate:
 - a) Angularity, AASHTO T 304:
 - (1) 45 percent minimum uncompacted void content.
 - b) Friable Particles, ASTM C142:
 - (1) 2 percent maximum by weight passing 4.75 mm sieve.
 - c) Plasticity, ASTM D4318: (Aggregate passing 4.75 mm sieve is non-plastic even when filler material is added to aggregate):
 - (1) Liquid limit: Less than 25.

- (2) Plastic limit: Less than 6.
- c. Admixture:
 - 1) Antistrip: Heat stable, cement slurry, or lime slurry.
 - 2) Cement or Hydrated Lime:
 - a) Add if mix is moisture sensitive.
 - 3) Mineral Filler: Comply with requirements of ASTM D242/D242M.
- C. Asphalt Binder:
 - 1. Performance Graded Asphalt Binder:
 - a. Meet requirements of Attachment Table 1:
 - 1) See Attachment **TABLE 1** for 'Performance Grade Asphalt Binders'.
 - b. Contractor's Choice: Blending with polymers or natural asphalts is allowed.
 - c. As a rule of thumb, if two numbers in asphalt binder designation are added together and are greater than 90, then binder will most likely contain polymer or natural asphalt.
- D. Asphalt Reinforcement Fiber:
 - 1. Description:
 - a. High tensile strength synthetic fiber blend formulated to reinforce asphalt.
 - b. By controlling thermal, reflective and fatigue cracking, as well as rutting, extends asphalt life.
 - c. Used in all asphalt pavements including roadways and parking lots.
 - 2. Design Criteria - Comply with following fiber characteristics:
 - a. Configuration:
 - 1) Fiber shall be a blend of twisted-bundle network fibers and high-strength monofilament fibers.
 - b. Chemistry:
 - 1) Fiber shall be made of aramid (monofilament) and polyolefin (twisted-bundle and monofilament) fibers and other materials, known for their strength, durability, and binding properties.
 - c. Contents:
 - 1) Fiber shall be used at minimum dosage rate of 1 lb (0.45 kg) per 1 ton (1.02 metric ton) of asphalt.
 - d. Correct Length:
 - 1) Fiber length shall be 3/4 inch (19 mm) for surface course mixes.
 - 3. Physical Properties:
 - a. Materials Polyolefin/Aramid.
 - b. Length 3/4 inch (19 mm).
 - c. Form Twisted Fibrillated and Monofilament Fibers.
 - d. Color Yellow, Black, Tan.
 - e. Specific Gravity 0.91/1.44.
 - f. Acid/Alkali Resistance Inert.
 - g. Tensile Strength 70,000 psi / 400,000 psi (485 MPa / 2 758 MPa).
 - h. Melting Temperature 212 deg F / 800 deg F (100 deg C / 427 deg C).
 - 4. Batching and Mixing:
 - a. Add fiber manually or through specialized equipment that can accurately proportion or meter, by weight, proper amount per batch for batch plants, or continuously and in steady uniform manner for drum plants.
 - b. Batch Plant:
 - 1) When batch plant is used, add fiber to aggregate in weigh hopper and increase both dry and wet mixing times.
 - 2) Ensure that fiber is uniformly distributed before injection of asphalt cement into mixture.
 - c. Drum Plant:
 - 1) When drum plant is used, inject fibers through RAP collar by placing 1 lb (0.45 kg) bags of fibers on RAP belt or by feeding them through blower tube.
 - 2) Rate feeding of fibers with rate plant is producing asphalt mix.
 - 5. Type One Acceptable Products:
 - a. FORTA-FI asphalt reinforcement fibers as manufactured by Forta Corporation, Grove City, PA www.forta-fi.com. Distributed by Alliance Geosynthetics, Inc.

- 1) Contact Information: phone (949) 610-6098, email - joseph@alliancegeo.com.
 - b. Equal as approved by Architect before installation. See Section 01 6200.
- E. Tack Coat:
1. Emulsified asphalt meeting requirements of ASTM D977, Grade SS-1H, CQS-1H, or ASTM D2397, Grade CSS-1H.

2.2 MATERIAL

- A. Pre-Emergent Herbicide:
1. Design Criteria:
 - a. Selective type pre-emergence control chemical containing forty (40) percent Trifluralin minimum for control of annual grasses and broadleaf weeds.
 - b. Non-oil based sterilant.
 - c. Labeled for under-pavement use.
 2. Type Two Acceptable Products:
 - a. Treflan E.C. by Monterey AgResources, Fresno, CA www.montereyagresources.com (available in western United States).
 - b. Trust 4EC by WinField Solutions LLC (Agrilsolutions), St Paul, MN www.agrisolutionsinfo.com (available in United States).
 - c. Equal as approved by Architect before installation. See Section 01 6200.
- B. Aggregate Base With Reclaimed Asphalt Pavement (RAP) or Reclaimed Portland Concrete:
1. Pulverized existing Portland cement or asphalt cement concrete paving mixed uniformly with existing aggregate base.
 2. Limit asphalt binder content to 2.0 percent maximum in base material if:
 - a. Limit maximum size to 3 inch (76 mm) with no gradation bands.
 - b. Quality Requirements as established by testing:
 - 1) R-value (CBR value as per ASTM D1883): 70 percent minimum.
 - 2) Sand Equivalent (ASTM D2419): 25 percent minimum.
 - 3) ASTM C131 (Los Angeles Abrasion): : 50 percent maximum.
 - 4) ASTM D4318 (Atterberg Limits): Non Plastic.
- C. Performance Graded Asphalt Binder:
1. Use PG XX-XX graded PGAB. Design Team to select Performance Grade Asphalt Binder to be used on Project.
 2. Aggregates in Asphalt Mix:
 - a. Fine to coarse mineral aggregates comprised of clean, hard, durable, angular natural aggregates suitable for pavement meeting following gradation requirements:

1) Sieve		Percent Passing
a) 3/4 inch	(19.0 mm)	100
b) 1/2 inch	(12.7 mm)	95 - 100
c) 3/8 inch	(9.5 mm)	80 - 95
d) No. 4	(4.750 mm)	54 - 71
e) No. 8	(2.360 mm)	38 - 54
f) No. 30	(0.594 mm)	17 - 32
g) No. 200	(0.075 mm)	3 - 8

 - 2) AASHTO T 304 (Fine Aggregate Angularity): 45 percent minimum.
 - 3) ASTM C131 (Los Angeles Abrasion): : 50 percent maximum.
 - 4) ASTM D5821 (Fracture Face Count): 90 percent one face, 75 percent two face.
 - 5) ASTM D4791 (Flat and Elongated Particles): 20 percent maximum at 3:1 ratio.
 - 6) ASTM D4318 (Atterberg Limits): Non Plastic.
 - b. Dust to Asphalt Ratio:
 - 1) 0.6 to 1.2 based on effective binder content of the mix.

2.3 MIXES

- A. Central Plant Hot Mix.
- B. Mix Design:
 - 1. Develop mix design according to Asphalt Institute MS-2 Marshall Method to achieve optimum asphalt content as shown by test data curves based on testing samples containing 1/4 to 1/2 percent maximum increments of asphalt content. Samples shall include minimum of two (2) with asphalt content above optimum and two (2) with asphalt content below optimum:
 - a. Make tests in accordance with Marshall Method.
 - b. Final design shall meet following criteria:
 - 1) Marshall blow count: 50.
 - 2) Stability: 1200 pounds (545 kg) minimum.
 - 3) Flow: 8 minimum, 16 maximum.
 - 4) Air voids: 3.5 percent minimum, 5 percent maximum.
 - 5) Voids in mineral aggregate: 15 percent minimum.
 - 6) Voids filled with asphalt: 65 percent minimum, 78 percent maximum.
 - 7) Index of Retained Strength: 80 percent.

PART 3 - EXECUTION

3.1 PREPARATION

- A. General:
 - 1. Aggregate base and paving must be placed before any moisture or seasonal changes occur to subgrade that would cause compaction tests previously performed to be erroneous. Recompact and retest subgrade soils that have been left exposed to weather.
- B. Protection Of In-Place Conditions:
 - 1. Pre-emergent herbicide:
 - a. Take necessary precautions to protect adjoining property and areas designated for planting on building site.
 - b. Do not contaminate any body of water by direct application, cleaning of equipment or disposal of wastes.
 - 2. Asphalt Paving:
 - a. Protect all structures, including curb, gutter, sidewalks, guard rails and guide posts.
 - b. Protect neighborhood, storm drains and down-stream fish habitat.
- C. Surface Preparation:
 - 1. Survey and stake parking surfaces to show grading required by Contract Documents.
 - 2. Subgrade (soil below aggregate base):
 - a. Prepare natural soil subgrade as specified in Section 31 2213 'Rough Grading'
 - 3. Pre-emergent herbicide:
 - a. Apply to prepared subgrade dispersed in liquid. Concentrate shall be such that Manufacturer's full recommended rate of chemical will be applied to every 1000 sq ft (100 sq m).
 - b. Application shall be no more than one (1) day before installation of granular road base.
 - 4. Aggregate base:
 - a. Finish grade parking surface area to grades required by Contract Documents.
 - b. Compact aggregate base as specified in Section 31 1123.
 - c. Tolerances:
 - 1) Elevation of aggregate base shall be 0.00 inches (0.00 mm) high.
 - 2) Measure using string line from curb to curb, gutter, flat drainage structure, or grade break.
 - 5. Tack coat:
 - a. Clean surface of all materials such as mud, dirt, leaves, etc. that prevent tack from bonding to existing surfaces.

- 1) If flushed, allow surface to dry.
- b. Cover all tacked surface areas with surfacing materials same day of application.
6. Asphalt paving:
 - a. Area shall be clean and tack coat applied before placing of asphalt paving.
 - 1) Remove all moisture, dirt, sand, leaves, and other objectionable material from prepared surface before placing asphalt.
 - 2) Locate, reference, and protect all utility covers, monuments, curb, and gutter and other components affected by asphalt paving operations.
 - 3) Allow sufficient cure time for tack coat before placing asphalt.

3.2 APPLICATION

- A. Interface With Other Work:
 1. Section 31 2213: 'Rough Grading' for rough grading and preparation of natural soil subgrades below fill and aggregate base materials.
 2. Section 31 2323: 'Fill' for compaction procedures and tolerances.
- B. Pre-Emergent Herbicide:
 1. Soil Sterilant:
 - a. Asphalt paving areas:
 - 1) Follow Manufacturer's printed application requirements:
 - 2) Apply to prepared subgrade dispersed in liquid. Concentrate shall be such that Manufacturer's full recommended amount of chemical will be applied to every 1000 sq ft (93 sq m) and liquid will penetrate minimum of 2 inches (50 mm).
 - 3) Application shall be no more than one (1) day before installation of aggregate base.
- C. Asphalt Reinforcement Fiber:
 1. Batching and Mixing:
 - a. Add fiber manually or through specialized equipment that can accurately proportion or meter, by weight, proper amount per batch for batch plants, or continuously and in steady uniform manner for drum plants.
 - b. Batch Plant:
 - 1) When batch plant is used, add fiber to aggregate in weigh hopper and increase both dry and wet mixing times.
 - 2) Ensure that fiber is uniformly distributed before injection of asphalt cement into mixture.
 - c. Drum Plant:
 - 1) When drum plant is used, inject fibers through RAP collar by placing 1 lb (0.45 kg) bags of fibers on RAP belt or by feeding them through blower tube.
 - 2) Rate feeding of fibers with rate plant is producing asphalt mix.
 2. Fiber added at project site:
 - a. Add asphalt reinforcement fibers into hot mix asphalt concrete at rate of 1 lb (0.45 kg) per 1 ton (1.02 metric ton) of asphalt in accordance with manufacturer's recommendations.
- D. Tack Coat:
 1. General:
 - a. Tack coat vertical surfaces or existing asphalt cement concrete or portland cement concrete that will be in contact with asphalt paving.
 - b. Use tack coat diluted to a 2:1 (concentrate water) ratio.
 - c. Use pressure distributor to apply in uniform, continuous spread.
 2. Application rate. Typically as follows:
 - a. Emulsions, 0.08 to 0.15 gallons per sq yd (0.303 to 0.679 L per sq m) of diluted material:
 - 1) Apply sufficient to achieve ninety five (95) percent or better coverage of existing surfaces.
 - 2) Above application rates may vary according to field conditions. Obtain approval from Civil Engineer for quantities, rate of application, temperatures, and areas to be treated before any application.
- E. Asphalt Paving:

1. General:
 - a. Do not place on frozen aggregate base or during adverse climatic conditions such as precipitation or when roadway surface is icy or wet.
 - b. Uniformly mix materials so aggregate is thoroughly coated with asphalt.
 - c. Spread asphalt paving on prepared aggregate base at following minimum ambient temperatures:
 - 1) Place at temperatures between 250 and 325 deg F (120 and 163 deg C) with self-propelled laydown machine.
 - d. Longitudinal bituminous joints shall be vertical and properly tack coated if cold. Transverse joints shall always be tack coated.
 2. Compaction:
 - a. Compact asphalt paving to ninety six (96) percent minimum of Marshall value. Determine percent compaction by ASTM D2950/D2950M.
 - 1) Maximum total air voids in completed asphaltic concrete shall be eight (8) percent as determined by ASTM D2041/D2041M.
 - 2) Governing Standard of State where the Work is located.
 - 3) Alternate density and compaction:
 - a) Compact asphalt paving to ninety-four (94) percent of Maximum Theoretical Specific Gravity minimum. Determine percent compaction by D2041/D2041M.
 - b) Maximum total air voids in completed asphaltic concrete shall be eight (8) percent as determined by ASTM D2041/D2041M.
 - b. Roll with powered equipment capable of obtaining specified density.
 - c. Begin breakdown rolling immediately after asphalt is placed when asphalt temperature is at maximum:
 - 1) Complete breakdown rolling before mix temperature drops below 240 deg F (115 deg C).
 - 2) Complete handwork compaction concurrently with breakdown rolling.
 - d. Complete intermediate rolling as soon as possible after breakdown rolling and before mix temperature drops below 185 deg F (85 deg C):
 - 1) Do not roll paving for compaction purposes after asphalt temperature falls below 185 deg F (85 deg C).
 - e. Execute compaction so visibility of joints is minimized:
 - 1) Complete finish rolling to improve asphalt surface as soon as possible after intermediate rolling and while asphalt paving is still warm.
 - 2) Do not use vibration for finish rolling.
- F. Tolerances:
1. Aggregate Base:
 - a. Elevation of aggregate base shall be:
 - 1) 0.00 inches (0.00 mm) high.
 - 2) Measure using string line from curb to curb, gutter, flat drainage structure, or grade break.
 2. Asphalt Paving:
 - a. Paving adjacent to cast-in-place concrete site elements shall be between 1/4 inch (6 mm) higher than concrete and flush with concrete.
 - b. Surface texture of hand worked areas shall match texture of machine-laid areas.
 - c. Surface shall be uniform with no 'birdbaths'. Leave finished surfaces clean and smooth. Variations from specified grades shall not exceed 1/2 inch (13 mm).
 - d. Cross Slope: 1/4 inch (6 mm) in 10 feet (3.0 m) perpendicular to centerline except at cross section grade breaks.
 - e. Grade: 1/8 inch (3 mm) in 10 feet (3.0 m) parallel to centerline.
 - f. Lift Thickness:
 - 1) Preferred Method:
 - a) For pavements 3-1/2 inch (89 mm) or thinner apply asphalt paving in single lift.
 - b) For pavements greater than 3-1/2 inch (89 mm), use alternate method below.
 - 2) Alternate Method:
 - a) Asphalt paving may be applied in two (2) lifts, first 2 inches (50 mm) thick minimum and second 1 1/2 inches (38 mm) thick minimum following temperature recommendations of following paragraph.

