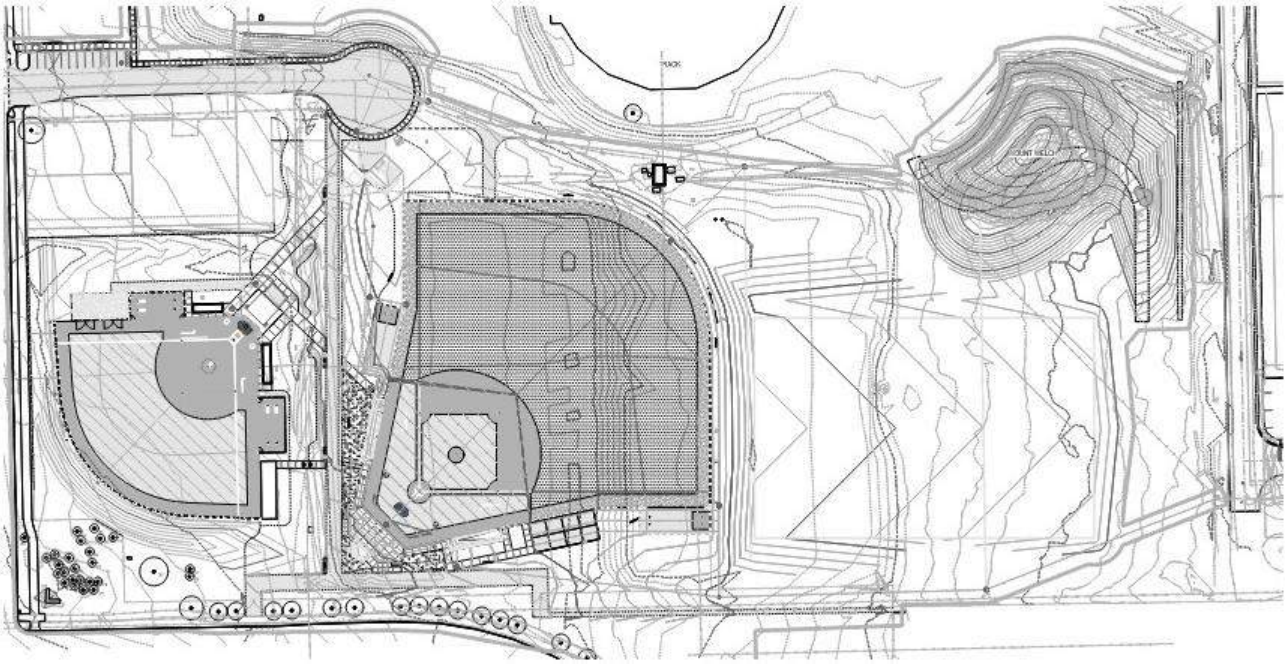
EASTERN OREGON UNIVERSITY

BID DOCUMENTS

for

BALLFIELD COMPLEX RENOVATION: PHASE 1



Prepared By:

SZABO LANDSCAPE ARCHITECTURE
1000 nw wall st., suite 205 | bend, or 97703 | www.szabo-la.com

INVITATION TO BID PROPOSALS #FP-2022-09B

EOU BALLFIELD COMPLEX – PHASE 1

ISSUE DATE: FEBRUARY 26, 2026

MANDATORY MEETING & SITE VISIT:

Friday, March 13, 2026 at 10:00 AM
Main Entrance of the Physical Plant Admin. Bldg.
One University Blvd, La Grande, OR 97850

BID DUE DATE & TIME

Tuesday, April 7, 2026 at 2:00 PM via sealed bid submission to bids@eou.edu

Eastern Oregon University reserves the right to change the pre-proposal site visit requirements to non-mandatory should there be three (3) or fewer attendees.

REQUEST FOR CLARIFICATIONS OR CHANGE BID DOCUMENTS:
Must be received in writing by March 26, 2026 5:00 PM
Addenda to be issued on March 30, 2026

PROJECT NUMBER FP-2022-09B

Eastern Oregon University is seeking Bid Proposals for the Project described below pursuant to this INVITATION TO BID. By submitting a Bid, the Bidder represents that they have carefully read the terms and conditions of this Bid Proposal, including all attachments and addenda, and agrees to be bound by them.

Contract Administrator
John Garlitz, Director of Facilities & Planning
EOU Facilities & Planning Department
Phone: (541) 962-3181
Email: shollenbeck@eou.edu

Bid Proposal Administrator
Lowann Vanleuven, F&P Business Manager
EOU Facilities & Planning Department
Phone: (541) 962-3020
Email: bids@eou.edu

It is the Bidders' responsibility to continue to monitor the ORPU.org website for Addenda. Failure to acknowledge any Addenda in the Transmittal Letter may cause your Bid to be considered non-responsive.

EOU Policy 3.15.01 – Procurement and Contracting of Goods and Services govern this solicitation unless otherwise referenced in this or stated.

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INVITATION FOR BIDS

Owner: **Eastern Oregon University, La Grande, OR**

Project: **EOU Ballfield Complex – Phase 1**

Bidders must submit Bids electronically. Hard copies will not be accepted. Bids must be delivered through email in a searchable PDF format to, bids@eou.eou and must be received by **2:00 PM, Monday April 5, 2026**, at which time bids shall be immediately opened; however, the amounts of the Bids will not be publicly provided at that time. The email subject line must include the title: "**Bid Proposal: Ballfield Complex – Phase 1**". Within two working hours after the date and time designated for Bid opening, the Bidder shall submit to EOU the First Tier Subcontractors Disclosure Form through email in a searchable PDF format to bids@eou.edu. The email subject line must include the title "**1st Tier Subcontractor Form: Ballfield Complex – Phase 1**". If a First Tier Subcontractors Disclosure Form is not received by **4:00 PM** the Bid will be considered Non-Responsive. After the deadline for submitting the First Tier Subcontractors Disclosure Form, the responsive Bid amounts will be reviewed and publicly posted in a timely manner.

A **Mandatory Pre-Bid Conference** will be convened Tuesday, March 13, 2026 at 10:00 AM at the main Entrance of the Physical Plant Administration Building, One University Blvd, La Grande, OR 97850. The University reserves the right to adjust the requirements of the pre-bid conference from mandatory to non-mandatory should three (3) or fewer bidders attend the meeting.

Written requests for clarification or change of the Bid Documents (defined below), including but not limited to the form of contract, must be received by March 26, 2026 at 5:00 PM.

- Should a Bidder find discrepancies in, or omissions from the Bid Documents, or should the Bidder be in doubt as to their meaning or believe that any aspect of the Bid Documents is improvident or unlawful or which may unnecessarily restrict competition, the Bidder should at once notify EOU in the form of a request for clarification, change, or protest. Only responses issued by formal written Addenda will be binding.
- The purpose of this request for clarification, change or protest procedure is to permit EOU time to correct, prior to the submission of Bids, aspects of the Bid Documents that may be improvident or unlawful, or which may unnecessarily restrict competition. This requirement is intended to eliminate, by permitting corrections prior to the submission of Bids, the waste of resources and delay that may result from the untimely detection of errors in the Bid Documents, possible protests, and possible rejection of Bids.
- EOU will consider each request for clarification, change, or protest and amend the Bid Documents accordingly if warranted and notify by written Addenda each prospective Bidder of any change. No other explanation or interpretation will be considered official or binding. Oral and other interpretations or clarification will be without legal effect.
- Any prospective Bidder who contends that the terms and conditions of the Bid Documents, including but not limited to the Contract, or any aspect of the selection process: (i) will encourage favoritism in the award of the Contract; (ii) will substantially diminish competition; (iii) will violate any other statute, regulation, policy, or law of any kind, including but not limited to EOU Policy

3.15.01 – Procurement and Contracting of Goods and Services; and/or (iv) are ambiguous, insufficient, or unfair for any reason must file a written protest.

- Protests must set forth the basis of the protest or request for clarification along with any proposed changes to the Bid Documents, including but not limited to the specifications or Contract terms. Failure to file a protest by the time and date indicated above will be deemed a waiver of any claim by a Bidder that the selection process violates any of the items (i)-(iv) in Paragraph 6.5. Any protest that does not meet these requirements will not be considered.
- EOU will issue a written disposition of each such request for change or clarification and/or protest no less than three business days before Bids are due. If EOU agrees with the request or upholds the protest, in whole or in part, EOU may, in its sole discretion, issue an Addendum reflecting its disposition or take other appropriate action.
- Addenda may also be issued to modify the Bid Documents or Contract Documents as deemed advisable by EOU. EOU will post addenda, if any, on its website. It is each Bidder's responsibility to check the website frequently for updates and addenda.

Work will generally include:

Right-of-way utility improvements along C Ave and 6th Street, site grading and utility updates, utilities for future baseball field and existing softball field with associate infrastructure materials, planting remediation, and site treatment from construction disturbance for all improvements, new site irrigation system, new baseball field improvements and associated infrastructure, softball field improvements and associated infrastructure, and site planting improvements.

Bid Procedures and Conditions, Bid Forms, Drawings, Specifications, and other Documents collectively referred to as the Bid Documents may be examined at the www.ORPU.org website. These are uncontrolled documents, and it is the sole responsibility of bidder to continue to monitor the www.ORPU.org website for Addenda. Failure to acknowledge any Addenda will be cause for being considered non-responsive.

EOU Policy 3.15.01 – Procurement and Contracting for Goods and Services govern this bid solicitation unless otherwise referenced or stated.