- b) (Equipment, skill, and knowledge are required to place and compact asphalt before asphalt cools). Surface of first lift shall be clean and provide tack coat between first and second lifts, unless temperature of first lift is above 140 deg F (60 deg C). Maximum aggregate size is limited to 1/2 inch (12.7 mm) for this method.
 - c) Asphalt must be placed quickly before it cools and cannot be compacted. Follow recommendations of Figure 9.4 'Time Allowed for Compaction, Based on Temperature and Thickness of Mat and Temperature of Underlying Base' on page 423 in MS-4, 'The Asphalt Handbook'.
- 3) Provide not more than limits established by pneumatic or vibratory compactor equipment manufacture.

3.3 FIELD QUALITY CONTROL

A. Field Tests And Inspections:

1. General:

- a. Civil engineer applies pay factor for Gradation/Asphalt Content, In-Place Density. Civil engineer computes pay factor for each lot.
- b. Opening paved surface to traffic does not constitute acceptance.
- c. Asphalt-aggregate mix sampling as per ASTM D979/D979M.
 - 1) Test for:
 - a) Air voids as per D3203/D3203M.
 - b) Asphalt binder content as per ASTM D6307.
 - c) Aggregate gradation as per ASTM D5444.
- d. Lot size: 10,000 sq. ft. (930 sq. m) or part thereof.
- e. Sub lot size: 5,000 sq. ft. (465 sq. m) or part thereof.

2. At Site Testing and Inspection:

a. General:

- 1) Sampling. One (1) random sample per 5,000 sq. ft. (465 sq. m). Locations as follows:
 - a) Behind paver before compaction.
 - or
 - b) Where sub-lot exhibits non-uniform appearance.

b. Asphalt Paving:

- 1) Testing Agency shall provide full time nuclear density testing and inspection for asphalt paving during asphalt paving operations (nuclear density testing is informational testing only and does not constitute acceptance by Owner).
- 2) Inspection to include:
 - a) Aggregate coating.
 - b) Compaction control and effort required.
 - c) Suitability of spreading and asphalt paving equipment.
 - d) Temperature of mix as delivered and placed.
 - (1) Reject mixes exceeding 325 deg F (163 deg C) in transport vehicle as required in Non-Conforming Work below.
 - (2) Dispose of cold mix in paver hopper as thin spread underlay.

3) Field Tests:

- a) See Section 32 1823.33 Item 3.1 For Asphalt Track Tolerances
- b) Perform compaction tests per ASTM D2950/D2950M.
- c) Provide nuclear density testing, or other nondestructive nonnuclear methods such as sonar, of asphalt paving at minimum rate of one (1) per 2,500 sq. ft. (232 sq. m). Select test locations by ASTM D3665 and sample per ASTM D979/D979M before compaction. Minimum of three (3) tests required.
- d) Compact asphalt paving shall be compacted to ninety six (96) percent minimum of Marshall/Bulk value.. Determine percent compaction by ASTM D2950/D2950M:
 - (1) Alternate density and compaction:
 - (a) Compact asphalt paving to ninety-four (94) percent of Maximum Theoretical Specific Gravity minimum. Determine percent compaction by ASTM D2041/D2041M.
 - (b) Maximum average total air voids in completed hot mix asphalt shall be eight (8.0) percent as determined by ASTM D2041/D2041M.

- e) Determine thickness of paving being placed, no less than one (1) test per 10,000 sq. ft. (930 sq. m) of paving or portion thereof, three (3) tests minimum.
- 3. At Laboratory Testing:
 - a. General:
 - 1) Provide at least one (1) laboratory test series for every 10,000 sq. ft. (930 sq. m) or part thereof (minimum of one (1) test):
 - a) Test reports will show compliance with Contract Documents regarding type of aggregate base, depth of aggregate base, depth and density of asphalt paving, asphalt content, aggregate gradation, flow and stability, bulk specific gravity and maximum specific gravity.
 - b) Reports will also give test procedures used by testing laboratory.
 - b. Compaction and Final Density:
 - 1) Pavement thickness and final density to be determined by results of coring. Provide one (1) core per 10,000 sq. ft. (930 sq. m) or part thereof. Minimum of three (3) tests required:
 - a) Based upon core samples, compaction is acceptable if test deviations are within pay factor 1.00 limits.
 - b) At Project Manager's discretion, after consulting with design team, a Lot with a sub-lot test deviation greater than Reject may stay in place at fifty (50) percent cost.
 - c) Select test locations by ASTM D3665 and sample per ASTM D979/D979M after compaction.
 - c. Compaction Pay Factor:
 - 1) Based upon core samples, compaction is acceptable if test deviations are within pay factor 1.00 limits.
 - 2) At Project Manager's discretion, after consulting with design team, a Lot with a sub-lot test deviation greater than Reject may stay in place at fifty (50) percent cost.
 - 3) Average Density, in percent as per ASTM D2726/D2726M:

96 percent Required	
Actual Density percent As Compared Marshall/Bulk Density	Pay Factor Applied to Bid Asphalt Qualities
96.0	100.0
95.9	99.7
95.8	99.3
95.7	98.9
95.6	98.4
95.5	97.8
95.4	97.1
95.3	96.4
95.2	95.8
95.1	94.6
95.0	93.4
94.9	92.2
94.8	90.7
94.7	89.1
94.6	87.8
94.5	85.1
94.4	82.6
94.3	79.5
94.2	75.5
94.1	69.7
94.0	60.0
Under 94.0	REJECT

- d. Pavement Thickness:
 - 1) Pavement thickness and final density to be determined by results of coring. Provide one (1) core per 10,000 sq. ft. (930 sq. m) or part thereof. Minimum of three (3) tests required:
 - a) Acceptance will be based on average of all thickness tests.
 - b) At Project Manager's discretion, after consulting with design team, payment may be made for areas deficient in thickness by more than 0.75 inches (19.05 mm) at fifty (50) percent. If not, remove and replace at no additional cost to the Owner.
 - c) Thickness Pay Factors: Thickness in inches as per ASTM D3549:
 - (2) 1.00 for 0.00 inch (0.00 mm) to 0.25 inch (6.35 mm) less than specified thickness.
 - (3) 0.90 for 0.26 inch (6.60 mm) to 0.50 inches (12.70 mm) less than specified thickness.
 - (4) 0.70 for 0.51 inch (12.95 mm) to 0.75 inches (19.05 mm) less than specified thickness.
 - (5) Reject if thickness is 0.76 inches (19.30 mm) or more than specified thickness.
- e. Air Voids:
 - 1) Basis of evaluation is laboratory compacted samples (not field compacted samples).
 - 2) If test results are not within this Section's limits, options include correction of production procedures or alternate mix design acceptable to Civil Engineer.
- f. Dust to asphalt ratio.
- g. Asphalt Content, Aggregate Gradation:
 - 1) Lot is acceptable if test deviations are within pay factor 1.00 limits.
 - 2) At Civil Engineer's discretion, a Lot with sub-lot test deviation greater than pay factor 0.85 limits may stay in place at fifty (50) percent cost.
 - 3) See 'At Site Testing and Inspection' above for pay factors for non-complying materials.
- B. Non-Conforming Work: Non-conforming work as covered in the General Conditions applies, but is not limited to the following:
 - 1. Asphalt Paving:
 - a. Deficient asphalt paving thickness:
 - 1) Place additional material over deficient areas. Do not skin patch. Mill for inlay if necessary. Correct deficient asphalt paving thickness at no additional cost to the Owner.
 - b. Rejection and Removal of Asphalt Paving:
 - 1) Remove asphalt paving found defective after installation and install acceptable product at no additional cost to the Owner.
 - c. Removal of Asphalt Paving:
 - 1) Remove spatter, over-coat, or mar at no additional cost to the Owner.
 - 2) Remove asphalt from borrow pits or gutters at no additional cost to the Owner.
 - d. Repair of Asphalt Paving:
 - 1) Repair or replace defective joints, seams, edges at no additional cost to the Owner.

3.4 PROTECTION

- A. Tack Coat:
 - 1. Protect all surfaces exposed to public view from being spattered or marred. Remove any spattering, over-coating, or marring at no additional cost to Owner.
 - 2. Traffic:
 - a. Do not permit traffic to travel over tacked surface until tack coat has cured and dried.
- B. Asphalt Paving:
 - 1. Protect hot mixed asphalt (HMA) pavement from traffic until mixture has cooled enough not to become marked.

3.5 CLEANING

- A. Waste Management:
 - 1. Pre-emergent herbicide:
 - a. Follow Manufacturer's recommendations for disposal of product at approved waste disposal facility.
 - 1) Do not reuse empty containers.

END OF SECTION

ATTACHMENTS

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PART 4 - ATTACHMENTS

4.1 TABLE 1

A. Performance Grade Asphalt Binder PG 58-22:

PG58-22		
ORIGINAL BINDER		AASHTO M 320
Dynamic Shear Rheometer, AASHTO T 315	@ 58° C, G*, kPa	1.00 kPa min.
	@ 58° C, phase angle, degrees	74.0 max.
Rotational Viscometer, AASHTO T 316	@ 135° C, Pa.s	3.0 Pa.s max.
Flash Point, AASHTO T 48	°C	230 °C min.
Rolling Thin Film Oven (RTFO) Residue, AASHTO T 240		
Dynamic Shear Rheometer, AASHTO T 315	@ 58° C, G*, sinδ, kPa	2.20 kPa min.
Elastic recovery, AASHTO T 301 mod	%	65 min.
Pressure Aging Vessel (PAV) Residue, 20 hours, 2.10 100° C, AASHTO R28		
Dynamic Shear Rheometer, AASHTO T 315	@ 22° C, kPa	5000 kPa max.
Bending Beam Rheometer, AASHTO T 313	@ -12° C, S, MPa	300 MPa max.
	@ -12° C, m-value	0.300 min.
Direct tension Test, AASHTO T 314	@ -12° C, Failure Stress, %	1.5 min.
	@ -12° C, Failure Stress (a) MPa	4.0 MPa min.
(a) No allowances will be given for passing at colder grade.		

B. Performance Grade Asphalt Binder PG 58-28:

PG58-28		
ORIGINAL BINDER		AASHTO M 320
Dynamic Shear Rheometer, AASHTO T 315	@ 58° C, G*, kPa	1.00 kPa min.
	@ 58° C, phase angle, degrees	74.0 max.
Rotational Viscometer, AASHTO T 316	@ 135° C, Pa.s	3.0 Pa.s max.
Flash Point, AASHTO T 48	°C	230 °C min.
Rolling Thin Film Oven (RTFO) Residue, AASHTO T 240		
Dynamic Shear Rheometer, AASHTO T 315	@ 58° C, G*, sinδ, kPa	2.20 kPa min.
Elastic recovery, AASHTO T 301 mod	%	65 min.
Pressure Aging Vessel (PAV) Residue, 20 hours, 2.10 100° C, AASHTO R28		
Dynamic Shear Rheometer, AASHTO T 315	@ 19° C, kPa	5000 kPa max.
Bending Beam Rheometer, AASHTO T 313	@ -18° C, S, MPa	300 MPa max.
	@ -18° C, m-value	0.300 min.
Direct tension Test, AASHTO T 314	@ -18° C, Failure Stress, %	1.5 min.
	@ -18° C, Failure Stress (a) MPa	4.0 MPa min.
(b) No allowances will be given for passing at colder grade.		

C. Performance Grade Asphalt Binder PG 58-34 Table:

PG58-34		
ORIGINAL BINDER		AASHTO M 320
Dynamic Shear Rheometer, AASHTO T 315	@ 58° C, G*, kPa	1.30 kPa min.
	@ 58° C, phase angle, degrees	74.0 max.
Rotational Viscometer, AASHTO T 316	@ 135° C, Pa.s	3.0 Pa.s max.
Flash Point, AASHTO T 48	°C	260 °C min.
Rolling Thin Film Oven (RTFO) Residue, AASHTO T 240		
Dynamic Shear Rheometer, AASHTO T 315	@ 58° C, G*, sin δ , kPa	2.20 kPa min.
	Elastic recovery, AASHTO T 301 mod	%
Pressure Aging Vessel (PAV) Residue, 20 hours, 2.10 100° C, AASHTO R28		
Dynamic Shear Rheometer, AASHTO T 315	@ 16° C, kPa	5000 kPa max.
Bending Beam Rheometer, AASHTO T 313	@ -24° C, S, MPa	300 MPa max.
	@ -24° C, m-value	0.300 min.
Direct tension Test, AASHTO T 314	@ -24° C, Failure Stress, %	1.5 min.
	@ -24° C, Failure Stress (a) MPa	4.0 MPa min.
(c) No allowances will be given for passing at colder grade.		

D. Performance Grade Asphalt Binder PG 64-22:

PG64-22		
ORIGINAL BINDER		AASHTO M 320
Dynamic Shear Rheometer, AASHTO T 315	@ 64° C, G*, kPa	1.30 kPa min.
	@ 64° C, phase angle, degrees	74.0 max.
Rotational Viscometer, AASHTO T 316	@ 135° C, Pa.s	3.0 Pa.s max.
Flash Point, AASHTO T 48	°C	260 °C min.
Rolling Thin Film Oven (RTFO) Residue, AASHTO T 240		
Dynamic Shear Rheometer, AASHTO T 315	@ 64° C, G*, sin δ , kPa	2.20 kPa min.
	Elastic recovery, AASHTO T 301 mod	%
Pressure Aging Vessel (PAV) Residue, 20 hours, 2.10 100° C, AASHTO R28		
Dynamic Shear Rheometer, AASHTO T 315	@ 25° C, kPa	5000 kPa max.
Bending Beam Rheometer, AASHTO T 313	@ -12° C, S, MPa	300 MPa max.
	@ -12° C, m-value	0.300 min.
Direct tension Test, AASHTO T 314	@ -12° C, Failure Stress, %	1.5 min.
	@ -12° C, Failure Stress (a) MPa	4.0 MPa min.
(d) No allowances will be given for passing at colder grade.		