Each Bid must contain a statement as to whether the bidder is a resident bidder, as defined in ORS 279A.120. In determining the lowest qualified bidder, the Eastern Oregon University will, for the purpose of awarding the Contract, include a contractor proposed Bid Price, and add a percentage increase on the Bid of a nonresident bidder equal to the percentage, if any, of the preference given to that bidder in the state in which the bidder resides.

The successful Bidder will be required to furnish separate Performance and Payment Bonds submitted on the prescribed forms for faithful performance of the Contract in the full amount of the Contract price. The Surety issuing the bond must hold a certificate of authority to transact surety business in Oregon.

The Eastern Oregon University reserves the right to reject any or all Bids for good cause, or any or all Bids upon a finding of the Owner that it is in the public interest to do so, to postpone the award of the Contract for a period not to exceed thirty (30) days, and to accept that Bid which is to the best interests of the Eastern Oregon University

For information regarding this project, contact John Garlitz, Director of Facilities and Planning, Eastern Oregon University Facilities & Planning Department, phone (541) 962-3114, email jgarlitz@eou.edu .

END OF SECTION

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INSTRUCTIONS FOR BIDDERS

1. Project Data & Information

1.1. Project: EOU Ballfield Complex – Phase 1

1.2. Project Location: La Grande, OR

1.3. Project Owner: Eastern Oregon University

1.4. Project Funding: Auxiliary Funds with some Capital Improvement and Renewal Funds where appropriate

1.5. Project Starting and Completion Times:

Work is to commence within 7 days of the date of Notice to Proceed which is anticipated being on or before **April 9, 2026,** and completion time **October 31, 2026.**

1.6. Liquidated Damages:

Liquidated damages shall apply against the Contractor and accrue to the Owner at the rate of **$1,000** per day for each and every calendar day afterwards that the project remains uncompleted beyond the time limit set. Refer to Article II.B of the Section 004110 – Public Improvement Contract.

1.7. Bid Schedule:

The work is offered in one Bid schedule on a unit price basis, and proposed Contract Time basis. Each item is to be Bid and filled out. If a Bid item is not filled in, the Bid may be considered non-responsive. No substitutions, alternate bids or partial bids are allowed, except as provided by written addenda from the Owner.

1.8. Owner's A/E Consultant:

Szabo Landscape Architecture, 1000 NW Wall Street, Bend, OR 97703

1.9. Retainage:

To ensure proper performance of this Contract, the Owner shall retain five percent (5%) of the amount of each progress payment until completion and acceptance of all work covered by this Contract.

1.10. Prevailing Wages:

This Contract is subject to prevailing wages under both the State of Oregon statutes. Refer to Article X.B of the Section 004110 – Public Improvement Contract.

1.11. Performance and Payment Bonds:

Prior to execution of the Contract, the Bidder shall furnish separate bonds covering the faithful performance of the Contract, and the payment of all obligations arising thereunder, each in an amount equal to one hundred percent (100%) of the Contract sum. The cost of furnishing such bonds shall be included in the Bid. The surety issuing such bonds shall be licensed to issue bonds in the State of Oregon

2. Responsibility of Bidders

2.1. Bidder shall include all information in the Responsibility Inquiry Form in Section 00 40 00 – Bid Forms as part of the sealed bids.

2.2. Before submitting a bid, it is the responsibility of each bidder to:

2.2.1. Examine and carefully study the Solicitation Documents including but not limited to the drawings and specifications before submitting a bid.

2.2.2. Quantities appearing in the Bid Schedule are approximate and are provided for only the comparison of Bids. The Owner does not warrant that the actual individual items, amount of Work, or quantities will correspond to those shown in the Bid Schedule. Payment to Contractor will be made for actual quantities of Work performed and accepted or Materials furnished and accepted, as required by the Contract. Quantities of the Work to be performed and Materials to be furnished may be increased, decreased, or omitted by the Owner. The Owner reserves the right to require changes it deems necessary or desirable within the Specifications means the general scope of the project.

2.2.3. Visit the site to (i) become familiar with and satisfy the Bidder as to the general, local site conditions that may affect cost, progress, performance or furnishing of the Work including by not limited to access, topography, weather and the kind an quality of materials to be encountered in excavation and (ii) perform such examination, investigation, explorations, tests, and studies necessary for the determination of its Bid for performance of the Work required at the prices bid and within the times committed to, and in accordance with the other terms and conditions of the Solicitation Documents. Each Bidder shall be conclusively presumed to have knowledge of the general, local and site conditions in the preparation of the Bid and in the execution of the Contract. Bidders should be aware that participation in the pre-Bid visit is mandatory.

2.2.4. Consider all federal, state, and local laws and regulations that may affect costs, progress, performance or furnishings of the Work, including but not limited to those laws and regulations in the numbered Sections and Exhibits referenced or contained in Solicitation Documents.

2.2.5. Consider the information known to the Bidder; information commonly known to contractors performing similar work, information and observations obtained from visits to the work sites; the Solicitation Documents, with respect to the effect of such information, observations and documents on (i) the cost, progress and performance of the Work; (ii) the means, methods, techniques, sequences and procedures for completing the Work; (iii) Bidder's safety precautions and programs

2.2.6. Become aware of the general nature of the operations of the general public, EOU and/or other contractors at various location that maybe related to the Work required for the completion of the Project.

2.2.7. Promptly notify EOU of all conflicts, errors, ambiguities, or discrepancies in or between the Bid Documents, Invitation to Bid (ITB), or all related documents contained in the Solicitation Documents.

2.2.8. When conflicts, errors, ambiguities, or discrepancies are discovered in or between the Bid Documents, ITB, and any other related documents, and when such conflicts have not been resolved through the interpretations of EOU in Section 3, Bidder shall include in the Bid the

greater quantity or better quality of Work, or compliance with the more stringent requirement resulting in the greater cost. Such greater cost shall be included in the Bid.

2.2.9. The submission of a bid will constitute an incontrovertible representation by Bidder (i) that Bidder has complied with every requirement of this Section 2, (ii) that without exception the Bid is premised upon performing and furnishing the design and Work required by the Solicitation Documents for this Project, and applying the specific means, methods, techniques, sequences, or procedures for the completion of the Work that may be shown, indicated, or expressly required in the Solicitation Documents, (iii) that Bidder has given EOU written notice of all conflicts, errors, ambiguities and discrepancies in the Solicitation Documents and the written resolution thereof by EOU are acceptable to Bidder, and when said conflicts, etc., have not been resolved through the interpretations as described in Section 3, Bidder has included in the Bid the greater quantity or better quality of Work, or compliance with a most stringent requirement resulting in a greater cost, and (iv) that the Solicitation Documents are generally sufficient to indicate and convey understand of all terms and conditions for performing and furnishing the Work.

3. Request for Clarifications or Change, Solicitation Protests

3.1. Bidders desiring to submit a request for clarification, change or protest must make a request for such information in writing to EOU no later than **5:00 PM, March 26, 2026**.

3.2. Should a Bidder find discrepancies in, or omissions form the Solicitation Documents, or should the Bidder be in doubt as to their meaning or believes that any aspect of the Solicitation Documents is improvident or unlawful, or which may unnecessarily restrict competition, the Bidder should at once notify the EOU in the form of a request for clarification, change or protest. Only responses issued by formal written Addenda will be binding.

3.3. The purpose of this request for clarification, change or protest procedure is to permit EOU the time to correct, prior to submission of Bids, aspects of the Solicitation Documents that may be improvident or unlawful, or which may unnecessarily restrict competition. This requirement is intended to eliminate, by permitting corrections prior to the submissions of Bids, the waste of resources and delays that may results from the untimely detection of errors in the Solicitation Documents, possible protests, and possible rejection of Bids.

3.4. EOU will consider each request for clarification, change, or protest and amend the Solicitation Documents accordingly if warranted and notify by written Addenda each prospective Bidder of any change. No other explanation or interpretation will be considered official or binding. Oral and other interpretations or clarifications will be without legal effect.

3.5. Any prospective Bidder who contends that the terms and conditions of the Solicitation Documents, including but not limited to the Contract, or any aspect of the solicitation process: (i) will encourage favoritism in the award of the Contract; (ii) will substantially diminish competition; (iii) will violate any other statue, regulation, policy, or law of any kind; and/or (iv) are ambiguous, insufficient, or unfair for any reason must file a written protest consistent with the procedures provided in EOU Policy 3.15.01.

3.6. Protests must set forth the basis of the protest or request for clarification along with any proposed changes to the Solicitation Documents, including but not limited to the specifications or

Contract terms. Failure to file a protest by the date and time indicated will be deemed a waiver of any claim by a Bidder that the selection process violates any of these items in Section 3. Any protest that does not meet these requirements will not be considered.

3.7. EOU will issue a written disposition of each such request for change, clarification, and/or protest no less than three (3) business days before the Bids are due. If EOU agrees with the request or upholds the protest, in whole or in part, EOU may, in its sole discretion, issue an Addendum reflecting its disposition or take other appropriate action.

3.8. Addenda may also be issued to modify the Solicitation Documents or Contract Documents as deemed advisable by EOU. EOU will post addenda, if any, on the ORPU.org website. It is each Bidder's responsibility to check that website frequently for updates and addenda.

4. Bid Security

4.1. Each Bid must be accompanied by a Bid security made payable to EOU in an amount of ten percent (10%) of Bidder's maximum Bid price and in the form of a cashiers check or certified check; irrevocable letter of credit issued by an insured institution as defined in ORS 706.008; or a Bid Bond as provided in the Procurement Forms.

4.2. The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract, furnished the required Contract security, and met the other conditions of the Notice of Intent to Award, whereon Bid security shall be returned. If the Successful Bidder fails to execute and deliver the Contract and furnish the required Contract security, certificates of insurance and bonds within 15 calendar days after the Notice of Intent to Award, EOU may consider Bidder to be in default and annul the Notice of Intent to Award, and the Bid security of that Bidder will be forfeited. The Bid security of other Bidders who EOU believes to have a reasonable chance of receiving the award may be retained by EOU until the earlier of the seventh (7^{th}) day after the Effective Date of the Contract after all Bids have been rejected, whereupon the Bid security furnished by such Bidder will be returned.

5. Basis Award

After opening and reading of the Bids, EOU will check them for correct extension of unit prices and total. The total of extensions, corrected where necessary, will be used by EOU for Award purposes in determining the Successful Bidder. For the purposes of this Project "Successful Bidder" means the responsible bidder who submits the lowest responsive Bid, who is not on the list created by the Construction Contractors Board according to ORS Chapter 701.227. A responsible bidder is one who has, among other things:

5.1. Have available, the appropriate financial, materials, equipment, facility and personnel resources and expertise, or ability to obtain the resources and expertise, necessary to indicate the capability of the prospective Bidder to meet all contractual responsibilities.

5.2. A satisfactory record of performance. In evaluating a Bidder's record of performance, EOU may consider, among other things, whether the Bidder completed previous contracts of a similar nature with a satisfactory record of performance. For purposes of evaluating a Bidder's performance on previous contracts of a similar nature, a satisfactory record of performance means that to the extent that the costs associated with and time available to perform a previous contract remained within the Bidder's control, the Bidder stayed within the time and budget allotted for the procurement and otherwise performed the contract in a satisfactory manner.

Satisfactory performance of the Contract also includes compliance with the requirements for records in the EOU General Conditions.

5.3. A satisfactory record of integrity. In evaluating a Bidder's record of integrity, EOU may consider, among other things, whether the Bidder has previous criminal convictions for offenses related to obtaining or attempting to obtain a contract or subcontract or in connection with the Bidder's performance of a contract or subcontract.

5.4. Qualified legally to contract with the EOU.

5.5. Supplied all necessary information in connection with the inquiry concerning responsibility. If a prospective Bidder fails to promptly supply information requested by the Agency concerning responsibility, the Agency will base the determination of responsibility upon any available information or may find the prospective Bidder not to be responsible.

5.6. Not been disqualified by the public contracting agency under ORS 279C.440.

5.7. An unexpired certificate issued by the Oregon Department of Administrative Services (under ORS 279A.167) upon completion of the curriculum and assessment that the Bidder understands the prohibitions set forth in ORS 652.220 and in other laws or rules that prohibit discrimination in compensation or wage payment. If the Bidder is found not to have a satisfactory record of performance or integrity, EOU will document the record and the reasons for the unsatisfactory finding.

5.8. In determining whether the Bidder is responsible, EOU may also consider whether the Bidder has liquidated and delinquent debt owed to the State of Oregon or any department or agency of the State, or any Public University in the State of Oregon. EOU may also investigate any entity submitting a bid, which may include investigation of the entity's officers, directors, owners, affiliates, or any other person acquiring ownership of the entity to determine the Bidder's qualifications.

5.9. EOU will provide Notice of Intent to Award on the www.ORPU.org website. The Award will not be final until the later of the following:

5.9.1. Seven (7) calendar days after the Notice of Intent to Award has been posted as specified in the advertised solicitation or Addendum thereto; or

5.9.2. EOU has provided a written response to each timely protest, denying the protest and affirming the Award.

5.10. If EOU accepts a Bid and awards a Contract, EOU will send the successful Bidder written notice of acceptance and Award.

5.11. EOU reserves the right, in its sole discretion:

5.11.1. to reject Bids which it determines to be non-responsive;

5.11.2. to reject Bids upon EOU's finding that the Bidder: (a) has been declared ineligible under ORS 279C.860; (b) has been identified by the Oregon Construction Contractor's Board as ineligible to hold public contracts in accordance with ORS 701.227; or (c) is not responsible;

5.11.3. to reject all Bids;

5.11.4. to amend the solicitation documents, including but not limited to making such changes or corrections in drawings, specifications, or quantities as it may deem necessary or desirable prior to the Bid due date;

5.11.5. to extend the deadline for submitting Bids;

5.11.6. to determine whether a Bid does or does not substantially comply with the requirements of the solicitation documents;

5.11.7. to waive any minor irregularity, informality, or non-conformance with the solicitation documents;

5.11.8. to obtain information from or provide information to other public agencies, upon request, regarding the Bidder's performance;

5.11.9. to permit a Bidder to submit supplemental information;

5.11.10. to negotiate with any Bidder or multiple Bidders as may be in the best interests of EOU;

5.11.11. at any time prior to contract execution (including after the Notice of Intent to Award is issued): (a) reject any Bid that fails to substantially comply with all prescribed solicitation requirements and procedures and/or the prescribed public contracting procedures and requirements, including but not limited to the requirement to demonstrate Bidder's responsibility; and/or (b) to reject all Bids received and cancel this solicitation upon a finding by EOU that there is good cause therefor and that such cancelation would be in the public interest;

5.11.12. to hold meetings, exchange correspondence, and obtain data from any source or party, including a Bidder; and

5.11.13. in the event any Bidder to whom the Contract is awarded shall fail to execute the Contractor or furnish satisfactory bonds or evidence of insurance coverage within the time and in the manner hereinafter specified, to re-award the Contract to another Bidder.

ALL BIDDERS WHO SUBMIT A RESPONSE TO THIS SOLICITATION UNDERSTAND AND AGREE THAT EOU IS NOT OBLIGATED TO AWARD A CONTRACT TO ANY B8IDDER. EOU HAS NO FINANCIAL OBLIGATION TO ANY BIDDER. IN ADDITION, EACH BIDDER UNDERSTANDS AND AGREES THAT EOU SHALL NOT BE RESPONSIBLE FOR ANY DAMAGES, EXPENSES, AND COSTS INCURRED IN PREPARING A BID, SUBMITTING A BID IN RESPONSE TO THIS ITB, ATTENDING ANY MEETING, AND EXECUTING A CONTRACT. EACH BIDDER WHO PREPARES AND SUBMITS A BID IN RESPONSE TO THIS SOLICITATION DOES SO SOLELY AT THE BIDDER'S OWN COST AND EXPENSE.

END OF SECTION

BIDDERS CHECKLIST

The Bidder's Attention is especially called to the following forms or information, which must be submitted in full as part of the bid.

[ ] **BID** signed and completely filled out.

[ ] **BID SCHEDULE** filled out showing bid amounts and properly signed.

[ ] **BID BOND** completed, signed, and dated.

[ ] **RESPONSIBILITY INQUIRY FORM** completed, signed, and dated.

[ ] **CONTRACTOR'S REGISTRATION** completed, signed, and dated.

Above forms MUST BE inserted in a sealed envelope properly identified and delivered to the OWNER

[ ] **Complete and submit, in a separate envelope, the FIRST-TIER SUBCONTRACTORS DISCLOSURE form. This form shall be submitted, timing as outline in the instructions to bidders.**

(This Bidder's Checklist is provided as a convenience to the Bidder. It is recommended, but not required, that this page be attached to the front of the bid.)

BID

EOU Ballfield Complex – Phase 1

TO: BID EOU Ballfield Complex – Phase 1
Eastern Oregon University
One University Blvd
La Grande, OR 97850

Bidder's Declaration and Understanding

The undersigned Bidder declares that: (a) the Construction Drawings, Invitation to Bid, Information to Bidders, Bid, Bid Schedule and all other Bidding Requirements, including not limited to Addenda and other items uploaded to the ORPU.org website, collectively referred to hereinafter as the Contract Documents for the construction of the proposed improvement have been carefully examined; (b) that the site has been personally inspected and that he has determined the extent, character, and location of the proposed work, the nature and type of excavation to be done, the location and condition of the existing streets and roadways giving access to the site of the work, and the topography of the site of the work; (c) that the Bidder is satisfied as to the quantities of materials, items of equipment and conditions or work involved including the fact that the description of the quantities of work and materials as included herein is brief and is intended only to indicate the general nature of such items and to identify the said quantities with the detailed requirements of the Contract Documents; and (d) that the Bidder's Bid is made according to the provisions and under the terms therein, which documents are hereby made a part of this Bid.

The Bidder further declares that the only persons or parties interested in this Bid are those named herein; that this Bid is in all respects fair and without fraud; that it is made without collusion with any official of EOU (Owner), and that the Bid is made without any connection or collusion with any person making another Bid on this Contract.

The Bidder further declares by the signing of this Bid that all the provisions required by ORS 279 & 701 relating to the payment of prevailing wage rates for work performed under the Contract with the Owner shall be complied with. Including, but not limited to:

a) Bidder is registered with the Oregon Construction Contractors Registration Board in Oregon in accordance with ORS 701.035 through 701.055. The Bidder certifies that Registration Number _____ (*fill in registration number*) allows their company to perform work on Public Works Projects and that this registration is current and valid. The Bidder further certifies that, if awarded the contract, all subcontractors performing the work will be registered with the Construction Contractors Board in accordance with ORS 701.055 before the subcontractors commence work under the contract (reference ORS 279C.365).

b) Bidder agrees to be bound by and will comply with the provisions of prevailing wages in accordance with Article X.B and X.D and Section C of the EOU General Conditions.

c) Bidder is in compliance with the State of Oregon tax laws in accordance with ORS 305.385.

d) Bidder, in accordance with ORS 297A.110, does not discriminate against minorities, women, or emerging small business enterprises in obtaining any subcontracts (reference ORS 279A.110).

e) Bidder is a [*Non-resident Bidder*] or [*Resident Bidder*] (circle correct designation) as defined in ORS 279A.120. Resident Bidder means a bidder that has paid unemployment taxes or income taxes in the State of Oregon during the 12 calendar months immediately preceding submission of the bid and has a business address in the State of Oregon per ORS 279C.365.

f) Bidder and Bidder's subcontractors are not on the Oregon Construction Contractors Board list of corporations, partnerships, or other business entities of which the Contractor or subcontractor is an owner, shareholder, or officer of the business or was an owner or officer of the business and who have been determined not be qualified to hold or participate in a public contract for a public improvement.

g) Bidder has an employee drug testing program that meets State and Federal standards per ORS 279C.505.