E. Performance Grade Asphalt Binder PG 64-28 Table:

PG64-28		
ORIGINAL BINDER		AASHTO M 320
Dynamic Shear Rheometer, AASHTO T 315	@ 64° C, G*, kPa	1.30 kPa min.
	@ 64° C, phase angle, degrees	74.0 max.
Rotational Viscometer, AASHTO T 316	@ 135° C, Pa.s	3.0 Pa.s max.
Flash Point, AASHTO T 48	°C	260 °C min.
Rolling Thin Film Oven (RTFO) Residue, AASHTO T 240		
Dynamic Shear Rheometer, AASHTO T 315	@ 64° C, G*, sin δ , kPa	2.20 kPa min.
Elastic recovery, AASHTO T 301 mod	%	65 min.
Pressure Aging Vessel (PAV) Residue, 20 hours, 2.10 100° C, AASHTO R28		
Dynamic Shear Rheometer, AASHTO T 315	@ 22° C, kPa	5000 kPa max.
Bending Beam Rheometer, AASHTO T 313	@ -18° C, S, MPa	300 MPa max.
	@ -18° C, m-value	0.300 min.
Direct tension Test, AASHTO T 314	@ -18° C, Failure Stress, %	1.5 min.
	@ -18° C, Failure Stress (a) MPa	4.0 MPa min.
(e) No allowances will be given for passing at colder grade.		

F. Performance Grade Asphalt Binder PG 70-28 Table:

PG70-28		
ORIGINAL BINDER		AASHTO M 320
Dynamic Shear Rheometer, AASHTO T 315	@ 70° C, G*, kPa	1.30 kPa min.
	@ 70° C, phase angle, degrees	74.0 max.
Rotational Viscometer, AASHTO T 316	@ 135° C, Pa.s	3.0 Pa.s max.
Flash Point, AASHTO T 48	°C	260 °C min.
Rolling Thin Film Oven (RTFO) Residue, AASHTO T 240		
Dynamic Shear Rheometer, AASHTO T 315	@ 70° C, G*, sin δ , kPa	2.20 kPa min.
Elastic recovery, AASHTO T 301 mod	%	65 min.
Pressure Aging Vessel (PAV) Residue, 20 hours, 2.10 100° C, AASHTO R28		
Dynamic Shear Rheometer, AASHTO T 315	@ 25° C, kPa	5000 kPa max.
Bending Beam Rheometer, AASHTO T 313	@ -18° C, S, MPa	300 MPa max.
	@ -18° C, m-value	0.300 min.
Direct tension Test, AASHTO T 314	@ -18° C, Failure Stress, %	1.5 min.
	@ -18° C, Failure Stress (a) MPa	4.0 MPa min.
(f) No allowances will be given for passing at colder grade.		

SECTION 321500 - AGGREGATE SURFACING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Sand at long/triple jump landing pit.

1.2 RELATED REQUIREMENTS

- A. Section 033000 - Concrete Paving.
- B. Section 321823.33 - Synthetic Running Track Surfacing.
- C. Section 334600 - Subdrainage:

1.3 REFERENCE STANDARDS

- A. ASTM C 136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2006.

1.4 SUBMITTALS

- A. Action Submittals:
 - 1. Samples: Submit 2 quart sample of Materials; submit in air-tight containers.
 - 2. Materials Sources: Submit name of imported materials source.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When aggregate materials need to be stored on site, locate stockpiles where designated.
 - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 - 2. Prevent contamination.
 - 3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Long/Triple Jump Pit Sand: High quality quartz sand that does not crust, white in color, free of deleterious materials, organic matter, rock, clay, and trash.
 - 1. Beach or USGA Bunker Sand. Submit sample for approval.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify substrate has been inspected, gradients and elevations are correct, and is dry.
- B. Verify that subgrade drain piping is completed and operating properly.

3.2 PREPARATION

- A. Remove concrete, clods, debris, and other foreign material from areas to receive Material installation.
- B. Do not place Materials on soft, muddy, or frozen surfaces.

3.3 INSTALLATION

- A. Install geotextile fabric at areas to receive Materials and as detailed.
- B. Install Materials at locations shown on plans and details.
- C. Install Long/Triple Jump Pit Sand throughout entire landing pit level with take off board elevation.

3.4 TOLERANCES

- A. Surface of Sand: Plus or minus 1/8 inch from take off board elevation.

3.5 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for general requirements for field inspection and testing.
- B. Protect Sand and Cinder areas from contamination by other materials.

3.6 EXTRA MATERIAL

- A. Long/Triple Jump Pit Sand:
 - 1. At each long/triple jump pit surround place 1/2 cubic yard of material after review and acceptance of the drainage inside of the pit surrounds (approximately 2 inches of sand throughout sand catch channel).

3.7 CLEANING

- A. Clean up excess material and leave in neat condition.

END OF SECTION

SECTION 321823.29 - SYNTHETIC FIELD SPORT SURFACING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Infilled synthetic turf field system.
- B. Prefabricated Resilient Underlayment.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast in Place Concrete.
- B. Section 322300 - Excavation and Fill.
- C. Section 334600 - Subdrainage.

1.3 REFERENCE STANDARDS

- A. ASTM F1551-09 Standard Test Methods for Comprehensive Characterization of Synthetic Turf Playing Surfaces and Materials.
- B. NCAA Soccer Rule 1 - Construction of Facilities, current edition.
- C. NCAA Football Rule 1 - Construction of Facilities, current edition.
- D. "Suggested Guidelines for the Essential Elements of Synthetic Turf Systems", latest edition by the Synthetic Turf Council.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Contact the General Contractor and schedule a preinstallation meeting at least one month prior to the start of Work related to any components of the base or drainage for the synthetic turf field. Provide General Contractor with all applicable information and requirements related to the synthetic turf field installation, storage, scheduling, etc.
- B. Review drawings and specifications issued for bidding/construction of the project. Notify Owner's Authorized Representative immediately if any items related to the synthetic turf (base rock, drainage, nailer board, etc.) will produce results not compatible with the synthetic turf system.

1.5 PROTECTION

- A. Protect existing built elements during construction. Leave in as good condition as found.

- B. Maintain benchmarks, monuments, and other reference points. If disturbed or destroyed replace as directed.

1.6 SUBMITTALS

- A. Product Data: Submit the following information prior to delivery of turf to Owner's Representative prior to installation.
 - 1. Product cut sheets and MSDS data.
 - 2. Manufacturer's standard specification for material construction and installation.
 - 3. Manufacturer's maintenance instructions.
 - 4. Third party testing results demonstrating compliance with the specifications for the actual material intended for use on the project prior to turf delivery.
- B. Shop Drawings: Provide the following minimum information for review and approval:
 - 1. Field marking plan with dimensions, details, color, and design standard. Provide plans in full color representing variations of turf colors to be installed.
 - 2. Seam and roll layout plans.
 - 3. Attachment details showing edge condition(s) consistent with design documents.
- C. Samples: Submit the following product samples:
 - 1. Submit turf material samples, 12 inch square min. in size, illustrating color, backing, and fiber for each color of synthetic turf including markings.
 - 2. Submit samples of infill mix.
 - 3. Submit sample of Resilient Underlayment.
- D. Qualification Submittals: Submit Quality Assurance data.
- E. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
 - 1. Submit a sample of the warranty, and any amendments, to Owner prior to delivery of turf material to the site.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of the project.
 - 1. Submit manufacturer's maintenance manual. The maintenance manual should include instructions for care and protection of the synthetic turf system including, but not limited to, recommended maintenance, approved cleaning products, paints, painting application and removal procedures, procedures for minor repairs, and forms for logging maintenance activities.
 - 2. Extra Synthetic Turf Material: Coordinate delivery and storage location with Owner of excess turf material in the following quantities:
 - a. 600 sf (15 feet x 40 feet) of each color of turf.
 - b. 4 inch wide strips totaling 50 lf of each color of line marking
 - 3. Extra Infill Materials: 1 super sack each of rubber and sand. Coordinate delivery location with Owner's Authorized Representative.

4. Provide maintenance equipment as recommended by the turf manufacturer to allow Owner to maintain turf to meet warranty requirements. The equipment, at a minimum, shall consist of a hydraulic sweeper, groomer, and brush attachment able to be towed by a Gator.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified with not less than 5 years of documented experience and:
 1. Have a minimum of 10 fields of similar size and similar materials specified in this Section installed in the past 5 years. Provide project name and location, date of installation, product installed, and contact information.
 2. Be vertically integrated in the manufacturing of the synthetic turf system and not a reseller.
 3. Have a representative certify the Work of the Installer for warranty compliance.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years of experience as well as:
 1. Be approved by the turf manufacturer, in writing, as qualified to install the specified synthetic turf system.
 2. Have a designated supervisor approved by the turf manufacturer.
 3. Have a minimum of 10 successfully installed projects of similar size with materials similar to those specified in this Section in the past 5 years. Provide project name and location, date of installation, product installed, and contact information.
- C. Submit test results for cushioning properties per ASTM F1936-10: Standard Specification for Shock Absorbing properties of North American Football Field Playing Systems as Measured in the Field and F355 procedure A prior to Final Acceptance.
- D. Submit third party test results for the synthetic turf carpet intended for use on the project identifying characteristics using ASTM standards identified prior to delivery or installation.
 1. Contractor shall submit the required sample(s) of the turf produced for the project to a third party laboratory for testing of material to demonstrate conformance with Carpet and Fiber Characteristics identified in Part 2.1.
 2. Deliver test results to Owner's Authorized Representative a minimum of 10 days prior to delivery of material

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver material to project site, unload, handle, and store according to manufacturer's directions. Coordinate material storage location with Owner's Authorized Representative and General Contractor prior to deliver.
- B. Protect materials of this Section from time of delivery until installation.
- C. Protect work of other trades. Make repairs in the event of damage.

1.9 WARRANTY

- A. In addition to the synthetic turf manufacturer's standard warranty the following items shall be included:
 - 1. Warranty shall cover defects in synthetic turf materials, installation or workmanship, and damage from UV degradation.
 - 2. Synthetic turf must maintain a G max value of less than 165 throughout the warranty period and be less than 120 following substantial completion.
 - 3. Warranty shall extend a minimum of 8 years from the date of substantial completion and be non pro rated.
 - 4. Warranty shall be third party insured by an A+ rated or better carrier as rated by AM Best financial strengths rating and be prepaid with no deductible to the Owner and Beaverton School District as additional insured.
 - 5. Warranty shall not restrict the hours of use or exclude high wear areas.
 - 6. Warranty shall cover, at a minimum, the intended uses for the field by the athletic department, student recreation, and university events such as commencement.
 - 7. Demonstrate and train Owner in proper operation of maintenance equipment and procedures to Owner's designated representatives to qualify them as authorized maintenance personnel for performing maintenance to the turf field which satisfies any warranty requirements.
- B. Resilient Underlayment shall be warranted by the manufacturer for a minimum of 16 years from the date of Substantial Completion.

1.10 COORDINATION

- A. Coordinate schedule and installation of synthetic turf with General Contractor. Provide submittals to Owner's Authorized Representative with adequate time for review and approval while conforming to General Contractor's schedule.
- B. Contractor must receive certification from the Resilient Underlayment manufacturer that the underlayment was installed per manufacturers requirements and in full accordance with manufacturer's warranty. Provide certification to Owner prior to turf installation.

PART 2 PRODUCTS

2.1 SYNTHETIC TURF SYSTEM

- A. Description: All weather monofilament synthetic turf carpet infilled with a mixture of sand and rubber designed for athletic applications. Notify Owner's Representative of discrepancies between these Specifications and the manufacturer's current standard specifications prior to bidding or installation.
- B. Synthetic Turf:

1. Pile Height: 2.5 inches, uniform over entire field, per ASTM D5823.
 2. Infill depth: 1.75 inches, minimum.
 3. Pile weight: 40 oz/sy per ASTM D5848 minimum.
 4. Yarn Denier: 10,000 per ASTM D1577 minimum.
 5. Primary Backing Weight: Minimum 7 oz/sy per ASTM D5848.
 6. Secondary Backing Weight: Minimum 14 oz/sy per ASTM D5848.
 7. Total Carpet Weight: Minimum 61 oz/sy per ASTM D5848.
 8. Tuft Bind: Minimum 8 lbs/force per ASTM D1335.
 9. Grab Tear Length and Width: Minimum 200 lbs/force per ASTM D5034.
 10. Infiltration Rate: Minimum 14 inches/hour.
 11. Roll Width: 15 feet wide.
- C. Infill Characteristics: Mixture of sand and rubber with the following characteristics and per manufacturer's standard materials:
1. Infill Depth: 1.75 inches minimum over entire field (uniform).
 2. Silica Sand: Minimum of 25% of total infill.
- D. Warranty: 8 years minimum.
1. Gmax over the life of the warranty: Minimum 90; Maximum 165 Gmax per ASTM F1936.
- E. Color Schedule: Refer to Drawings for additional requirements.
1. Turf: As shown on Drawings, submit sample for approval.
 2. Football Markings: White.
 3. Soccer Markings: Yellow.
 4. Lacrosse Guide Marks: Black.
 5. Sideline and 20-yard line accents: Red.
 6. Logos and Wordmarks: As shown on Drawings.
- F. Approved products:
1. Revolution by FieldTurf; Contact: Steve Coury @ 503-635-3219.
 2. PowerBlade HP+ by Shaw Sportexe; Contact: Kevin Senf @ 512-627-2220.
 3. Speed M6M by UBU Sports; Contact: Kevin Farin @ 971-506-3574.
 4. Matrix by Hellas; Contact: John Burke @ 512-250-2910.
 5. GameDay Grass MT by AstroTurf; Contact: James Traynor @ 206-979-9792.
 6. Ultrablade MX by SprinTurf; Contact: Brad Martin @253-859-8223.
 7. Substitutions: Submit substitution requests to Owner's Authorized Representative.

2.2 ACCESSORIES

- A. Adhesives and Stitching: As recommended by the synthetic turf manufacturer.

2.3 TURF NAILER BOARD AND FASTENERS

- A. Nailer Board: 2" x 4" (nominal) composite lumber nailer board.
 - 1. Approved Product:
 - a. Evergrain.
 - b. Trex.
 - 2. Substitutions: Submit substitution requests to Owner's Representative.
- B. Fasteners: 1/4" x 3" anchor for composite lumber nailer board.
 - 1. Approved Product:
 - a. Tap-it Model 5160.
 - b. Wej-It Model DN1430
 - 2. Substitutions: Submit substitution requests to Owner's Representative.

2.4 ALTERNATE BID ITEM 1 - RESILIENT UNDERLAYMENT

- A. Premanufactured interlocking panels for use as a shock pad beneath entire synthetic turf athletic surface with the minimum following characteristics:
 - 1. Material: Expanded Polypropylene Composite (30% recycled content minimum)
 - 2. Thickness: 0.55 inches (14 mm).
 - 3. Size: 15.9 square feet per panel.
 - 4. Permeability: Minimum 50 inches/hour per EN 12616.
 - 5. Approved Product: SP14 Shock Pad by Brock International or approved.

PART 3 EXECUTION

3.1 INSTALLERS

- A. Must be certified or approved by the synthetic turf manufacturer and meet qualifications.