The Bidder further agrees that its own judgment has been exercised regarding the interpretation of subsurface information and all data which it believes pertinent from the Engineer, Owner, and other sources in arriving at these conclusions have been utilized.

Contract Execution and Bonds

The Bidder agrees that if this Bid is accepted, a Contract with the Owner, will be executed, within fourteen (14) calendar days after the date of the written Notice of Award, and will at that time, deliver to Owner the required Performance and Payment Bonds, and will, to the extent of this Bid, furnish all machinery, tools, apparatus and other means of construction and do the work and furnish all the materials necessary to complete all work as specified or shown in the Contract Documents.

Certificates of Insurance

The Bidder agrees to furnish the Owner, before commencing the work under this Contract, the certificates of insurance as specified in these Contract Documents.

Start of Construction and Contract Completion Date

The Bidder agrees to begin work within 7 calendar days after the date of the Notice to Proceed, which is anticipated being on or before **April 9, 2026.** The Contract Complete Date is October 31, 2026.

Liquidated Damages

In the event the Bidder is awarded the Contract and shall fail to complete the work within the time stated above or extended time agreed upon, as more particularly set forth in the Contract Documents, Bidder shall pay the Owner liquidated damages in an amount of **$1,000** per day and every calendar day afterwards that the work remains uncompleted beyond the time limit set for all work awarded under the contract until the work shall have been finished as provided by the Article II.B of the Public Improvement Contract

Bid Bond

Accompanying this Bid is a certified check, cashier's check, or Bidder's bond in the sum of (10%) of the Bid Total which is forfeit as liquidated damages, if, in the event that this Bid is accepted, and the Bidder shall fail to execute the Contract and furnish satisfactory Performance Bond, Payment Bond, and insurance documents under the conditions and within the time specified in the Contract Documents. Otherwise, said check or bond is to be returned to the Bidder

Surety

If the Bidder is awarded a construction Contract on this Bid, the Surety who provides the Performance and Payment bond will be_____ whose address is

_____.

Lump Sum or Unit Price Work

The Bidder further proposes to accept as full payment for the work proposed herein the amounts computed under the provisions of the Contract Documents and based on the following lump sum or unit price amounts stated in the Bid Schedule, it being expressly understood that the unit prices are independent of the exact quantities involved. The Bidder agrees that the lump sum prices and the unit prices represent a true measure of the labor and materials required to perform the work, including all allowances for overhead and profit for each type and unit of work called for in these Contract Documents.

Bidder

Bidder's Business Name:		
Type of Business: ☐ Sole Proprietorship ☐ Partnership ☐ Corporation (State of Incorporation:___) ☐ Other		
Physical Business Address (Must not be a P.O. Box):		
City:	State:	Zip Code:
Business Telephone Number:	Business Fax Number:	Business E-mail Address:
State of Oregon numbers for the following:		
Oregon CCB # & Expiration Date :	Oregon Registry # :	Federal Tax ID # :
In submitting this bid, it is understood that the Owner reserves the right to reject any and all bids, to adjust the scope of the work within reasonable limits, including to meet approved budget limitations, and to postpone award for a reasonable time.		

OFFICIAL AUTHORIZED TO SIGN FOR BIDDER:

"I certify (or declare) under penalty of perjury under the laws of the State of Oregon that the foregoing is true and correct":	
Signature:	Date:
Print Name and Title	Location or Place Executed: (City, State)

BID SCHEDULE | DRAWING PACKAGE A

Instructions to Bidders

1. Submit lump sum prices for each work scope item as listed below.
2. EOU will be determining what packages beyond A are advanced to construction based on an Institutional Determination based on Auxilary budgets. EOU will award the bid based on the totals of packages advanced as determined by EOU.
3. Include all overhead, general conditions, and profit in each lump sum; prices must be reasonable and justifiable.
4. Bid each work scope item as financially independent, since the Owner may accept, modify, or omit one or more item(s) based on final budget availability.
5. Document, as necessary, assumptions used in calculating overhead and profit to support the lump sums.
6. Bids should allow the Owner flexibility to add or remove scope items without renegotiating overhead or profit allocation.
7. The Itemized Lump Sum Base Bid must include all labor, materials, equipment, supervision, services, overhead, profit, permits, fees, and all other costs necessary to provide a complete, fully functional, code-compliant project in strict accordance with the Contract Documents.
8. All work indicated, reasonably inferable, or required by the Contract Documents shall be included in the Base Bid, whether or not specifically itemized.
9. No additional compensation will be allowed for work required by the Contract Documents that is not separately listed in the Bid Schedule.
10. By submitting this Bid, the Bidder acknowledges they have reviewed the Contract Documents in their entirety and agree to complete all work in accordance therewith for the stated amount.

BASE BID ITEMS

ITEM	ITEM DESCRIPTION	QUANTITY	BID PRICE
1.	**MOBILIZATION and BONDING**	1 LS	$_____
2.	**FEES & PERMITTING |** (includes applicable fees, 1200C permit, and other work reasonably inferable to this section)	1 LS	$_____
3.	**TRAFFIC CONTROL**	1 LS	$_____
4.	**EROSION CONTROL |** (includes labor, equipment, and material required for: construction fencing, silt fencing, tree protection, and maintenance of existing erosion control BMP's and		

other work reasonably inferable to this section). RE: drawing sheet(s) C-012 and C-002. 1 LS $_____

5. **DEMOLITION |** (includes labor, equipment, and material required for: removal and proper disposal of existing pavements, curbs, utility abandonment fence removal, clearing and grubbing, temporary protections, hauling, cutting and patching and other work reasonably inferable to this section). RE: specifications section(s) 31 10 00 and 26 00 20; as well as drawing sheet(s) C-010, C-011, C-002, and E0.00. 1 LS $_____

6. **EARTHWORK |** (includes labor, equipment, and material required for: topsoil stripping and stockpile, export, import haul & place for all earthwork, trenching and backfilling, compactions, and other work reasonably inferable to this section). RE: specifications section(s) 31 00 00 and 31 23 00; as well as drawing sheet(s) C-110, C-111, C-112, and C-113). 1 LS $_____

7. **CAST IN PLACE CONCRETE** | (includes labor, equipment, and material required for: curbs, walls (freestanding and retaining), footings and foundations, stairs, curb ramps, slab-on-grade, columns and associated reinforcing, joints, surface treatments, and other work reasonably inferable to this section). RE: specifications section(s) 03 30 00, 03 30 01, and per City of La Grande Public Works Department Standards and Development Code Ordinance(s); as well as drawing sheet(s) C-112, C-113, LC2.01, E1.00 and LI4.01. 1 LS $_____

8. **MASONRY |** (includes labor, equipment, and material required for: Concrete Masonry Units (CMU), mortar, grout, reinforcing, flashing, and moisture controls, and other work reasonably inferable to this section). RE: specifications section 04 20 00; as well as drawing sheet(s) A2.10 – A9.00 and S0.1 – S6.1. 1 LS $_____

9. **METALS |** (includes labor, equipment, and material required for: metal tube and bar-stock stair and ramp railings, fabrication, field verification, finishes, and other work reasonably inferable to this section). RE: specifications section(s) 05 5213; as well as drawing sheet(s) LC1.00 – LC1.02, LC2.01, and LC2.03. 1 LS $_____

10. **WOOD, PLASTICS, AND COMPOSITES** | (includes labor, equipment, and material required for: baseball dug-outs and storage areas to related to rough carpentry, framing, sheathing, architectural casework, cabinets, shelving, finishes, fasteners, and other work reasonably inferable to this section). RE: specifications section(s) 06 10 00, 06 20 00, and 06 41 00; as well as drawing sheet(s) A2.10 – A9.00 and S0.1 – S6.1. 1 LS $_____

11. **THERMAL AND MOISTURE PROTECTION** | (includes labor, equipment, and material required for: surface prep, liquid or asphalt-based dampproofing, application of water repellent(s), crack treatments, protections, metal roof panels, underlayment, fiber cement siding, fasteners, trim pieces, flashings, drip edge, roof accessories, joint sealants, and other work reasonably inferable to this section). RE: specifications section(s) 07 11 13, 07 19 00, 07 41 13, 07 46 46, 07 62 00, 07 72 00, and 07 92 00; as well as drawing sheet(s) A2.10 – A9.00, S0.1 – S0.1-S6.1, LC2.01, and LC2.03. 1 LS $_____

12. **OPENINGS |** (includes labor, equipment, and material required for: hollow metal doors, frames, finishes, hardware, hinges, locks, latchsets, exit devices, stops, thresholds, and other work reasonably inferable to this section). RE: specifications section(s) 08 11 13 and 08 71 00; as well as drawing sheet(s) A2.10 – A9.00. 1 LS $_____

13. **FINISHES |** (includes labor, equipment, and material required for: exterior painting, staining, finishes, high performance coatings, graffiti resistant coatings, CMU or masonry coatings,

and other work reasonably inferable to this section). RE: specifications section(s) 09 91 13, 09 93 00, 09 96 23 and 09 97 23; as well as drawing sheet(s) A2.10 – A9.00 and LC2.01 – LC2.03. 1 LS $_____

14. **SPECIALTIES |** (includes labor, equipment, and material required for: fire protection specialties, extinguishers, fire resistant coatings, and other work reasonably inferable to this section). RE: specifications section(s) 10 44 00; as well as drawing sheet(s) A2.10 – A9.00. 1 LS $_____

15. **EQUIPMENT |** (includes labor, equipment, and material required for: bases, pitchers' mounds, athletic field equipment, batting cages, backstop padding, fence toppers, home plate, foul poles, windscreens, backstop netting, and other work reasonably inferable to this section). RE: specifications section(s) 11 68 33; as well as drawing sheet(s) LC1.00 – LC1.02, LC2.02 – LC2.08, and A2.10 – A9.00. 1 LS $_____

16. **ELECTRICAL |** (includes labor, equipment, and material required for: general provisions, medium voltage cable, building wires and cables, grounding, support devices, raceways and fittings, outlets, junction and pull boxes, overcurrent protective devices, wire connections, oil filled transformers, panelboards, (SPD) equipment, lamps, lighting fixtures, and other work reasonably inferable to this section). RE: specifications section(s)26 00 01, 26 00 20, 26 00 26, 26 00 05 13, 26 05 19, 26 05 26, 26 05 29, 26 05 33, 26 05 33.16, 26 05 53, 26 05 60, 26 05 83, 26 12 00, 26 24 17, 26 24 18, 26 27 26, 26 51 13.10, and 26 51 13.20; as well as drawing sheet(s) E0.00 – E1.00. 1 LS $_____

17. **CONCRETE PAVING & FLATWORK** | (includes labor, equipment, and material required for: concrete flatwork, reinforcing, joints and sealants, expansion assemblies, base course aggregates, and other work reasonably inferable to this section). RE: specifications section(s) 32 13 13 and 32 13 73, and City of La Grande Public Works Department Standards and Development Code Ordinance(s); as well as drawing sheet(s) C-112, C-113, LC1.00, & LC2.01. 1 LS $_____

18. **ASPHALT PAVING & MARKINGS** | (includes labor, equipment, and material required for: Parking and pavement markings and striping, ADA Symbols, lane and crosswalk striping, curb painting, directional arrows, hot-mix asphalt paving, aggregate base materials and compaction, leveling and surface coats, patching, and other work reasonably inferable to this section). RE: specifications section(s) 32 17 23, City of La Grande Public Works Department Standards and Development Code Ordinance(s); as well as drawing sheet(s) C-112, C-113, LC1.00, LC2.01. 1 LS $_____

19. **CHAIN LINK FENCING AND GATES** | (includes labor, equipment, and material required for: posts, horizontal rails, mesh infill, pedestrian and vehicular gates, vinyl-coatings, finishes, fasteners, hardware, tension bars and bands, drop rods, latches, locks, slats, windscreens, field measurements, and other work reasonably inferable to this section). RE: specifications section(s) 32 31 13; as well as drawing sheet(s) LC1.00, LC2.01 1 LS $_____

20. **PLANTING IRRIGATION** | (includes labor, equipment, and material required for: connection to water supply, controllers, flow sensors, double-check valves, ball valves, control valves, quick-couplers, boxes, equipment components, mainline, lateral lines, heads and emitters, joints, fittings, trenching, wires, tape, sleeving, testing, as-builts, maintenance period establishment and operations, and other work reasonably inferable to this section). RE: specifications section(s) 32 84 00 and 32 01 90; as well as drawing sheet(s) LI3.00 – LI4.01, E.00, and E1.00. 1 LS $_____

21. **SOIL PREPARATION** | (includes labor, equipment, and material required for: topsoil, soils

testing, scarifying, amendments, tilling, fine grading, conditioning, soil depth verifications, and other work reasonably inferable to this section). RE: specifications section(s) 32 91 13; as well as drawing sheet(s) LP5.00 – LP6.01. 1 LS $_____

22. **NATIVE SEEDING** | (includes labor, equipment, and material required for: removal of rocks or debris, drill seeding, hydroseeding, tackifier, starter fertilizer application, maintenance period establishment, reseeding, weed control & removal, and other work reasonably inferable to this section). RE: specifications section(s) 32 01 90 and 32 92 20; as well as drawing sheet(s) LP5.00 – LP5.01 1 LS $_____

23. **PLANTS |** (includes labor, equipment, and material required for: supply and planting of trees, shrubs, ornamental grasses, groundcovers, perennials, tree stakes and ties, fertilizers, pit amendments, mulching, establishment period maintenance, and other work reasonably inferable to this section). RE: specifications section(s) 32 01 90 and 32 93 00; as well as drawing sheet(s) LP5.00 – LP6.01 1 LS $_____

24. **UTILITY STRUCTURES** | (includes labor, equipment, and material required for: placement of utility boxes, vaults, catch basins and inlets, precast structures, temporary shoring, dry wells, and other work reasonably inferable to this section). RE: specifications section(s) 33 05 16; as well as drawing sheet(s) C-002, C-110 – C-501 1 LS $_____

25. **SANITARY UTILITY SEWERAGE PIPING** | (includes labor, equipment, and material required for: gravity and force mains, PVC and HDPE pipe, fittings, gaskets and joint material, bedding material, inspections, testing, and other work reasonably inferable to this section). RE: specifications section(s) 33 31 00 and La Grande Public Works Department Standards and Development Code Ordinance; as well as drawing sheet(s) C-002, C-110 – C-501. 1 LS $_____

26. **STORMWATER UTILITY DRAINAGE PIPING** | (includes labor, equipment, and material required for: PVC, RCP, and/or HDPE underground rainwater piping, fittings, bedding material, connections catch basins and other structures, testing, and other work reasonably inferable to this section). RE: specifications section(s) 33 42 00; as well as drawing sheet(s) C-002, C-110 – C-501. 1 LS $_____

27. **TRENCHING OVER EXCAVATION AND STABILIZATION** | (includes labor, equipment, and material required for: over excavation and stabilization of utility trenching and backfilling, compactions, trench soil stabilization, and other work reasonably inferable to this section). Assumed to be 15% of total project trenching. 1 LS $_____

TOTAL BASE BID AMOUNT FOR ALL ITEMS 1-27 COMBINED (IN NUMBERS):
$_____

TOTAL BASE BID AMOUNT FOR ALL ITEMS 1-27 COMBINED (IN WORDS):
_____

NOTE: It is the intent of the University to award the bid to the lowest responsive bidder who submits the lowest dollar bid for all the Base Bid bid-items 1-25 combined. In the event that the University determines

that it will award any of the Bid Alternate Bid Items from this bid, then the lowest responsive bidder shall be considered that bidder who has submitted the lowest dollar bid for all the Base Bid Items and for any of the selected Bid Alternate Items combined. Award of all and/or any of the Alternate Bid Items is at the sole option of the City as deemed in its best interest. All of the listed Base Bid and Bid Alternates are ADD alternates.

BID ALTERNATES

ITEM	ITEM DESCRIPTION	QUANTITY	BID PRICE
A1	New Oil Filled Transformer	1 LS	$_____

Base Bid- Readily available Oil-Filled Transformer meeting Specification Section 26 12 00 (additional pre-approved manufacturers/suppliers/etc.). Requires added testing, and demonstration period. See Alternates Specification Section 01 63 00. Indicate lead-time_____*

Alternate Bid- New Oil-Filled Transformer per fewer listed new manufacturers (or approved) in Specification Section 26 12 00. See Alternates Specification Section 01 63 00. Indicate lead-time_____*

*Lead-time is not part of Contractor Award selection, will be used to determine if Owner elects to extend Substantial Completion and/or selection of Alternate; however, Owner may select Alternate at bid time leading to a difference in apparent low bidder.

For Specification Section 01 63 00
Alternate Description (Bid Package A). Base Bid to include readily available Oil-Filled Transformer. For the purposes of this Alternate readily available means furnished and installed prior to bid Substantial Completion. Base Bid allows for used, tested, in-stock unit, not exceeding 15 years in age (from install date) with warranty not less than specified. Base Bid allows for refurbished Oil Filled Transformer with warranty not less than specified. Requires performance demonstration period, and after on-site operational 3rd party oil testing. Refer to Specification Section 26 12 00 for approved base bid Oil-Filled Transformer suppliers/re-manufacturers, and additional requirements. Oil-Filled Transformer (used in-stock, and/or refurbished) shall meet requirements of Section 26 12 00.
Alternate Bid to include newly manufactured Oil-Filled Transformer (not used, not refurbished) as described in Specification Section 26 12 00. Alternate deletes performance demonstration period, and after operation on-site 3rd Party oil testing (factory testing still required). Base Bid and Alternate bids include same Warranty requirements.

NOTE: The above Lump Sum (LS) amount for the Bid Alternate A1 must be inclusive of all labor, materials, equipment, permits, transportation and everything else that is necessary to complete the project as specified in the Invitation for Bid documents.

SUPPLEMENTAL UNIT PRICE SCHEDULE

The following prices are intended to be the basis for additions or deletions to the work, if required. Should the Bidder be required to perform more or less work than that shown on the drawings and specifications, an additional sum will be paid or shall be credited to the City on the basis of the unit prices quoted below. Listed prices shall be the sum total compensation for items complete and in place.