3.2 EXAMINATION

- A. Verification of Conditions: Verify that the aggregate base is acceptable for installation of synthetic turf system. Review compaction reports, survey for planarity, and infiltration reports. Submit in writing to Owner's Authorized Representative that surface is acceptable for turf installation and execution of warranty.
- B. Commencing the installation of the synthetic turf indicates acceptance of the rock base.
- C. Verify the Nailer Board is installed to allow for synthetic turf attachment requirements.

3.3 PREPARATION

- A. Protection of In-Place Conditions: Protect installed work of other trades during installation of synthetic turf system.
- B. Survey dimensions for field markings and verify the specifications and applicable standards are being met prior to turf installation. Survey work should be performed by a registered surveyor.

3.4 INSTALLATION OF TURF NAILER BOARD

- A. Install nailer board as shown on Drawings and Details.
- B. Install fasteners at 24 inches minimum on center spacing and 3 inches from the ends of the nailer board. Leave 1/2" gap between ends of boards.

3.5 INSTALLATION OF TURF AND RESILIENT UNDERLAYMENT

- A. Install synthetic turf system and resilient underlayment following manufacturer's instructions, specifications, drawings, and details. Where discrepancies exist between manufacturer's specifications and the contract documents notify Owner's Authorized Representative prior to beginning installation.
- B. Compact and repair base aggregate which has been disturbed during synthetic turf installation to required compaction and levelness.
- C. Install turf as indicated on approved roll layout plans. Install seams in accordance with manufacturer's instructions.
- D. Attach turf to perimeter edge nailer as detailed and in accordance with the manufacturer's typical installation procedures. Ensure turf is securely fastened along entire field perimeter.
- E. Install infill material following manufacturer's instructions to depths specified. Infill shall be installed evenly over the field eliminating any high or low areas. The height of the fibers above the infill should be uniform throughout the field.
 - 1. After infill is installed turf fibers should be vertical and non-directional.
 - 2. At field perimeters the infill is to be flush with adjacent concrete header or adjacent surface.
 - 3. Infill installation will not be accepted if less than 1-3/4" deep or greater than 1-7/8" deep measured at any location throughout the field.
- F. Install field markings shown on the Plans, shop drawings, and as specified. If a conflict exists between plans and specified standards for markings notify Owner's Authorized Representative prior to installing lines.
 - 1. Field markings are to be tufted or inlaid. Inlay lines following manufacturer's instructions. Inlaid lines shall be the same turf material type as the specified turf. Inlaid lines should be level with the surrounding turf.

2. Employ a qualified registered surveyor to lay out field markings. Ensure conformance to specified standards prior to shearing turf for the installation of sector lines..
3. Field markings should be installed to within 1/2 inch accuracy.

3.6 INSPECTION

- A. Notify Owner's Authorized Representative for review of synthetic turf system installation. Prior to review ensure all work has been installed per manufacturer's instructions, drawings, details, and specifications.

3.7 FIELD QUALITY CONTROL

- A. Provide manufacturer's field representative to inspect synthetic turf installation to confirm manufacturer's installation instructions have been followed and allows for a full warranty.
- B. Prepare As-Built drawing, with surveyed data from a registered professional surveyor, showing dimensions of field markings and field elevations.
 1. Obtain elevations at the following locations:
 - a. (3) along centerline of soccer field (1 at the center and 1 at each end)
 - b. (3) along each soccer field end line (1 at the center and 1 at each end)
 - c. (3) at the midpoint between the center and end line at each side of the soccer field.
 - d. (3) at each sector line at the beginning, mid, and end point.
 2. Survey field markings to demonstrate compliance with specified requirements. At a minimum, measurements shall be taken at the corners, intersections, end lines, center lines, and other markings.
- C. Employ an independent testing agency to perform and provide test results for G max per ASTM F1936-10 and ASTM F355 procedure A at each field. Submit results to the Owner's Authorized Representative prior to Final Acceptance.

3.8 CLEANING

- A. Clean synthetic turf field of debris, including synthetic turf fibers, rocks, dirt, and items not specified as infill material.
- B. Remove excess infill and synthetic turf material, debris, and construction waste from storage and work areas.

3.9 CLOSEOUT ACTIVITIES

- A. Demonstrate and train Owner in proper operation of maintenance equipment, and all other necessary field maintenance requirements to satisfy manufacturer's warranty requirements, to Owner's designated representative.
- B. Coordinate location for delivering maintenance materials to Owner.

3.10 PROTECTION

- A. Notify General Contractor of requirements to protect installed Work during subsequent construction operations.

END OF SECTION

SECTION 321823.33 - SYNTHETIC RUNNING TRACK SURFACING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Synthetic running track surfaces.
- B. Track and field line markings.

1.2 RELATED REQUIREMENTS

- A. Section 033000 - Cast-in-Place Concrete.
- B. Section 321216 - Asphalt Paving.

1.3 REFERENCE STANDARDS

- A. IAAF/NCAA - Performance Specification for Synthetic-Surfaced Athletics Tracks (Outdoor), International Amateur Athletic Federation / National Collegiate Athletic Association; latest edition.
- B. NCAA Track and Field Rules; latest edition.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to start of Work of this section; require attendance by all affected installers.

1.5 SUBMITTALS

- A. See Section 013000 - Administrative Requirements.
- B. Action Submittals:
 - 1. Product Data: Manufacturer's product data including standard specifications, installation guidelines and maintenance instructions.
 - a. Submit documentation that synthetic running track surfacing material is free of toxic or hazardous substances that exceed the limits set forth by the U.S. Environmental Protection Agency.
 - 2. Shop Drawings: Show location and color of lane lines, start lines, finish lines, and related markings for Owner to review a minimum of 4 weeks prior to application.
 - a. Include diagram of lane numbers showing font and proportions to running lane striping.
 - 3. Samples: Three, 12 inch by 12 inch samples of the full-depth system in the color(s) indicated on the contract documents.

4. Manufacturer's Qualification Statement.
 5. Certifications:
 - a. Submit installer's certification that the installer has reviewed the asphalt or concrete base drawings and specifications and accepts the asphalt or concrete base will be suitable if constructed as shown and specified.
 - b. Submit installer's certification that in-place concrete or asphalt substrate is acceptable as installed.
 6. Installer's Qualification Statement.
- C. Informational Submittals:
1. Manufacturer's Instructions: Submit copies of manufacturer's written installation instructions and other recommendations
 2. Test Reports: Reports of field quality control testing.
 3. Maintenance Data.
 4. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
 5. Project Record Documents: Record actual locations of installed synthetic running track surfaces. Submit 2 color plans identifying line markings at a minimum size of 17 x 22 inches.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company that has produced surfacing materials for not less than 10 years with not less than six similar projects that have been in successful use for more than 10 years.
- B. Installer Qualifications: Minimum seven years experience with not less than five successful installations of surfacing systems of type specified herein.
 1. Submit manufacturer's certification that installer is qualified to install the products specified.
 2. Submit installer's certification that installer is a member of American Sports Builders Association (ASBA).
 3. Submit installer's certification that installer employs at least one ASBA "Certified Track Builder" (CTB) on installation team for project.

1.7 DELIVERY STORAGE AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store in weathertight location and protect from damage during delivery, storage and handling.

1.8 WARRANTY

- A. Provide five year minimum manufacturer warranty for synthetic running track surface system.

PART 2 PRODUCTS

2.1 SYNTHETIC RUNNING TRACK SURFACING

- A. BASE BID-Synthetic Running Track Surfacing System: Impermeable, paved in place base layer consisting of polyurethane and SBR rubber granules coated with polyurethane sealer consisting of pigmented EPDM granules and polyurethane structural spray.
1. Thickness: 13 mm.
 2. Materials: Per manufacturer's standard product.
 3. Color: Red.
 4. Approved Products and Installers:
 - a. BSS 200.
 - 1) Manufacturer: Beynon Sports Surfaces.
 - 2) Installer: Beynon Sport Surfaces.
 - 3) Contact: Gary Logsdon @ 503-691-2484.
 - b. CalTrax Impermeable Mat Spray by California Track and Engineering.
 - 1) Manufacturer: Advanced Polymer Technologies, Inc.
 - 2) Installer: California Track and Engineering, Inc.
 - 3) Contact: Jeb Burgess @ 559-237-2590.
 - c. EpiqTracks V300
 - 1) Manufacturer: Roxie Polymers, LLC.
 - 2) Installer: Hellas Construction.
 - 3) Contact: John Burke @ 512-250-2910.
 - d. Renegade BMSS Sealed
 - 1) Manufacturer: Stockmeier Urethanes USA, Inc.
 - 2) Installer: Renegade Sports Surfacing, Inc.
 - 3) Contact: Jeffrey Dixon @ 503-443-4714.
- B. ALTERNATE BID 5 - Synthetic Running Track Surfacing System: Sandwich system composed of a paved in place polyurethane base mat topped with a seal coat and surfaced with a two component polyurethane wear layer of embedded EPDM granules.
1. Hold current certificate indicating compliance with IAAF performance requirements.
 2. Thickness: Thickness meeting the IAAF certification for the product and not less than 13mm.
 3. Materials: Same as IAAF certified formula and properties.
 4. Color: Red.
 5. Approved Products:
 - a. BSS 300.
 - 1) Manufacturer: Beynon Sports Surfaces.
 - 2) Installer: Beynon Sport Surfaces.
 - 3) Contact: Gary Logsdon @ 503-691-2484.
 - b. Rekortan S.
 - 1) Manufacturer: Advanced Polymer Technologies, Inc.
 - 2) Installer: California Track and Engineering, Inc.

- 3) Contact: Jeb Burgess @ 559-237-2590.
 - c. EpiqTracks X1000.
 - 1) Manufacturer: Roxie Polymers, LLC.
 - 2) Installer: Hellas Construction.
 - 3) Contact: John Burke @ 512-250-2910.
 - d. Renegade SW.
 - 1) Manufacturer: Stockmeier Urethanes USA, Inc.
 - 2) Installer: Renegade Sports Surfacing, Inc.
 - 3) Contact: Jeffrey Dixon @ 503-443-4714.
- C. ALTERNATE BID 6 - Synthetic Running Track Surfacing System: Impermeable; full pour system per the manufacturer's specifications and the following requirements.
1. Hold current certificate indicating compliance with IAAF performance requirements.
 2. Thickness: Thickness meeting the IAAF certification for the product and not less than 13mm.
 3. Materials: Same as IAAF certified formula and properties.
 4. Color: Red.
 5. Approved Product and Installer:
 - a. BSS 1000ML by Beynon Sport Surfaces.
 - 1) Manufacturer: Beynon Sports Surfaces.
 - 2) Installer: Beynon Sport Surfaces.
 - 3) Contact: Gary Logsdon @ 503-691-2484.
 - b. Rekortan M99 by California Track and Engineering.
 - 1) Manufacturer: Advanced Polymer Technologies, Inc.
 - 2) Installer: California Track and Engineering, Inc.
 - 3) Contact: Jeb Burgess @ 559-237-2590.
 - c. EpiqTracks Z5000 by Hellas Sports Construction.
 - 1) Manufacturer: Roxie Polymers, LLC.
 - 2) Installer: Hellas Construction.
 - 3) Contact: John Burke @ 512-250-2910.
 - d. Renegade FP.
 - 1) Manufacturer: Stockmeier Urethanes USA, Inc.
 - 2) Installer: Renegade Sports Surfacing, Inc.
 - 3) Contact: Jeffrey Dixon @ 503-443-4714.

2.2 ACCESSORIES

- A. Track and Event Line Marking Paint: Polyurethane paint formulated for exterior service environments in striping applications in color as specified for line markings and as recommended by the synthetic track manufacturer.
1. Thickness: 12 mils dry film thickness (DFT) minimum.
 2. Multiple coats as required to achieve thickness as required by paint manufacturer.
 3. Prime surface to achieve adhesion characteristics of paint.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.
 - 1. Do not proceed until unsatisfactory conditions have been corrected.
 - 2. Substrate tolerances:
 - a. Planarity: Not to exceed 1/8 inch in 10 feet, non-cumulative.
 - b. Levelness: Not to exceed 0.1 percent in running direction.
 - c. Concrete Curbs: Ensure top elevations of continuous concrete curbs are at elevations shown on Drawings.
- B. Flood Test: Flood substrate immediately after substrate is capable of supporting foot traffic. Allow to dry for 20 minutes.
 - 1. If any areas of ponded water (“birdbaths”) are visible at the end of the 20 minute drying time, correct areas of substrate that allow water to pond.
 - 2. Obtain Owner's Representative's written approval of method of correction prior to proceeding with corrective work.
 - 3. Cold tar patching, skim-coat patching and sand-mix patching are not acceptable methods of correction.

3.2 PREPARATION

- A. Protection: Protect surfaces adjacent to track surfacing operations from polyurethane liquids.
- B. Surface Preparation: Verify substrate is fully cured and free from excess surface oils and chemicals that would impair track surface installation.
 - 1. Concrete: Cure concrete for not less than 30 days or as required by synthetic track surface installer. Test cured concrete substrate and provide documentation that moisture content is within limits defined by manufacturer.
 - 2. Asphalt: Cure asphalt for no less than 30 days or as required by synthetic track surface installer. Test cured asphalt and provide documentation that volatiles and latent asphalt content are within limits defined by manufacturer.
- C. Check asphalt with 10 foot straightedge in all directions. Repair areas not in conformance or replace with new materials, recompact, and recheck surfaces.
- D. Ensure that asphalt compaction test indicate conformance with Specifications.

3.3 INSTALLATION

- A. General:
 - 1. Comply with manufacturer's installation instructions.

2. Prime areas to be surfaced.
3. Make substrate surface repairs and minor planarity corrections with repair compound.
4. Install track surface as specified to achieve track surface performance and physical dimensions within tolerances.

3.4 TRACK AND EVENT LINE MARKING

- A. Track and Event Line Markings, General: Comply with the requirements of the referenced NCAA standards. All markings shall be performed by experienced personnel approved by the synthetic track installer and manufacturer.
- B. Verify with Owner's Authorized Representative location and color of lines and markings prior to installation.
- C. Follow manufacturer's recommendations for surface preparation and installation.
- D. Provide NCAA standard markings for the following track and field events:
 1. Start Lines - White:
 - a. 55/60 m.
 - b. 55/60 m hurdles.
 - c. 100 m; label "100M" outside of lane 8 next to start line.
 - d. 100/110 m hurdles; label "110M" outside of lane 8 next to start line.
 - e. 200 m; label "200M" above start line in lane 1.
 - f. 300 m; label "300M" above start line in lane 1.
 - g. 400 m; label "400M" above start line in lane 1.
 - h. 1,500 m; label "1500M" outside of lane 8 next to start line.
 - i. 1 mile; label "1MILE" outside of lane 8 next to start line.
 - j. 3,000 m Steeplechase; label "3000M" outside of lane 8 next to start line.
 - k. 5,000 m; label "5000M" outside of lane 8 next to start line.
 - l. 10,000 m; label "10000M" outside of lane 8 next to start line.
 2. Start Lines - White with Green Insert:
 - a. 800 m; label starting line "800M" above starting line.
 3. Start Line - White with Red Insert:
 - a. 400 m Relay.
 4. Start Line - White with Blue Insert:
 - a. 1600 m Relay; label "1600MR" above start line in lane 2.
 5. Finish Lines: White; Paint the intersection of the finish line and each lane line black. See Figure 3 in NCAA Track and Field Rules - Rule 1.
 6. Relay Exchange Zones:
 - a. 400 m - Yellow.
 - b. 800 m - Red.
 - c. 1600 m - Blue.
 7. Hurdle Locations:
 - a. 100 m - Yellow.
 - b. 110 m - Blue.
 - c. 400 m - Green.