BID SCHEDULE | DRAWING PACKAGE B

Instructions to Bidders

1. Submit lump sum prices for each work scope item as listed below.
2. EOU will be determining what packages beyond A are advanced to construction based on an Institutional Determination based on Auxilary budgets. EOU will award the bid based on the totals of packages advanced as determined by EOU.
3. Include all overhead, general conditions, and profit in each lump sum; prices must be reasonable and justifiable.
4. Bid each work scope item as financially independent, since the Owner may accept, modify, or omit one or more item(s) based on final budget availability.
5. Document, as necessary, assumptions used in calculating overhead and profit to support the lump sums.
6. Bids should allow the Owner flexibility to add or remove scope items without renegotiating overhead or profit allocation.
7. The Itemized Lump Sum Base Bid must include all labor, materials, equipment, supervision, services, overhead, profit, permits, fees, and all other costs necessary to provide a complete, fully functional, code-compliant project in strict accordance with the Contract Documents.
8. All work indicated, reasonably inferable, or required by the Contract Documents shall be included in the Base Bid, whether or not specifically itemized.
9. No additional compensation will be allowed for work required by the Contract Documents that is not separately listed in the Bid Schedule.
10. By submitting this Bid, the Bidder acknowledges they have reviewed the Contract Documents in their entirety and agree to complete all work in accordance therewith for the stated amount.

BASE BID ITEMS

ITEM	ITEM DESCRIPTION	QUANTITY	BID PRICE
1.	**MOBILIZATION and BONDING**	1 LS	$_____
2.	**FEES & PERMITTING |** (includes applicable fees, 1200C permit, and other work reasonably inferable to this section)	1 LS	$_____
3.	**TRAFFIC CONTROL**	1 LS	$_____
4.	**EROSION CONTROL |** (includes labor, equipment, and material required for: construction fencing, silt fencing, tree protection, and maintenance of existing erosion control BMP's and other work reasonably inferable to this section). RE: drawing sheet(s) C-012 and C-002.	1 LS	$_____
5.	**DEMOLITION |** (includes labor, equipment, and material required for: removal and proper		

disposal of existing pavements, curbs, utility abandonment fence removal, clearing and grubbing, temporary protections, hauling, cutting and patching and other work reasonably inferable to this section). RE: specifications section(s) 31 10 00 and 26 00 20; as well as drawing sheet(s) C-010, C-002, and E0.00. 1 LS $_____

6. **EARTHWORK |** (includes labor, equipment, and material required for: topsoil stripping and stockpile, export, import haul & place for all earthwork, trenching and backfilling, compactions, and other work reasonably inferable to this section). RE: specifications section(s) 31 00 00 and 31 23 00; as well as drawing sheet(s) C-110.
1 LS $_____

7. **CAST IN PLACE CONCRETE** | (includes labor, equipment, and material required for: curbs, walls (freestanding and retaining), footings and foundations, stairs, curb ramps, slab-on-grade, columns and associated reinforcing, joints, surface treatments, and other work reasonably inferable to this section). RE: specifications section(s) 03 30 00, 03 30 01, and per City of La Grande Public Works Department Standards and Development Code Ordinance(s); as well as drawing sheet(s) C-110, LC1.00 – LC1.02, LC2.01 – LC2.03, LC2.05, LC2.08, and E1.00. 1 LS $_____

8. **MASONRY |** (includes labor, equipment, and material required for: Concrete Masonry Units (CMU), mortar, grout, reinforcing, flashing, and moisture controls, and other work reasonably inferable to this section). RE: specifications section 04 20 00; as well as drawing sheet(s) A2.10 – A9.00 and S0.1 – S6.1. 1 LS $_____

9. **METALS |** (includes labor, equipment, and material required for: metal tube and bar-stock stair and ramp railings, fabrication, field verification, finishes, and other work reasonably inferable to this section). RE: specifications section(s) 05 5213; as well as drawing sheet(s) LC1.00 – LC1.02, LC2.01, and LC2.03. 1 LS $_____

10. **WOOD, PLASTICS, AND COMPOSITES** | (includes labor, equipment, and material required for: baseball dug-outs and storage areas to related to rough carpentry, framing, sheathing, architectural casework, cabinets, shelving, finishes, fasteners, and other work reasonably inferable to this section). RE: specifications section(s) 06 10 00, 06 20 00, and 06 41 00; as well as drawing sheet(s) A2.10 – A9.00 and S0.1 – S6.1. 1 LS $_____

11. **THERMAL AND MOISTURE PROTECTION** | (includes labor, equipment, and material required for: surface prep, liquid or asphalt-based dampproofing, application of water repellent(s), crack treatments, protections, metal roof panels, underlayment, fiber cement siding, fasteners, trim pieces, flashings, drip edge, roof accessories, joint sealants, and other work reasonably inferable to this section). RE: specifications section(s) 07 11 13, 07 19 00, 07 41 13, 07 46 46, 07 62 00, 07 72 00, and 07 92 00; as well as drawing sheet(s) A2.10 – A9.00, S0.1 – S0.1-S6.1, LC2.01, and LC2.03. 1 LS $_____

12. **OPENINGS |** (includes labor, equipment, and material required for: hollow metal doors, frames, finishes, hardware, hinges, locks, latchsets, exit devices, stops, thresholds, and other work reasonably inferable to this section). RE: specifications section(s) 08 11 13 and 08 71 00; as well as drawing sheet(s) A2.10 – A9.00. 1 LS $_____

13. **FINISHES |** (includes labor, equipment, and material required for: exterior painting, staining, finishes, high performance coatings, graffiti resistant coatings, CMU or masonry coatings, and other work reasonably inferable to this section). RE: specifications section(s) 09 91 13, 09 93 00, 09 96 23 and 09 97 23; as well as drawing sheet(s) A2.10 – A9.00 and LC2.01 –

LC2.03. 1 LS $_____

14. **SPECIALTIES |** (includes labor, equipment, and material required for: fire protection specialties, extinguishers, fire resistant coatings, and other work reasonably inferable to this section). RE: specifications section(s) 10 44 00; as well as drawing sheet(s) A2.10 – A9.00. 1 LS $_____

15. **EQUIPMENT |** (includes labor, equipment, and material required for: bases, pitchers' mounds, athletic field equipment, batting cages, backstop padding, fence toppers, home plate, foul poles, windscreens, backstop netting, and other work reasonably inferable to this section). RE: specifications section(s) 11 68 33; as well as drawing sheet(s) LC1.00 – LC1.02, LC2.02 – LC2.08, and A2.10 – A9.00. 1 LS $_____

16. **ELECTRICAL |** (includes labor, equipment, and material required for: general provisions, medium voltage cable, building wires and cables, grounding, support devices, raceways and fittings, outlets, junction and pull boxes, overcurrent protective devices, wire connections, oil filled transformers, panelboards, (SPD) equipment, lamps, lighting fixtures, and other work reasonably inferable to this section). RE: specifications section(s)26 00 01, 26 00 20, 26 00 26, 26 00 05 13, 26 05 19, 26 05 26, 26 05 29, 26 05 33, 26 05 33.16, 26 05 53, 26 05 60, 26 05 83, 26 12 00, 26 24 17, 26 24 18, 26 27 26, 26 51 13.10, and 26 51 13.20; as well as drawing sheet(s) E0.00 – E1.00. 1 LS $_____

17. **COMMUNICATIONS |** (includes labor, equipment, and material required for: communications pathways, cable trays, mounting panels, grounding and bonding, sleeves, IT/owner furnished equipment, AV and data and wireless systems, and other work reasonably inferable to this section). RE: specifications section(s) 27 05 00, as well as drawing sheet(s) E0.00 – E1.00. 1 LS $_____

18. **CONCRETE PAVING & FLATWORK** | (includes labor, equipment, and material required for: concrete flatwork, reinforcing, joints and sealants, expansion assemblies, base course aggregates, and other work reasonably inferable to this section). RE: specifications section(s) 32 13 13 and 32 13 73, and City of La Grande Public Works Department Standards and Development Code Ordinance(s), as well as drawing sheet(s) C-110, LC1.00 – LC1.02, LC2.01. 1 LS $_____

19. **STABILIZED AGGREGATE PATHWAY** | (includes labor, equipment, and material required for: Decomposed granite, stabilizer, edge restraints, aggregate base work, and other work reasonably inferable to this section). RE: specifications section(s) 32 14 45; as well as drawing sheet(s) LC1.00-1.02, LC2.01. 1 LS $_____

20. **ASPHALT PAVING & MARKINGS** | (includes labor, equipment, and material required for: Parking and pavement markings and striping, ADA Symbols, lane and crosswalk striping, curb painting, directional arrows, hot-mix asphalt paving, aggregate base materials and compaction, leveling and surface coats, patching, and other work reasonably inferable to this section). RE: specifications section(s) 32 17 23, City of La Grande Public Works Department Standards and Development Code Ordinance(s); as well as drawing sheet(s) C-112, C-113, LC1.00, LC2.01. 1 LS $_____

21. **SYNTHETIC GRASS SURFACING** | (includes labor, equipment, and material required for: artificial grass surfacing, backing, infill material, field layout, base course materials, drainage layer, seaming, edge anchoring and nailer boards, field grooming, performance testing, and other work reasonably inferable to this section). RE: specifications section(s) 32 18 13; as well as drawing sheet(s) B C-500, LC1.00-LC1.02, LC2.01, LC2.05, LC2.08. 1 LS $_____

22. **CHAIN LINK FENCING AND GATES** | (includes labor, equipment, and material required for: posts, horizontal rails, mesh infill, pedestrian and vehicular gates, vinyl-coatings, finishes, fasteners, hardware, tension bars and bands, drop rods, latches, locks, slats, windscreens, field measurements, and other work reasonably inferable to this section). RE: specifications section(s) 32 31 13; as well as drawing sheet(s) LC1.00-LC1.03, LC2.01 – LC2.05, and LC2.08. 1 LS $_____

23. **PLANTING IRRIGATION** | (includes labor, equipment, and material required for: connection to water supply, controllers, flow sensors, double-check valves, ball valves, control valves, quick-couplers, boxes, equipment components, mainline, lateral lines, heads and emitters, joints, fittings, trenching, wires, tape, sleeving, testing, as-builts, maintenance period establishment and operations, and other work reasonably inferable to this section). RE: specifications section(s) 32 84 00 and 32 01 90; as well as drawing sheet(s) LI3.00 – LI4.01. 1 LS $_____

24. **SOIL PREPARATION** | (includes labor, equipment, and material required for: topsoil, soils testing, scarifying, amendments, tilling, fine grading, conditioning, soil depth verifications, and other work reasonably inferable to this section). RE: specifications section(s) 32 91 13; as well as drawing sheet(s) LP5.00 – LP6.01. 1 LS $_____

25. **NATIVE SEEDING** | (includes labor, equipment, and material required for: removal of rocks or debris, drill seeding, hydroseeding, tackifier, starter fertilizer application, maintenance period establishment, reseeding, weed control & removal, and other work reasonably inferable to this section). RE: specifications section(s) 32 01 90 and 32 92 20; as well as drawing sheet(s) LP5.00 – LP5.02. 1 LS $_____

26. **SODDING |** (includes labor, equipment, and material required for: soil prep and rolling, full contact sod placement, cutting, watering, fertilizers, establishment period maintenance, and other work reasonably inferable to this section). RE: specifications section(s) 32 01 90 and 32 92 20; as well as drawing sheet(s) LP5.00 – LP5.02. 1 LS $_____

27. **PLANTS |** (includes labor, equipment, and material required for: supply and planting of trees, shrubs, ornamental grasses, groundcovers, perennials, tree stakes and ties, fertilizers, pit amendments, mulching, establishment period maintenance, and other work reasonably inferable to this section). RE: specifications section(s) 32 01 90 and 32 93 00; as well as drawing sheet(s) LP5.00 – LP6.01. 1 LS $_____

28. **UTILITY STRUCTURES** | (includes labor, equipment, and material required for: placement of utility boxes, vaults, catch basins and inlets, precast structures, temporary shoring, dry wells, and other work reasonably inferable to this section). RE: specifications section(s) 33 05 16; as well as drawing sheet(s) C-002, C-110 – C-501. 1 LS $_____

29. **SANITARY UTILITY SEWERAGE PIPING** | (includes labor, equipment, and material required for: gravity and force mains, PVC and HDPE pipe, fittings, gaskets and joint material, bedding material, inspections, testing, and other work reasonably inferable to this section). RE: specifications section(s) 33 31 00 and La Grande Public Works Department Standards and Development Code Ordinance; as well as drawing sheet(s) C-002, C-110 – C-501. 1 LS $_____

30. **STORMWATER UTILITY DRAINAGE PIPING** | (includes labor, equipment, and material required for: PVC, RCP, and/or HDPE underground rainwater piping, fittings, bedding material, connections catch basins and other structures, testing, and other work reasonably inferable to this section). RE: specifications section(s) 33 42 00; as well as drawing sheet(s) C-002, C-110 – C-501. 1 LS $_____

31. **TRENCHING OVER EXCAVATION AND STABILIZATION** | (includes labor, equipment, and material required for: over excavation and stabilization of utility trenching and backfilling, compactions, trench soil stabilization, and other work reasonably inferable to this section). Assumed to be 15% of total project trenching and 1. 1 LS $_____

32. **SYNTHETIC TURF OVER EXCAVATION AND STABILIZATION** | (includes labor, equipment, and material required for: base course materials, over excavation to a 24" depth, soil stabilization, and other work reasonably inferable to this section). Assumed to be 10% of total synthetic turf area. 1 LS $_____

TOTAL BASE BID AMOUNT FOR ALL ITEMS 1-32 COMBINED (IN NUMBERS):
$_____

TOTAL BASE BID AMOUNT FOR ALL ITEMS 1-32 COMBINED (IN WORDS):
_____

SUPPLEMENTAL UNIT PRICE SCHEDULE

The following prices are intended to be the basis for additions or deletions to the work, if required. Should the Bidder be required to perform more or less work than that shown on the drawings and specifications, an additional sum will be paid or shall be credited to the City on the basis of the unit prices quoted below. Listed prices shall be the sum total compensation for items complete and in place.

BID SCHEDULE | DRAWING PACKAGE C

Instructions to Bidders

1. Submit lump sum prices for each work scope item as listed below.
2. EOU will be determining what packages beyond A are advanced to construction based on an Institutional Determination based on Auxilary budgets. EOU will award the bid based on the totals of packages advanced as determined by EOU.
3. Include all overhead, general conditions, and profit in each lump sum; prices must be reasonable and justifiable.
4. Bid each work scope item as financially independent, since the Owner may accept, modify, or omit one or more item(s) based on final budget availability.
5. Document, as necessary, assumptions used in calculating overhead and profit to support the lump sums.
6. Bids should allow the Owner flexibility to add or remove scope items without renegotiating overhead or profit allocation.
7. The Itemized Lump Sum Base Bid must include all labor, materials, equipment, supervision, services, overhead, profit, permits, fees, and all other costs necessary to provide a complete, fully functional, code-compliant project in strict accordance with the Contract Documents.
8. All work indicated, reasonably inferable, or required by the Contract Documents shall be included in the Base Bid, whether or not specifically itemized.
9. No additional compensation will be allowed for work required by the Contract Documents that is not separately listed in the Bid Schedule.
10. By submitting this Bid, the Bidder acknowledges they have reviewed the Contract Documents in their entirety and agree to complete all work in accordance therewith for the stated amount.

BASE BID ITEMS

ITEM	ITEM DESCRIPTION	QUANTITY	BID PRICE
1.	**MOBILIZATION and BONDING**	1 LS	$_____
2.	**FEES & PERMITTING |** (includes applicable fees, 1200C permit, and other work reasonably inferable to this section)	1 LS	$_____
3.	**TRAFFIC CONTROL**	1 LS	$_____
4.	**EROSION CONTROL |** (includes labor, equipment, and material required for: construction fencing, silt fencing, tree protection, and maintenance of existing erosion control BMP's and other work reasonably inferable to this section). RE: drawing sheet(s) C-012 and C-002.	1 LS	$_____
5.	**DEMOLITION |** (includes labor, equipment, and material required for: removal and proper		

disposal of existing pavements, curbs, utility abandonment fence removal, clearing and grubbing, temporary protections, hauling, cutting and patching and other work reasonably inferable to this section). RE: specifications section(s) 31 10 00 and 26 00 20; as well as drawing sheet(s) C-010, C-002, LC1.01 and E0.00. 1 LS $_____

6. **EARTHWORK |** (includes labor, equipment, and material required for: topsoil stripping and stockpile, export, import haul & place for all earthwork, trenching and backfilling, compactions, and other work reasonably inferable to this section). RE: specifications section(s) 31 00 00 and 31 23 00; as well as drawing sheet(s) C-110.
1 LS $_____

7. **CAST IN PLACE CONCRETE** | (includes labor, equipment, and material required for: curbs, walls (freestanding and retaining), footings and foundations, stairs, curb ramps, slab-on-grade, columns and associated reinforcing, joints, surface treatments, and other work reasonably inferable to this section). RE: specifications section(s) 03 30 00, 03 30 01, and per City of La Grande Public Works Department Standards and Development Code Ordinance(s); as well as drawing sheet(s) C-110, LC1.00 – LC1.01, LC2.01 – LC2.03, and E1.00. 1 LS $_____

8. **METALS |** (includes labor, equipment, and material required for: metal tube and bar-stock stair and ramp railings, fabrication, field verification, finishes, and other work reasonably inferable to this section). RE: specifications section(s) 05 5213; as well as drawing sheet(s) LC1.00 – LC1.01, and LC2.02. 1 LS $_____

9. **EQUIPMENT |** (includes labor, equipment, and material required for: bases, pitchers' mounds, athletic field equipment, batting cages, backstop padding, fence toppers, home plate, foul poles, windscreens, backstop netting, and other work reasonably inferable to this section). RE: specifications section(s) 11 68 33; as well as drawing sheet(s) LC1.00 – LC1.01.02 and LC2.01 – LC2.03. 1 LS $_____

10. **ELECTRICAL |** (includes labor, equipment, and material required for: general provisions, medium voltage cable, building wires and cables, grounding, support devices, raceways and fittings, outlets, junction and pull boxes, overcurrent protective devices, wire connections, oil filled transformers, panelboards, (SPD) equipment, lamps, lighting fixtures, and other work reasonably inferable to this section). RE: specifications section(s)26 00 01, 26 00 20, 26 00 26, 26 00 05 13, 26 05 19, 26 05 26, 26 05 29, 26 05 33, 26 05 33.16, 26 05 53, 26 05 60, 26 05 83, 26 12 00, 26 24 17, 26 24 18, 26 27 26, 26 51 13.10, and 26 51 13.20; as well as drawing sheet(s) E0.00 – E1.00. 1 LS $_____

11. **COMMUNICATIONS |** (includes labor, equipment, and material required for: communications pathways, cable trays, mounting panels, grounding and bonding, sleeves, IT/owner furnished equipment, AV and data and wireless systems, and other work reasonably inferable to this section). RE: specifications section(s) 27 05 00, as well as drawing sheet(s) E0.00 – E1.00.
1 LS $_____