- d. Steeplechase - Black.
- 8. Break Line: Green.
- 9. Lane Lines: White.
- 10. Lane Numbers: SOU font according to SOU Graphic Identity Standards, latest edition; white in color. Install at the following locations:
 - a. 5 feet before the primary 110 m starting line (north end); 36 inches tall.
 - b. 12 inches after the primary common finish line facing to read from west side stadium bleachers; 30 inches tall.
 - c. Above the staggered start lines for the 200m and 400m; 36 inches tall.
- 11. Markings shown on drawings and details.
- 12. Event labels to be white lettering 4 inches tall in location identified.
- 13. Pole Vault:
 - a. Runway: 5cm (2 inches), white striping, 48 inches apart extending to the slot drain on both sides of the 'D' zone.
 - b. Runway Markings: Mark center of runway with 7 lines as shown on Drawings conforming to Figure 6 of the current NCAA Track and Field Rules- Rule 1.
- 14. Long Jump:
 - a. Runway: 5cm (2 inches), white striping, 48 inches apart extending to landing pit edge.
- 15. Javelin:
 - a. Runway: 4 m (13.12 feet) wide, 5 cm (2 inches) white striping. Refer to drawing for location of solid and dashed lines.
 - b. Foul Line: 7 cm wide, white, 8 meter arc. Install striping from the end point of the arc perpendicular to the runway and extending 75 cm.
 - c. Sector: Radial lines, 2 inches wide, extended from the center of the foul line arc as shown in Figure 15 of the NCAA Track and Field Rules - Rule 1.

3.5 TOLERANCES

- A. Surface Thickness, variation: Variation of minus 0.0 inch to plus 1/8 inch.
- B. Color Deviation: Consistent color and texture over entire surface; 5 Delta E (Hunter) units maximum allowed.
- C. Striping and Markings: Calculate to nearest 1/100th of a foot.
- D. Slopes: Refer to NCAA standards for allowable tolerances.
 - 1. Track Oval:
 - a. Running Direction: 0.1 percent, maximum.
 - b. Lateral Slope: 1.0 percent maximum.

3.6 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements for additional information.
- B. Track Layout and Survey:

1. Employ registered surveyor to document compliance of in-place work with the contract documents and NCAA requirements.
2. Submit reports and drawings attesting to the accuracy of measurements and markings to Owner's Authorized Representative using the Class 3 Markings and Slopes Certification for Running Tracks form from the American Sports Builders Association.

3.7 CLEANING

- A. Leave surfacing in clean condition and free of surface defects.
- B. Reapply and touch up paint striping once during the warranty period.

3.8 PROTECTION

- A. Protect installed surfacing from damage during the balance of construction activity.

END OF SECTION

SECTION 323113 - CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fence framework, fabric, and accessories.
- B. Excavation for post bases; concrete foundation for posts.
- C. Manual gates and related hardware.

1.2 RELATED REQUIREMENTS

- A. Section 033000 - Cast-in-Place Concrete: Concrete anchorage for posts.

1.3 REFERENCE STANDARDS

- A. ASTM A392 - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric; 2011a.
- B. ASTM F567 - Standard Practice for Installation of Chain-Link Fence; 2011.
- C. ASTM F668 - Standard Specification for Polyvinyl Chloride (PVC) and Other Organic Polymer-Coated Steel Chain-Link Fence Fabric; 2011.
- D. ASTM F1083 - Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures; 2010.

1.4 SUBMITTALS

- A. Product Data: Provide data on fabric, posts, accessories, fittings and hardware.
- B. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, and schedule of components.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

PART 2 PRODUCTS

2.1 MATERIALS

- A. General: Provide all fabric, posts, rails, rods, bars, fittings, and hardware as required to make a complete installation.
- B. Posts, Rails, and Frames: ASTM F1083 Schedule 40 hot-dipped galvanized steel pipe, welded construction, minimum yield strength of 30 ksi.
- C. Wire Fabric: ASTM A 392 zinc coated steel chain link fabric.

2.2 COMPONENTS

- A. Line Posts: 2.38 inch outside diameter.
- B. Corner and Terminal Posts: 3 inch outside diameter.
- C. Gate Posts: 3 inch outside diameter.
- D. Top, Bottom, and Brace Rail: 1-5/8 inch outside diameter, plain end, sleeve coupled.
- E. Gate Frame: 1.66 inch diameter for welded fabrication.
- F. Fabric: 2 inch diamond mesh interwoven wire, 9 gage thick, top selvage knuckle end closed, bottom selvage knuckle end closed.
- G. Tension Bars: 3/16 inch x 3/4 inch x fabric height less 2 inches.
- H. Tension Wire, Bands, and Straps: 6 gage thick steel, single strand.
- I. Tie Wire: Aluminum alloy steel wire, 7 gauge minimum.
- J. Truss Rods: 5/16 inch outside diameter minimum.

2.3 ACCESSORIES

- A. Caps: Cast steel galvanized; sized to post diameter, set screw retainer.
- B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; galvanized steel.
- C. Hardware for Single Swinging Gates: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; fork latch with gravity drop and padlock hasp; keeper to hold gate in fully open position.
- D. Hardware for Double Swinging Gates: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; drop bolt on inactive leaf engaging socket stop set in concrete, active leaf

latched to inactive leaf preventing raising of drop bolt, padlock hasp; keepers to hold gate in fully open position.

- E. Hardware for Rolling Gates: Rolling gate latch, universal track bracket, rear track rollers with pipe brackets, and double wheel carrier with 6" wheels.

2.4 FINISH FOR SPECTATOR FENCE AND GATES

- A. Components and accessories: Powder coat all posts, components, and accessories.
- B. Fabric: Vinyl coated over coating of 2.0 oz/sq ft galvanizing.
- C. Color(s): Black.

2.5 FINISH FOR PERIMETER FENCE

- A. Galvanized.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install framework, fabric, accessories and gates in accordance with ASTM F 567.
- B. Place fabric on outside of posts and rails, unless indicated otherwise.
 - 1. Match existing fences where new fence abuts.
- C. Set intermediate posts plumb, in concrete footings with top of footing 6 inches below finish grade. Slope top of concrete for water runoff.
- D. Brace each gate and corner post to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail one bay from end and gate posts.
- E. Provide top rail through line post tops and splice with 6 inch long rail sleeves.
- F. Install center brace rail on corner gate leaves.
- G. Do not stretch fabric until concrete foundation has cured 28 days.
- H. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is less.
- I. Position bottom of fabric 2 inches above finished grade.
- J. Fasten fabric to top rail, line posts, braces, and bottom rail with tie wire at maximum 15 inches on centers.
- K. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.

- L. Install gate with fabric to match fence. Install hardware.
- M. Provide concrete center drop to footing depth and drop rod retainers at center of double gate openings.

3.2 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch.
- B. Maximum Offset From True Position: 1 inch.

END OF SECTION

SECTION 328000 - IRRIGATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Modification of an existing underground irrigation system for the installation of new zones and sprinkler heads.

1.2 RELATED REQUIREMENTS

- A. Section 016000 - Product Requirements
- B. Section 329000 - Planting

1.3 REFERENCE STANDARDS

- A. ASTM D1784: Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
- B. ASTM D1785: Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
- C. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
- D. ASTM D 2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems; 2004 (Reapproved 2009).
- E. ASTM F656: Standard Specification for Primers for Use in Solvent Cement Joints of Poly (Vinyl Chloride)(PVC) Plastic Pipe and Fittings.

1.4 PROTECTION

- A. Protect existing improvements and vegetation in areas to remain undisturbed until completion of project. Leave area in similar condition as found.
- B. Protect utilities and maintain in continuous operation or in operational condition during work. Repair damage to known utilities at Contractor's expense.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the work with other trades affecting and affected by Work of this Section.

- B. Preinstallation Meeting: Convene one week (minimum) prior to commencing work of this Section to coordinate utility marking procedures.

1.6 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's printed data covering products and installation instructions, catalog number, technical data, and photo or drawing for each component.
- C. Water Pressure Tests:
 - 1. Submit report of irrigation pressure tests for main line prior to backfilling.
- D. Quality Assurance Data: Submit license information and project references including name and location of previous projects, date of installation, square footage of areas with irrigation work, description of irrigation system, and Owner's contact information.
- E. Record Documents: Record actual locations of installed irrigation components on a clean set of plans. Use white out and red ink to legibly re-draft as-built information.
 - 1. Produce and keep current throughout the project.
 - 2. Indicate two dimensions for valves, stub outs, and main line T's, L's, ends, elbow's, and change in direction.
 - 3. Include the following information:
 - a. Variations or changes to system.
 - b. Main and lateral line locations.
 - c. Automatic control valves, quick coupling valves, drain valves.
 - d. Wire runs and splice locations.
 - e. Irrigation heads located by field dimension to the nearest permanent landmark.
 - f. Operating and Maintenance instructions for control valves, each type of irrigation head, spare parts list, and local source of replacement parts.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing Work of this Section who has successfully completed a minimum of 5 comparable scale projects and have the following licenses:
 - 1. For Irrigation Work:
 - a. Valid Oregon Landscape Contractors license..
 - b. Valid Oregon Landscape Business license.
 - 2. Successfully completed at least 5 comparable scale projects.
 - a. Submit names, addresses, dates, owners and locations of previous projects if requested by Owner's Representative.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products in original unopened packaging with legible manufacturer's identification.
- B. Comply with manufacturer's recommendations for storage and protection.
 - 1. Store in a cool, dry place out of direct sunlight.
 - 2. Protect from damage by the elements and construction procedures.
 - 3. Store plastic pipe on firm, level supports.
 - 4. Store plastic pipe cement in cool location.

1.9 ENVIRONMENTAL CONDITIONS

- A. Temperature of mating surfaces of plastic pipe and fittings to be between 40 degrees fahrenheit and 95 degrees fahrenheit. Do not solvent weld pvc pipe in wet conditions.

1.10 REVIEWS

- A. Request the following reviews by the Owner's Representative two days (min.) in advance:
 - 1. Irrigation Head Layout Review
 - 2. Pressure Test and Mainline Installation
 - 3. System Review
- B. Coordinate Reviews to coincide with regular progress meetings where possible.

1.11 DAMAGES

- A. Restore structures or facilities damaged by irrigation work to original condition.
- B. Repair damage caused by leaks or breaks in equipment and materials furnished or installed in this contract for one year after date of final acceptance.

1.12 EXISTING UTILITIES

- A. Locate and identify, with visible marking, existing underground utilities in areas of work. Utilities to remain in place shall be protected during excavation operations.
- B. Consult with utility owner for instructions if uncharted piping or other utilities are encountered during execution of work before proceeding.
- C. Cooperate with Owner and public or private utility companies in keeping their respective services and facilities in operation. Coordinate temporary interruptions to existing services and facilities and provide temporary utility services.

1.13 REGULATIONS

- A. Work to be accomplished in accordance with applicable Local, State and Federal codes and regulations.

1.14 WARRANTY

- A. Warranty period shall be one year following Final Completion or one full operating season following Final Completion, whichever is longer.
- B. Irrigation system must be in proper working condition at the end of the warranty period. At no additional cost to the Owner replace Work of this Section as necessary to restore system to proper working condition following the Contract Documents.
- C. Contractor is not responsible for loss or damage to Work of this Section caused by unusually extreme weather, vandalism, or lack of Owner's maintenance during warranty period.
- D. Equipment Warranty: Provide equipment manufacturer's standard Warranty for control valves, quick couplers, sprinkler heads, isolation, and drain valves.
- E. Installer's Warranty:
 - 1. Warranty all irrigation pipes to be free of leaks for one year from the date of final acceptance.
 - 2. Warranty shall include repair of trench backfill that settles more than 1/2" and repair of plantings, paving, and improvements damaged by settlement of trench backfill soils during warranty period.

PART 2 PRODUCTS

2.1 IRRIGATION SYSTEM MATERIALS

- A. Use only new materials of brands and types shown on Drawings or specified herein.
- B. Similar materials must be products of one manufacturer unless otherwise approved.
- C. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 PIPE MATERIALS

- A. Mainline and Lateral Line Pipe: Schedule 40 PVC Pipe, Type 1, normal impact: IPS, NSF approved conforming to ASTM D1784, ASTM D1785.
- B. Risers: One piece schedule 80 gray PVC Pipe, Type 1, threaded at both ends conforming to ASTM D1784 and ASTM D2464. No snap-risers.

- C. Fittings: PVC 1220, type 1, white schedule 40 and PVC nipples to be gray schedule 80; with molded threads; ASTM D1784, ASTM D2466, or ASTM D2464, as applicable.
- D. Irrigation Sleeves: Schedule 40 PVC Pipe, Type 1, normal impact: IPS, NSF approved conforming to ASTM D1784, ASTM D1785. Sized two times the diameter of the pipes scheduled to be contained in the sleeve. Minimum sleeve size is 6" diameter, unless noted otherwise on Drawings.
- E. Swing Joint Assembly Pipe and Fittings: Double swing joint risers as detailed. Swing-Pipe, snap, and "Funny pipe" risers not acceptable.
- F. Flex Riser Assembly: 18 inch minimum, 3 feet maximum Swing-Pipe with transfer barb 90 degree ells at both ends and a marlex ell below the irrigation head.
- G. Electrical Conduit and Fittings:
 - 1. Underground: Plastic, Class 3, Federal Specification W-C-1094.
 - 2. Above Ground: Aluminum, Federal Specification WW-G-540.
- H. PVC Solvent Cement: NSF approved solvent for Class 1245-B&C PVC through 4 inches conforming to ASTM D 2564 for PVC pipe and fittings. Ensure that manufacturer's expiration date is not exceeded.
 - 1. For pipe diameter 2-1/2" and larger: IPS Corporation Weld-On #705 PVC, gray color.
 - 2. For pipe diameter up to 2": Christy's Red Hot Blue Glue.
- I. PVC Cleaner and Primer: Weld-On P-70, purple color.

2.3 VALVES AND ACCESSORIES

- A. Main Line Isolation Valve: Lever-operated brass ball valve, 150-PSI min. rating, with threaded fittings. Sized to match line on which it is installed unless noted otherwise. Provide schedule 80 fittings for valve to pipe connections.
- B. Control Valves: See schedule on the Drawings.
- C. Valve Control: Baseline One, two, or four zone decoders as recommended by the manufacturer.
- D. Valve Boxes for Control and Isolation Valves: 12" minimum size box, one box for each valve, with locking lid and with 3" and/or 6" extensions as needed to facilitate required installation.
 - 1. Valve boxes shall be no closer than 12 inches apart when multiple valve boxes are placed together.
 - 2. Manufacturer: Armor with tee top lid, or approved.
- E. Manual Angle Valve: Brass manual angle valve with unions and Tee stem, same size as line on which it is installed.
- F. Quick Coupling Valves: See schedule on Drawings.

- G. Valve Boxes for Quick Coupling Valves and Manual Drain Valves: Armor with tee top lid, or approved equal, round valve boxes, 10" diameter.

2.4 IRRIGATION HEADS

- A. Makes and models shown on Drawings, or approved.

2.5 WIRE

- A. Controller to Decoder: No. 14 AWG, solid copper, jacketed two-conductor, direct burial cable. Baseline Bi-line two-wire communication wire or approved equal.
- B. Decoder to Solenoid: As recommended by the manufacturer.

2.6 OTHER MATERIALS

- A. Keys:
 - 1. 2 keys for each type of locking valve box, cover, or valve with integral locking lid.
- B. Electrical Connectors: Direct bury, water-tight splice kits.
 - 1. Manufacturer: 3-M, Rain Bird, or approved.
- C. Locator Wire: All main lines to be marked with continuous 14-gauge, single-strand locator wire, with light blue color coating. Provide minimum 3'-0" long coiled loop of locator wire in each valve box.
- D. Concrete for Thrust-Blocking: Concrete for thrust blocks to be from same source and conform to pipe manufacturer's recommendations and applicable ASTM requirements.
- E. Pipe Joint Tape: Minimum of 1/2" Teflon tape intended for use in wrapping threaded PVC and/or galvanized pipe fittings and joints, as required.

2.7 BACKFILL MATERIALS

- A. Drain Rock: 1/4 inch washed round pea gravel.
- B. Sand: Clean, fill sand free of clay, rocks, organic matter, or other deleterious material.
- C. Topsoil or Loam: See Section 32 90 00 - Planting.

PART 3 EXECUTION

3.1 GENERAL

- A. Do not allow work to be covered or enclosed until it has been inspected, pressure tested, and approved by the Landscape Architect.
- B. Minor changes necessary to conform to ground conditions may be made without the Landscape Architect's approval. Changes shall be recorded on the Record Drawings.
- C. Obtain written permission to shut off any water lines prior to work. Keep disruptions in service to a minimum.
- D. Maintain system and protect it from damage, including damage caused by vandalism or adverse weather conditions, until date of final acceptance. Repair damage at no additional cost to the Owner.

3.2 EXAMINATION

- A. Verify that surfaces and structures to receive Work are accurately sized and located, sound, secure, true, complete, and otherwise properly prepared.

3.3 PREPARATION

- A. System layout is diagrammatic. Route piping to avoid plants, ground cover, and structures. If field measurements differ slightly from Drawings modify work for accurate fit. If measurements differ substantially notify Owner's Representative prior to installation.
- B. Review layout requirements with other affected work. Coordinate locations of sleeves under paving to accommodate system and piping to minimize conflict with other work.
- C. Coordinate connections to existing irrigation system, including system shut down, new connections, system re-start, and scheduling of new irrigation zone run times with Owner's Representative.
- D. Irrigation Head Layout Review: Install flags at locations of irrigation heads and components shown on Drawings. Obtain Owner's Representative's approval and make adjustments to locations as directed. Coordinate marking of pipe trenches and location of valves prior to executing Work.

3.4 CUTTING OF PAVEMENT AND REPAIR

- A. Do no cutting of pavement for installation of Work without Owner Representative's approval.

3.5 TRENCHING

- A. Trench Depth:
 - 1. Minimum Cover Over Installed Mainline Piping: 18 inches.
 - 2. Minimum Cover Over Installed Lateral Line Piping: 12 inches.
 - 3. Minimum Cover Over Installed Sleeves in Roadway: 24 inches.
 - 4. Minimum Cover Over Installed Sleeves at other paving: 6 inches from bottom of paving.
- B. Remove debris, trash, rocks, and other foreign material from irrigation trenches.
 - 1. Irrigation lines to have a firm, uniform bearing surface for entire length of each line.
 - 2. Wedging or blocking of pipe other than specified thrust blocking is not permitted.
- C. Where excavation is performed to excess levels backfill with Sand to proper levels.
- D. Keep trenches dry and frost free. Provide and operate pumping equipment to keep excavations free from standing water.
- E. Protect existing vegetation to remain. Cut no roots over two inches in diameter without approval of Owner's Representative. Make cuts clean, straight, at right angles to roots. Paint cuts over 1-1/2 inches diameter with approved tree paint. Repair or replace damaged plant material.
- F. Before backfilling trenches, pipe shall be flushed clear and clean of dirt and foreign material. (See FLUSHING AND TESTING).
- G. Backfill trenches in layers of not more than 6" in depth and compact each layer.
 - 1. Fill trenches to finish grade with planting soil.
 - 2. Restore disturbed surfaces to original or better condition.
 - 3. Repair or replace materials and equipment damaged or destroyed while backfilling.

3.6 SLEEVE INSTALLATION

- A. Sleeves may be jacked or pulled but cover requirements must be maintained. Jacking of PVC pipe is not permitted in rocky or bar run fills where there is potential for damage to pipes.
- B. Extend sleeves 12 inches beyond pavement edge or curb.
- C. Install level and perpendicular to sidewalks and pavement unless shown otherwise on drawings.
- D. Provide markers where sleeve ends are concealed with stakes extending 12" above grade and write "Irrig. Sleeve" on stake. Tape ends of sleeve closed with a minimum of three layers of duct tape to keep soil out of sleeve until irrigation lines or wire are installed.
- E. Permanently attach a single length of locator wire to the entire length of the sleeve.

3.7 PIPE

- A. Exercise care in handling and storing pipe and fittings.
 - 1. Store materials under cover before using.
 - 2. Transport materials in a vehicle of adequate size and capacity to prevent bending or concentration of an external load at any point on materials.
 - 3. Materials or portions of materials that are damaged shall be discarded and replaced.
- B. Remove foreign matter and dirt from inside pipe or fittings before lowering into trench.
- C. Install pipe and fittings per manufacturer's specifications with specified materials. Use Teflon tape on threaded joints.
- D. Install locator wire on top side of pipe.
 - 1. Tape locator wire to pipe at no less than 20'-0" intervals.
 - 2. Sections of locator wire to be spliced together with watertight splice connectors, to provide a continuous run.
- E. Install concrete thrust blocks at changes of direction for mainline pipe 2-1/2" or greater in diameter. Pour a minimum of 1 cubic foot of pre-mixed concrete against pipe and firm soil, in accordance with pipe manufacturer's recommendations.
- F. Snake pipe in trenches where applicable to allow for expansion and contraction as recommended by manufacturer.
- G. Cut pipe ends square and remove burrs.
- H. Repair settling of backfilled trenches during warranty period and completely restore and repair plantings, paving and other site improvements disturbed by irrigation construction.

3.8 CONTROL VALVES

- A. Valve boxes to be installed with top of box 1/2" above finish grade.
- B. Install valves in box allowing room to perform ongoing maintenance by the Owner.
- C. Place drain rock in valve box to within 2" of bottom of valve assembly.
- D. Install one control valve assembly per valve box.
- E. Provide jumbo valve box only if necessary to allow room for maintenance.

3.9 DECODERS

- A. Install one, two, or four-station decoders as required. Connect to control valve and irrigation controller according to manufacturer's instructions.

3.10 ISOLATION VALVES

- A. Install complete with fittings, valve boxes and extensions.

3.11 QUICK COUPLING VALVES

- A. Install quick coupling valves on double swing joint assemblies plumb and flush to grade. Angle of nipple relative to main line shall be no more than 45 degrees and no less than 10 degrees. Install quick coupling valves as detailed on the Drawings.

3.12 CONTROL WIRE INSTALLATION

- A. Decoder to Solenoid: Make connections according to manufacturer's installation instructions.
- B. Make electrical joints waterproof using specified connectors. Enclose joints in valve boxes.
 - 1. Provide minimum 1'-0" length of coiled slack between wire splices.

3.13 FLUSHING, TESTING, AND ADJUSTING

- A. Thoroughly flush all main and lateral (zone) lines before testing and installation of irrigation heads and before backfilling trenches.
- B. Before testing, fill main lines with water and expel air from pipes.
- C. Do not backfill irrigation trenches before main line pressure testing and lateral line leak testing has been completed and approved.
 - 1. Soil may be placed in trenches between fittings and couplings to insure stability of line under pressure.
 - 2. Fittings and couplings must be left uncovered for visual inspection for full period of test.
 - 3. Do not test until last solvent welded joint has had a minimum of 24 hours to set and cure, or longer if required by manufacturer's instructions.
- D. Do not install irrigation heads until after main line pressure testing and lateral line leak testing has been completed and approved.
- E. Main line pressure testing:
 - 1. Minimum Pressure Test On Main Lines, Valves, Joints and Fittings: 100 pounds per square inch without losing more than 3 pounds per square inch for a period of 1 hour. Provide airless paint sprayer with compressor, or other equipment, to achieve required hydraulic test pressure without injection of air into main lines.
 - 2. Close all valves and cap all piping and fittings as necessary to isolate main line and conduct pressure testing.
 - 3. Perform preliminary test and repair any leaks or defects.
 - 4. Testing to be performed with a certified liquid-filled pressure gauge.

5. Perform final pressure test in the presence of the Landscape Architect.
 6. Contractor shall provide minimum 24-hour notice to Landscape Architect requesting observation of final pressure test.
 7. Piping may be pressure tested in sections if approved by Landscape Architect.
- F. Lateral (zone) line leak testing:
1. Perform lateral line leak testing for each control valve in numerical sequence, immediately after main line pressure testing has been approved, in the presence of the Landscape Architect.
 2. Open each control valve, one at a time, under main line dynamic pressure to demonstrate the absence of leaks at valves, pipe joints, and fittings.
- G. Where inspected work does not comply with specified requirements or if pressure tests fail, replace rejected work until compliance is achieved.
- H. Adjust and balance irrigation system to provide uniform coverage.
1. Change, reset or adjust heads and/or nozzles as required to provide uniform coverage and match final grades.
 2. Perform final coverage test by operating each control valve in the presence of the Landscape Architect when the irrigation system has been completely installed and adjusted.
- I. Locator wires must be tested and approved. Wire tests to be conducted by Owner or designated representative.

3.14 SPRINKLER HEAD INSTALLATION

- A. Install plumb with top of Topsoil/Loam or Mulch as detailed and at locations shown on drawings. Allow a maximum of 3 inches clearance between sprinkler head and adjacent lawn or planting edge.
- B. Install 1 cubic foot Drain Rock sump on all low irrigation heads where drainage occurs at zone shutdown.
- C. Make minor changes in head locations to achieve the required coverage at no additional cost to Owner. Notify the Landscape Architect for approval prior to making major changes.

3.15 SYSTEM REVIEW

- A. Prepare and start system in accordance with manufacturer's instructions. Prior to notifying Owner's Representative for review of the system review zones and make adjustments to ensure full and even coverage.
- B. Notify Owner's Representative for review of system operation to determine if water afforded to all areas is complete, adequate, and uniform.
- C. Adjust system for full water coverage as directed.

3.16 CLEANING

- A. Remove excess excavation, backfill materials, and other left over materials from the site. Clean improvements soiled by Work of this Section.

END OF SECTION

SECTION 329000 - PLANTING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Preparation of subsoil.
- B. Soil Material placement.
- C. Lawn and Plantbed Repair.

1.2 RELATED REQUIREMENTS

- A. Section 32 80 00 - Irrigation.

1.3 DEFINITIONS

- A. Weeds: Any plant life not specified or scheduled. Includes seeds and roots.
- B. Plants: Living trees, plants, and ground cover specified in this Section, and described in ANSI Z60.1.

1.4 Protection

- A. Protect existing improvements and vegetation in areas to remain undisturbed until completion of project. Leave in similar condition as found.
- B. Maintain benchmarks, monuments, and other reference points. Replace if disturbed or destroyed.
- C. Protect drainage inlets and underground drain lines from infiltration or clogging by soils and mulch during construction until Final Completion.
- D. Protect materials of this Section before, during, and after installation. Protect installed work and materials of other trades. In the event of damage immediately make repairs or replacements as directed by Landscape Architect.

1.5 SUBMITTALS

- A. Quality Assurance Data: Submit license information and project references including name and location of previous projects, date of installation, square footage of areas with planting work, and Owner's contact information.
- B. Product Data: Submit manufacturer's printed data for products and a list of suppliers.
- C. Soil Material:

1. Submit written verification of source and type of imported topsoil.
2. Submit analysis of existing (on-site) and imported topsoil from licensed soils testing laboratory for approval prior to reuse of existing topsoil or delivery of imported topsoil.
3. Sample: Submit 1/2-gallon sample each of existing and imported topsoil.

1.6 QUALITY ASSURANCE

- A. Valid Oregon Landscape Contractor's license.
- B. Valid Oregon Landscape Business license.
- C. Herbicide applicators must have valid State of Oregon Herbicide Applicator's license.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.
- B. Deliver products in original unopened packaging with legible manufacturer's identification.
- C. Seed containers shall show manufacturer's guaranteed analysis of seed mixture, percentage of purity, year of production, date and location of packaging, name and trademark, and conformance with governing regulations.

1.8 ENVIRONMENTAL CONDITIONS

- A. Planting Seasons:
 1. Seeding: Permitted between April 15 and October 15 unless otherwise approved.
- B. Prepare soil only when topsoil is not in a wet, muddy, or frozen condition.

1.9 Reviews

- A. Request the following reviews by the Landscape Architect 2 days in advance:
 1. Subgrade preparation
 2. Finish grading
 3. Completion
- B. See Part 3 - Execution for review requirements.
- C. Coordinate all reviews to coincide with regular progress meetings where possible.

1.10 WARRANTY

- A. Provide one year warranty following Final Completion or one full growing season following Final Completion, whichever is later.

- B. At the end of the warranty period, as directed by Landscape Architect and at no additional cost to the Owner:
 - 1. Replace work not surviving, in poor condition, or not exhibiting satisfactory growth.
 - 2. Lawns must be healthy, dense, uniform, well sodded, and reasonably weed free as judged by the Landscape Architect
 - 3. Provide noxious weed eradication from imported Soil Material, if required and as specified herein.
 - 4. Complete warranty work within 30 days of warranty review.
- C. Contractor is not responsible for plant loss or damage to work during warranty period which is caused by unusually extreme weather, vandalism, or Owner's lack of maintenance.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

- A. Top Soil: Utilize existing approved stockpiled top soil salvaged from excavation of the synthetic turf field or import Topsoil that is fertile, friable, natural loam capable of sustaining vigorous plant growth; porous and free draining; free of subsoil clay lumps, brush, noxious weeds, weed seeds, roots, stones larger than 1-1/2 inches and other material harmful to plant growth. Top Soil to meet the following gradation as defined by the USDA trinagle of physical characteristics.
 - 1. USDA soil texture within the following range:
 - a. Sand: 15 to 60 percent.
 - b. Silt: 10 to 60 percent.
 - c. Clay: 5 to 30 percent.

2.2 SOIL AMENDMENT MATERIALS

- A. Lawn Fertilizer: Uniform composition, dry, and free flowing of proportion necessary to eliminate any deficiencies of topsoil, to the following proportions:
 - 1. Best Fertilizer Triple Pro 15-15-15, or approved equal.
- B. Lime: Dolomite limestone, calcium magnesium carbonate, 50% passing through a 100 mesh sieve, 95 - 100% passing through a 20 mesh sieve, agricultural ground grade, minimum neutralizing value of 90%.
- C. Water: Clean, fresh, and free of substances or matter that could inhibit vigorous growth of plants.
- D. Organic Material: 1/4 inch minus fir or hemlock sawdust aged a minimum of 2 years, or approved substitute.

2.3 GRASS SEED

- A. Current or latest season's crop labeled in conformance with State and US Department of Agriculture laws and regulations:
 - 1. Purity: 98% by weight
 - 2. Germination: 90%
- B. Products:
 - 1. Lawn Seed:
 - a. Team Jr. Tall Fescue from Sunmark Seeds, or approved.

2.4 MULCH MATERIALS

- A. Shredded hemlock or fir bark, medium grade, free of wood chips, maximum size to pass 3/4" screen. Free from weeds, seeds, and material harmful to plant life.

2.5 HERBICIDE

- A. Broad Spectrum Non-Selective: Buccaneer Plus, or approved.
- B. Selective for Broadleaves: Speed Zone, Weed-B-Gone, or approved.

2.6 SOURCE QUALITY CONTROL

- A. Provide testing of imported Soil Material to include the following:
 - 1. Sieve analysis of soil particle size and USDA soil texture classification.
 - 2. Macro and micro nutrients including magnesium, nitrogen, phosphorous, and potassium levels.
 - 3. pH; organic matter; and infiltration rate.
 - 4. A written narrative summarizing the analysis and recommendations for use in plantbed and landscape areas shall be included in the submittal.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Prior to installation of Work of this Section, carefully inspect the work of others and verify that such work is complete to the point where this installation may properly commence.
- B. Verify that materials and surfaces to receive work specified herein are accurately sized, shaped, and located; sound, secure, true, complete, and otherwise properly prepared.
- C. Do not install Work of this Section until all unsatisfactory conditions have been corrected. Beginning Work of this Section signifies acceptance of existing conditions.

3.2 TOLERANCES

- A. Perform earthwork true to lines and grades, and to prevent ponding of water, with maximum variation in elevations of +/- 1/2 inch at subgrades and +/- 1/4 inch at finish grades.
- B. Compacted thickness of materials within 1/4 inch of specified thickness.

3.3 PREPARATION OF SUBGRADE

- A. Prepare subsoil to eliminate uneven areas or low spots. Maintain profiles and contours. Make changes in grade gradual. Blend slopes into level areas.
- B. Remove foreign materials, weeds and undesirable plants and their roots, stones, rock, and dirt clods. Remove contaminated subsoil.
- C. Aggregate Base Rock Removal:
 - 1. Remove all gravel, aggregate base rock material, asphalt, concrete, and all other construction debris from all planting beds and lawn areas to a minimum depth of 18" inches below finish grade.
 - 2. Replace with earth fill, if necessary, to bring subgrade to correct levels prior to placing topsoil.
- D. Scarify subsoil to a depth of 6 inches where plants are to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.
- E. Verify subgrades allow for placement of Soil Material, Amendments, and Mulch to depths specified.
- F. Notify Landscape Architect for Subgrade Preparation Review prior to placing Soil Material.

3.4 PLACING SOIL MATERIAL

- A. Soil Placement Schedule:
 - 1. At Plant Bed Repair: Soil Material as required to blend grades and allow for Mulch placement.
 - 2. Lawn Repair Areas: Place additional Soil Material as required to establish finish grades shown on drawings and to fill in depressions, blend grades, and produce positive drainage.
- B. Place topsoil during dry weather and on dry unfrozen subgrade. Suspend Soil Material placement if subgrade or Soil Material become saturated.
- C. Phase Soil Material placement so that equipment does not travel over Soil Material already installed.
- D. Place Soil Material in a relatively dry state to depths specified at locations shown on Drawings:

1. Remove stones, roots, grass, weeds, debris, and foreign material while spreading.
2. Manually spread around existing trees, paving, and other structures to prevent damage.
3. Establish levels, profiles, slopes, contours, and uniform gradients between given grade points as shown on Drawings.
4. Eliminate uneven or low spots at lawns and plant beds.
5. Fine grade Soil Material within specified tolerances.

3.5 INITIAL WEED CONTROL

- A. Inspect plant beds and lawns for the presence of weeds. If weeds are present apply broad spectrum herbicide.
- B. During herbicide application ensure safety and environmental precautions are taken and best management practices are employed. Adjust procedures adjacent to waterways.

3.6 SOIL PREPARATION AND FINISH GRADING

- A. Remove debris, sticks, roots, clods, stones, and soils contaminated by petroleum products at plant beds and lawns. Rake smooth, eliminate uneven areas or low spots in Soil Material, and set grades for positive drainage.
- B. At lawn repair areas:
 1. Apply herbicide to remove weeds as described in Initial Weed Control.
 2. Apply lime 2 weeks prior to seeding if indicated by soil test analysis at the rate indicated by the analysis.
 3. Spread 2" depth of compost and Lawn Fertilizer at the rate of 6.7 lbs per 1000 square feet.
 4. Rototill to a minimum depth of 6 inches.
 5. Set finish grades to ensure that finish grade of lawn will be flush with surrounding surfaces.
 6. Establish a friable, fine textured seed bed free of bumps and depressions immediately before seeding.
 7. Firm seed bed with a lawn roller making passes in 2 directions.
- C. Notify Landscape Architect for Finish Grading Review prior to proceeding with Work.

3.7 SECOND WEED CONTROL

- A. After completion of Soil Preparation and finish grading commence irrigation of all lawns. If weeds are present apply broad spectrum herbicide.
- B. Wait ten days minimum and inspect all plant beds and lawn areas for the presence of any additional weeds. If weeds are present, apply a second application of Herbicide to affected areas and delay planting until all weeds are dead.

- C. During herbicide application ensure safety and environmental precautions are taken and best management practices are employed. Adjust procedures adjacent to waterways.

3.8 MULCH INSTALLATION

- A. Install 3 inches of Mulch at plant bed repair areas.
- B. Remove excess Mulch from foliage of plant materials and from bark of trees. Mulch must not be placed within 3 inches of tree trunks. Remove mulch from adjacent surfaces and produce edges shown on Details.

3.9 LAWN INSTALLATION

- A. Install lawns using the following method:
 - 1. Hydroseeding:
 - a. Mix components are the following rates and apply uniformly and completely:
 - 1) Seed: 8 lbs per 1000 square feet
 - 2) Lawn Installation Fertilizer: 15 lbs per 1000 square feet
 - 3) Sufficient hydromulch to keep areas moist during germination and protect seed from wind erosion.
 - b. Ensure all equipment, including hoses, is clean and contains only the specified seed.
- B. Apply water with fine spray immediately after each area is sown.
- C. Provide a temporary barrier at the limits of newly planted lawns.

3.10 MAINTENANCE

- A. At lawns during period between installation and Final Completion:
 - 1. Water, weed, mow, reseed, top dress, and fertilize as necessary to establish a healthy, dense, uniform, weed free stand of grass; maintain at 2 inches high. This includes unirrigated lawns, unless otherwise noted on drawings.
 - 2. Conduct first mowing after grass is firmly rooted and secure. Mow grass when it exceeds 2 inches in height, cutting no more than 1/3 of the grass height at a time. Remove all clippings.
 - 3. Maintain surfaces and supply additional Soil Material and Seed where necessary.
 - 4. Apply Herbicide (selective) to remove weeds.

3.11 CLEANING

- A. Remove excess materials from site. Protect drain inlets and underground piping as necessary and clean improvements soiled by Work of this Section.

3.12 COMPLETION REVIEW

- A. Notify Landscape Architect for Completion Review when Work of this Section is complete.

END OF SECTION

SECTION 33 1116

SITE WATER UTILITY DISTRIBUTION PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Includes But Not Limited To:
 - 1. Perform trenching and backfilling required for work of this Section.
 - 2. Furnish and install piping for domestic water supply from water meter as described in Contract Documents. Water meter and water service to be installed by the City.

- B. Related Requirements:
 - 1. Section 31 2316: 'Excavation' for criteria for performance of excavation.
 - 2. Section 31 2323: 'Fill' for criteria for performance of backfill and compaction.
 - 3. Section 33 1116; 'Site Water Utility Distribution Piping'

1.2 REFERENCES

- A. Reference Standards:
 - 1. American Welding Society / American National Standards Institute:
 - a. AWS/ANSI A5.8-2004, 'Specification for Brazing Filler Metals'.
 - 2. ASTM International:
 - a. ASTM B88-09, 'Standard Specification for Seamless Copper Water Tube'.

PART 2 - PRODUCTS

2.1 SYSTEM

- A. Materials:
 - 1. Pipe: All PVC Schedule 80 pipe shall be manufactured from a Type I, Grade I Polyvinyl Chloride (PVC) compound with a Cell Classification of 12454 per ASTM D1784. The pipe shall be manufactured in strict compliance to ASTM D1785, consistently meeting and/or exceeding the Quality Assurance test requirements of this standard with regard to material, workmanship, burst pressure, flattening, and extrusion quality. The pipe shall be manufactured in the USA, using domestic materials, by an ISO 9001 certified manufacturer. Standard lengths of pipe sizes 6" and larger shall be beveled each end by the pipe manufacturer. All pipe shall be stored indoors after production at the manufacturing site until shipped from factory. This pipe shall carry the National Sanitation Foundation (NSF) seal of approval for potable water applications. All pipe shall be manufactured by GF Harvel.
 - 2. Water Meter: To be installed by City and furnished by SOU.
 - 3. Stop And Waste Valves:
 - a. Category Four Approved Products. See Section 01 6200 for definitions of Categories.
 - 1) Mueller: Mark II Oriseal stop and waste valve H10288.
 - 2) Mueller: Buffalo screw type curb box H-10350 complete with lid and H-10349 enlarged base.
 - 4. Double Check Valve: Any backflow protection assembly required herein shall be approved by the State of Oregon Health Authority. AVBs shall meet Oregon Plumbing Specialty Code requirements.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Excavate and backfill as specified in Sections 31 2316 and 31 2323 with following additional requirements:
 - 1. Runs shall be as close as possible to those shown on Drawings.
 - 2. Excavate to required depth.
 - 3. Bottom of trenches shall be hard. Tamp as required.
 - 4. Remove debris from trench before laying pipe.
 - 5. Do not cut trenches near footings without consulting Architect.
 - 6. Excavate trenches so outside pipe will be 12 inches (300 mm) minimum below frost line or 24 inches (600 mm) minimum below finish grade, whichever is deeper.
 - 7. Backfill only after pipe lines have been tested and inspected, and approved by Architect.
- B. Install piping system so it may contract and expand freely. Completely eliminate cross connections, backflow, and water hammer.
- C. Install shut-off valve at meter.

3.2 FIELD QUALITY CONTROL

- A. Field Tests
 - 1. Sterilization And Negative Bacteriological Test:
 - a. Sterilize potable water system with solution containing 200 parts per million minimum of available chlorine and maintaining a pH of 7.5 minimum. Introduce chlorinating materials into system in manner approved by Architect. Allow sterilization solution to remain for twenty four (24) hours and open and close valves and faucets several times during that time.
 - b. After sterilization, flush solution from system with clean water until residual chlorine content is less than 0.2 parts per million.
 - c. Water system will not be accepted until negative bacteriological test is made on water taken from system. Repeat dosing as necessary until such negative test is accomplished.
 - 2. Pressure Test: Before covering pipes, test system in presence of Architect or governing agency at 100 psi (0.69 MPa) hydrostatic pressure for two (2) hours and show no leaks.

3.3 CLEANING

- A. Remove excess earth from site or place as directed by Architect.

END OF SECTION

SECTION 33 3313

SANITARY UTILITY SEWERAGE

PART 1 - GENERAL

1.1 SUMMARY

- A. Includes But Not Limited To:
 - 1. Perform excavating and backfilling required for work of this Section.
 - 2. Furnish and install sanitary sewage system as described in Contract Documents beginning at 5 feet (1.50 meter) from where it enters building and connecting to serving sewer system.
- B. Related Requirements:
 - 1. Section 31 2316: 'Excavation' for criteria for performance of excavation.
 - 2. Section 31 2323: 'Fill' for criteria for performance of backfill and compaction.

1.2 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conference: Participate in pre-installation conference specified in Section 03 3111.

1.3 REFERENCES

- A. Reference Standards:
 - 1. ASTM International:
 - a. ASTM A74-09, 'Standard Specification for Cast Iron Soil Pipe and Fittings'.
 - b. ASTM A888-11, 'Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications'.
 - c. ASTM C564-11, 'Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings'.
 - d. ASTM D2235-04(2011), 'Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings'.
 - e. ASTM D2321-11, 'Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications'.
 - f. ASTM D2564-12, 'Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems'.
 - g. ASTM D2661-11, 'Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings'.
 - h. ASTM D2665-12, 'Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings'.
 - i. ASTM D3034-08, 'Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings'.
 - j. ASTM F656-10, 'Standard Specification for Primers for Use in Solvent Cement Joints of Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings'.
 - 2. Cast Iron Soil Pipe Institute:
 - a. CISPI 301-09, 'Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and Vent Piping Applications'.
 - b. CISPI 310-11, 'Standard Specification for Couplings for use in connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications'.
 - c. CISPI Handbook. 'Cast Iron Soil Pipe and Fittings Handbook' (1990).
 - 3. Canadian Standards Association:
 - a. CAN/CSA B70-12, 'Cast Iron Soil Pipe, Fittings, and Means of Joining'.

- b. CAN/CSA B602-10, 'Mechanical Couplings for Drain, Waste, and Vent Pipe and Sewer Pipe'.
- c. CAN/CSA B1800-11, 'Thermoplastic Nonpressure Pipe Compendium':
 - 1) CAN/CSA-B182.1-11, 'Plastic Drain and Sewer Pipe and Pipe Fittings'.
 - 2) CAN / CSA B182.2-11, 'PSM Type Polyvinylchloride (PVC) Sewer Pipe Fittings'.
- 4. International Code Council:
 - a. ICC IPC-2012, 'International Plumbing Code'.

1.4 QUALITY ASSURANCE

- A. Regulatory Agency Sustainability Approvals
 - 1. Install cleanouts in accordance with local governing authority and State codes.

PART 2 - PRODUCTS

2.1 COMPONENTS

- A. ABS:
 - 1. ABS Schedule 40 solid wall plastic pipe and fittings meeting requirements of ASTM D2661 joined with pipe cement meeting requirements of ASTM D2235.
- B. Cast Iron Soil Pipe And Fittings:
 - 1. Meet requirements of ASTM A74, Service Grade:
 - a. Cast iron for bell and spigot fittings.
 - b. Cast iron for no-hub joints.
 - 2. Approved Joint Material And Manufacturers:
 - a. For Bell And Spigot Pipe: Rubber gaskets meeting requirements of ASTM C564 and compatible with pipe used.
 - b. For No-Hub Pipe:
 - 1) Category Four Approved Products. See Section 01 6200 for definitions of Categories:
 - a) SuperGrip 304 American Brass & Iron (AB&I), Oakland, CA www.abifoundry.com.
 - b) Husky SD 4000 coupling by Anaco-Husky, Corona, CA www.anaco-husky.com.
 - c) Neoprene gaskets with type 304 stainless steel clamp and 24 ga type 304 stainless steel housing by Clamp-All Corp, Haverhill, MA www.clampall.com.
 - d) MG Coupling by MG Piping Products Co, Stanton, CA www.mgcoupling.com.
- C. PVC:
 - 1. Schedule 40 solid wall plastic pipe and fittings meeting requirements of ASTM D2665 joined using cement primer meeting requirements of ASTM F656 and pipe cement meeting requirements of ASTM D2564.
 - 2. Gasket joint gravity sewer pipe and fittings meeting requirements of ASTM D3034. Joints shall be integral wall and elastomeric gasket.

2.2 COMPONENTS

- A. ABS:
 - 1. ABS Schedule 40 solid wall plastic pipe and fittings meeting requirements of CAN/CSA B181.1 joined with pipe cement meeting requirements of ASTM D2235.
- B. Cast Iron Soil Pipe And Fittings:
 - 1. Meet requirements of ASTM A74, Service Grade:
 - a. Cast iron for bell and spigot fittings.
 - b. Cast iron for no-hub joints.
 - 2. Approved Joint Material And Manufacturers:

- a. For Bell And Spigot Pipe: Rubber gaskets meeting requirements of ASTM C564 and compatible with pipe used.
 - b. For No-Hub Pipe:
 - 1) Category Four Approved Products. See Section 01 6200 for definitions of Categories:
 - a) SuperGrip 304 American Brass & Iron (AB&I), Oakland, CA www.abifoundry.com.
 - b) Husky SD 4000 coupling by Anaco-Husky, Corona, CA www.anaco-husky.com.
 - c) Neoprene gaskets with type 304 stainless steel clamp and 24 ga type 304 stainless steel housing by Clamp-All Corp, Haverhill, MA www.clampall.com.
 - d) MG Coupling by MG Piping Products Co, Stanton, CA www.mgcoupling.com.
- C. PVC:
1. PVC Schedule 40 solid wall plastic pipe and fittings meeting requirements of CAN/CSA B182.2, SDC 28 joined using cement primer meeting requirements of ASTM F656 and pipe cement meeting requirements of ASTM D2564.
 2. Under areas subject to vehicular travel, use Blue Brute pipe and fittings by Ipex Inc, Englewood, CO www.ipexinc.com.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification Of Conditions:
1. Before installation, inspect pipe for defects and cracks.
 2. Do not use defective, damaged, or unsound pipe.

3.2 PREPARATION

- A. Excavate and backfill as specified in Sections 31 2316 and Section 31 2323 with following additional requirements:
1. Runs shall be as close as possible to those shown on Drawings.
 2. Excavate to required depth and grade to obtain fall required.
 3. Bottom of trenches shall be hard. Tamp as required.
 4. Remove debris from trench before laying pipe.
 5. Do not cut trenches near footings without consulting Architect/Engineer.
 6. Excavate trenches so outside pipe will be 12 inches (300 mm) minimum below frost line or 18 inches (450 mm) minimum below finish grade, whichever is deeper.

3.3 INSTALLATION

- A. General:
1. When work is not in progress, close open ends of pipe and fittings so no trench water, soil, or other substances will enter pipes or fittings.
 2. Keep trenches free from water until pipe jointing material has set. Do not lay pipe when condition of trench or weather is unsuitable for such work.
 3. Trench width at top of pipe:
 - a. Minimum: 18 inches (450 mm) or diameter of pipe plus one foot (305 mm), whichever is greater.
 - b. Maximum: Outside diameter of pipe plus two feet (610 mm).
- B. Placing And Laying of Underground Pipe:
1. Deflections from straight line or grade, as required by vertical curves, horizontal curves, or offsets, shall not exceed 6/D inches per linear foot (12 500/D mm per m) of pipe where D represents nominal diameter of pipe expressed in inches mm
 2. Deflections to be determined between center lines extended of two connecting pipes.

3. If alignment requires deflection in excess of these limitations, provide special bends or sufficient number of shorter lengths of pipe to provide angular deflections within limits approved by Architect.
 4. Laying:
 - a. Pipe laying shall proceed up-grade with spigot ends of bell-and-spigot pipe pointing in direction of flow.
 - b. Lay each pipe true to line and grade and in such manner as to form close concentric joint with adjoining pipe and to prevent sudden offsets of flow line.
 - c. As work progresses, clear interior of pipe of dirt and superfluous materials. Where cleaning after laying is difficult because of small pipe, keep suitable swab or drag in pipe and pull forward past each joint immediately after jointing has been completed.
 5. Make joints between cast iron pipe and other types of pipe with standard manufactured cast-iron adapters and fittings.
 6. Valve, plug, or cap, as directed by Architect, where pipe ends are left for future connections.
- C. Cast Iron Pipe And Fittings:
1. Shape trench bottom to give substantially uniform circumferential support to lower third of each pipe. Provide depression under bell of each joint to maintain even bearing of sewer pipe.
 2. Connect to street main as required by local authorities.
 3. Use jacks to make-up gasketed joints.
- D. Thermoplastic Pipe And Fittings:
1. Install in accordance with Manufacturer's recommendations and ASTM D2321.
 2. Stabilize unstable trench bottoms.
 3. Bed pipe true to line and grade with continuous support from firm base.
 - a. Bedding depth: 4 to 6 inches (100 to 150 mm).
 - b. Material and compaction to meet ASTM standard noted above.
 4. Excavate bell holes into bedding material so pipe is uniformly supported along its entire length. Blocking to grade pipe is forbidden.
 5. Piping and joints shall be clean and installed according to Manufacturer's recommendations. Break down contaminated joints, clean seats and gaskets and reinstall.
 6. Do not use back hoe or power equipment to assemble pipe.
 7. Initial backfill shall be 12 inches (305 mm) above top of pipe with material specified in referenced ASTM standard.
 8. Minimum cover over top of pipe:
 - a. 36 inches (915 mm) before allowing vehicular traffic over pipe.
 - b. 48 inches (1 200 mm) before use of compaction equipment other than hand or impact tampers.

3.4 FIELD QUALITY CONTROL

- A. Non-Conforming Work:
1. Failure to install joints properly shall be cause for rejection and replacement of piping system at no additional cost to Owner.

END OF SECTION

SECTION 33 4116

SITE STORM UTILITY DRAINAGE PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Includes But Not Limited To:
 - 1. Perform excavating and backfilling required for work of this Section.
 - 2. Furnish and install storm drainage system as described in Contract Documents from point of water collection to terminating point.
- B. Related Requirements:
 - 1. Section 31 2316: 'Excavation' for criteria for performance of excavation.
 - 2. Section 31 2323: 'Fill' for criteria for performance of backfill and compaction.

1.2 REFERENCES

- A. Reference Standards:
 - 1. American Association Of State Highway And Transportation Officials:
 - a. AASHTO M 252-09, 'Standard Specification for Corrugated Polyethylene Drainage Pipe'.
 - b. AASHTO M 294-11, 'Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-mm Diameter'.
 - 2. ASTM International:
 - a. ASTM A74-09, 'Standard Specification for Cast Iron Soil Pipe and Fittings'.
 - b. ASTM A536-84(2009), 'Standard Specification for Ductile Iron Castings'.
 - c. ASTM A929/A929M-01(2007), 'Standard Specification for Steel Sheet, Metallic-Coated by the Hot-Dip Process for Corrugated Steel Pipe'.
 - d. ASTM C14-11, 'Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe'.
 - e. ASTM C14M-11, 'Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe (Metric)'.
 - f. ASTM C76-12a, 'Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe'.
 - g. ASTM C564-11, 'Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings'.
 - h. ASTM D2321-11, 'Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications'.
 - i. ASTM D3034-08, 'Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings'.
 - j. ASTM D3212-07, 'Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals'.
 - k. ASTM F794-03(2009), 'Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter'.
 - l. ASTM F1336-07, 'Standard Specification for Poly (Vinyl Chloride) (PVC) Gasketed Sewer Fittings'.
 - 3. Cast Iron Soil Pipe Institute:
 - a. CISPI 301-09, 'Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and Vent Piping Applications'.
 - b. CISPI 310-11, 'Standard Specification for Couplings for use in connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications'.
 - c. CISPI Handbook. 'Cast Iron Soil Pipe and Fittings Handbook' (1990).
 - 4. Canadian Standards Association:

- a. CAN/CSA B1800-11, 'Thermoplastic Nonpressure Pipe Compendium':
 - 1) CAN/CSA-B182.1-11, 'Plastic Drain and Sewer Pipe and Pipe Fittings'.
 - 2) CAN / CSA B182.2-11, 'PSM Type Polyvinylchloride (PVC) Sewer Pipe Fittings'.
5. CSA Group:
 - a. CSA-B70-12, 'Cast Iron Soil Pipe, Fittings and Means of Joining'.
 - b. CSA B602-10, 'Mechanical Couplings for Drain, Waste, and Vent Pipe and Sewer Pipe'.
6. International Code Council:
 - a. ICC IPC-2012, 'International Plumbing Code'.

PART 2 - PRODUCTS

2.1 SYSTEM

A. Materials:

1. Bedding Material: 3/8 inch (9.5 mm) crushed gravel.
2. Catch Basins, Curb Inlets, Etc:
 - a. Concrete:
 - 1) Construct of 4000 psi (27.57 MPa) minimum concrete.
 - 2) Include cover inlet with cast iron frame and grate as shown on Drawings.
 - b. PVC:
 - 1) Comply with requirements of ASTM D3212, ASTM F794, and ASTM F1336.
 - 2) Metal grates, Frames, and hoods shall comply with ASTM A536, Grade 70-50-05.
 - 3) Type One Acceptable Products:
 - a) Nyloplast-ADS, Buford, GA (866) 888-8479. www.nyloplast-us.com.
 - b) Equal as approved by Architect before bidding.
3. Concrete Pipe:
 - a. Non-Reinforced: Meet requirements of ASTM C14 or ASTM C14M.
 - b. Reinforced:
 - 1) Meet requirements of ASTM C76, plain end.
 - 2) Determine class of pipe by depth of cover over pipe at rough-graded elevations as follows:

a) Depth Of Cover	Class Of Pipe
b) Under 2 feet	V
c) 2 feet to 3	IV
d) 3 feet to 6 feet	III
e) Over 6 feet	II
 - 3) Determine class of pipe by depth of cover over pipe at rough-graded elevations as follows:

a) Depth Of Cover	Class Of Pipe
b) Under 0.610 m	V
c) 0.610 to 0.915 m	IV
d) 0.915 to 1.800 m	III
e) Over 1.800 mm	II
4. PVC Pipe And Fittings:
 - a. Meet requirements of ASTM D3034, SDR 35.
 - b. Fittings: Slip Joint type with elastomeric seals.
5. PVC Pipe And Fittings:
 - a. Meet requirements of ASTM D3034, SDR 35 or CAN/CSA 182.1.
6. Fittings: Slip Joint type with elastomeric seals.
7. Corrugated Polyethylene Pipe And Fittings:
 - a. Meet requirements of AASHTO M 252 or AASHTO M 294, Type S.
 - 1) Corrugated, helical or annular, exterior with smooth interior and gasketed connectors.
 - 2) Corrugated, annular, with silt and watertight joints for storm sewers.
8. Subsurface Stormwater Management.
 - a. Manufacturers:
 - 1) Pipe Systems for use in non-pressure gravity flow storm water collection systems utilizing continuous outfall structure.

- 2) Type One Acceptable Systems:
 - a) AdvanEDGE, Drainage Layout for Synthetic Turf Fields, ADS flat pipe, Advanced Drainage Systems Inc., www.ads-pipe.com.
 - b) Equal as approved by Architect before bidding. See Section 01 6200.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Excavate and backfill as specified in Section 31 2316 and Section 31 2323 with following additional requirements:
 1. Runs shall be as close as possible to those shown on Contract Documents.
 2. Excavate to required depth.
 3. Grade to obtain fall required.
 4. Remove debris from trench before laying bedding and pipe.
 5. Do not cut trenches near footings without consulting Architect.
 6. Backfill only after pipe lines have been tested, inspected, and approved by Architect/Engineer.

3.2 INSTALLATION

- A. PVC / Polyethylene Pipe:
 1. Install in accordance with ASTM D2321.
 2. Minimum cover for corrugated polyethylene pipe and fittings shall be 12 inches (300 mm) for H-20 load.
- B. Use jacks to make-up gasketed joints.

3.3 FIELD QUALITY CONTROL

- A. Non-Conforming Work:
 1. Failure to install joints properly shall be cause for rejection and replacement of piping system at no additional cost to Owner.

3.4 CLEANING

- A. Remove excess earth from site or place as directed by Architect.

END OF SECTION

SECTION 33 4416
UTILITY TRENCH DRAINS

PART 1 - GENERAL

1.1 SUMMARY

- A. Products Supplied But Not Installed Under This Section:
 - 1. Trench drains.
- B. Related Requirements:
 - 1. Section 31 2316: 'Excavation' for criteria for performance of excavation.
 - 2. Section 31 2323: 'Fill' for criteria for performance of backfill and compaction.
 - 3. Section 33 4416: 'Utility Trench Drains'

1.2 SUBMITTALS

- A. Action Submittals:
 - 1. Product Data:
 - a. Provide Manufacturer's product literature or cut sheets.
- B. Informational Submittals:
 - 1. Manufacturer Instructions: Written installation instructions.
- C. Closeout Submittals:
 - 1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
 - a. Record Documentation:
 - 1) Manufacturers documentation:
 - a) Manufacturer's product literature.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Type One Acceptable Manufacturers:
 - 1. ABT Inc, Troutman, NC www.abtdrains.com.
 - 2. ACO Polymer Products Inc, Chardon, OH www.acousa.com..
 - 3. Polycast by Strongwell Ebert, Bristol, VA www.strongwell.com.
 - 4. Perma-Pipe System by Zurn, Falconer, NY www.zurn.com.
 - 5. Equal as approved by Architect before bidding. See Section 01 6200.

2.2 MATERIALS

- A. 6 inch (150 mm) wide pre-sloped trench drainage system.
 - 1. Channels:
 - a. Pre-cast polymer concrete or high-density polyethylene structural composite material with radiused bottoms.
 - b. Interlocking sections and horizontal anchoring ribs.
 - c. 4 inch (100 mm) vertical knock-out.

2. Grates: Slotted of epoxy-coated ductile iron with built-in lock-down mechanism.
3. Quality Standard: PolyDrain by ABT Inc.

PART 3 - EXECUTION: Not Used

END OF SECTION