12. **CONCRETE PAVING & FLATWORK** | (includes labor, equipment, and material required for: concrete flatwork, reinforcing, joints and sealants, expansion assemblies, base course aggregates, and other work reasonably inferable to this section). RE: specifications section(s) 32 13 13 and 32 13 73, and City of La Grande Public Works Department Standards and Development Code Ordinance(s); as well as drawing sheet(s) C-110, LC1.00, LC1.01, LC2.01. 1 LS $_____

13. **SYNTHETIC GRASS SURFACING** | (includes labor, equipment, and material required for: artificial grass surfacing, backing, infill material, field layout, base course materials, drainage

layer, seaming, edge anchoring and nailer boards, field grooming, performance testing, and other work reasonably inferable to this section). RE: specifications section(s) 32 18 13; as well as drawing sheet(s) C-500, LC1.00-LC1.01.2, LC2.01, LC2.02.
1 LS $_____

14. **CHAIN LINK FENCING AND GATES** | (includes labor, equipment, and material required for: posts, horizontal rails, mesh infill, pedestrian and vehicular gates, vinyl-coatings, finishes, fasteners, hardware, tension bars and bands, drop rods, latches, locks, slats, windscreens, field measurements, and other work reasonably inferable to this section). RE: specifications section(s) 32 31 13; as well as drawing sheet(s) LC1.00 – LC1.02, LC2.02 & LC2.03.
1 LS $_____

15. **PLANTING IRRIGATION** | (includes labor, equipment, and material required for: connection to water supply, controllers, flow sensors, double-check valves, ball valves, control valves, quick-couplers, boxes, equipment components, mainline, lateral lines, heads and emitters, joints, fittings, trenching, wires, tape, sleeving, testing, as-builts, maintenance period establishment and operations, and other work reasonably inferable to this section). RE: specifications section(s) 32 84 00 and 32 01 90; as well as drawing sheet(s) LI3.00 – LI4.01.
1 LS $_____

16. **SOIL PREPARATION** | (includes labor, equipment, and material required for: topsoil, soils testing, scarifying, amendments, tilling, fine grading, conditioning, soil depth verifications, and other work reasonably inferable to this section). RE: specifications section(s) 32 91 13; as well as drawing sheet(s) LP5.00 – LP6.01. 1 LS $_____

17. **NATIVE SEEDING** | (includes labor, equipment, and material required for: removal of rocks or debris, drill seeding, hydroseeding, tackifier, starter fertilizer application, maintenance period establishment, reseeding, weed control & removal, and other work reasonably inferable to this section). RE: specifications section(s) 32 01 90 and 32 92 20; as well as drawing sheet(s) LP5.00 – LP5.01. 1 LS $_____

18. **SODDING |** (includes labor, equipment, and material required for: soil prep and rolling, full contact sod placement, cutting, watering, fertilizers, establishment period maintenance, and other work reasonably inferable to this section). RE: specifications section(s) 32 01 90 and 32 92 20; as well as drawing sheet(s) LP5.00 – LP5.01. 1 LS $_____

19. **PLANTS |** (includes labor, equipment, and material required for: supply and planting of trees, shrubs, ornamental grasses, groundcovers, perennials, tree stakes and ties, fertilizers, pit amendments, mulching, establishment period maintenance, and other work reasonably inferable to this section). RE: specifications section(s) 32 01 90 and 32 93 00; as well as drawing sheet(s) LP5.00 – LP6.01. 1 LS $_____

20. **UTILITY STRUCTURES** | (includes labor, equipment, and material required for: placement of utility boxes, vaults, catch basins and inlets, precast structures, temporary shoring, dry wells, and other work reasonably inferable to this section). RE: specifications section(s) 33 05 16; as well as drawing sheet(s) C-110 – C-501. 1 LS $_____

21. **SANITARY UTILITY SEWERAGE PIPING** | (includes labor, equipment, and material required for: gravity and force mains, PVC and HDPE pipe, fittings, gaskets and joint material, bedding material, inspections, testing, and other work reasonably inferable to this section). RE: specifications section(s) 33 31 00 and La Grande Public Works Department Standards and Development Code Ordinance; as well as drawing sheet(s) C-110 – C-501.

1 LS $_____

22. **STORMWATER UTILITY DRAINAGE PIPING** | (includes labor, equipment, and material required for: PVC, RCP, and/or HDPE underground rainwater piping, fittings, bedding material, connections catch basins and other structures, testing, and other work reasonably inferable to this section). RE: specifications section(s) 33 42 00; as well as drawing sheet(s) C-002, C-110 – C-501. 1 LS $_____

23. **TRENCHING OVER EXCAVATION AND STABILIZATION** | (includes labor, equipment, and material required for: over excavation and stabilization of utility trenching and backfilling, compactions, trench soil stabilization, and other work reasonably inferable to this section). Assumed to be 15% of total project trenching and 1. 1 LS $_____

24. **SYNTHETIC TURF OVER EXCAVATION AND STABILIZATION** | (includes labor, equipment, and material required for: base course materials, over excavation to a 24” depth, soil stabilization, and other work reasonably inferable to this section). Assumed to be 10% of total synthetic turf area. 1 LS $_____

TOTAL BASE BID AMOUNT FOR ALL ITEMS 1-24 COMBINED (IN NUMBERS):
$_____

TOTAL BASE BID AMOUNT FOR ALL ITEMS 1-24 COMBINED (IN WORDS):
_____

SUPPLEMENTAL UNIT PRICE SCHEDULE

The following prices are intended to be the basis for additions or deletions to the work, if required. Should the Bidder be required to perform more or less work than that shown on the drawings and specifications, an additional sum will be paid or shall be credited to the City on the basis of the unit prices quoted below. Listed prices shall be the sum total compensation for items complete and in place.

EOU Ballfield Complex Phase 1

Bid Packages A, B, & C

Supplemental Unit Costs

EASTERN OREGON UNIVERSITY
Facilties & Planning Department

Description	Unit	Unit Price
Sports Fields		
Synthetic Turf	SF	
Synthetic Turf Underdrainage and Storm Drainage Connection	SF	
Sodded Turf Outfield	SF	
Subsurface Containment Curb	LF	
Fence Mowcurb	LF	
6' High Site Fencing	LF	
6' High Softball Outfield Fencing w/ Windscreen & Fence Topper	LF	
8' High Baseball Outfield Fencing w/ Windscreen & Fence Topper	LF	
8' High Baseball Foul Ball Fencing w/ Windscreen	LF	
Pedestrian Fence Gate - Single	EA	
Vehicular Fence Gate - Double	EA	
Guardrail Fencing	LF	
Guardrail Fencing w/ Lean Rail	LF	
Site Concrete		
Concrete - Pedestrian	SF	
Concrete - Vehicular	SF	
CIP Concrete Stairs	SF	
CIP Concrete Ramp	SF	
Metal Fabrication		
Metal Stair Handrail	LF	
Metal Ramp Handrail	LF	
Aggregate Paving		
Stabilized Decomposed Granite	SF	
Gravel Paving	SF	
Site Earthwork		
Clear and Grub	SF	
Fine Grading and Compaction	SF	
Site Cut	CY	
Site Fill, Reuse On-Site Materials	CY	
Base Aggregates	CY	
Trenching Over Excavation & Stabilization	CY	
Synthetic Turf Over Excavation & Stabilization	CY	
Irrigation		
Ornamental Planting Areas	SF	
Sod Lawn Areas	SF	
Irrigation Controls & Equipment	SF	
3" Irrigation Mainline w/ Mechanical Restraints	LF	
Planting		
Trees - 2.5" Caliper	EA	
Trees - 2" Caliper	EA	
Trees - 8'-9' Tall	EA	
Shrub - 15 Gal.	EA	
Shrub - 5 Gal.	EA	
Ornamental Grass - 3 Gal.	EA	
Perennial - 1 Gal.	EA	
Perennial - 4" Pot	EA	
Sod	SF	
Outfield Sod	SF	
Drill Seed	SF	
Hydroseed w/ Tackifier	SF	
Topsoil Amendments to Existing Soils	CY	

Description	Unit	Unit Price
Sanitary Sewer		
SS - Site Connection	EA	
SS - Cleanout	EA	
SS - 4"	LF	
SS - 4" Sewer Tap	EA	
Storm Sewer		
SD - Connection	EA	
SD - Connection to Manhole/Catch Basin	EA	
SD - 6"	LF	
SD - 8"	LF	
SD - 10"	LF	
SD - 15"	LF	
SD - Manhole	EA	
SD - Catch Basin	EA	
Water Supply		
WS - Connection	EA	
W - 1"	LF	
W - Meter, incl. box	EA	
W - Future Meter, Box Only	EA	
WS - Valve Box	EA	
F - 6" (6" Cap and Mark for Future Connection)	LF	

Bidder shall acknowledge by signing below, all information provided in the above bid schedule:

_____
Bidder's Signature

_____
Bidder's Name (Printed)

_____
Title

Bidder further specifically acknowledges that Bidder examined and carefully studied the Bid Documents, including but not limited to the Invitation to Bid, Bidding Requirements, Contracting Requirements, Technical Specifications, Construction Drawings, and the following Addenda, receipt of all of which is hereby acknowledged: (List Addenda by number)

ADDENDA NUMBER

_____ _____

_____

BIDDER'S BID BOND

_____

(Here insert full name and address or legal title of Contractor)

As Principal, hereinafter called the Principal, and

_____

(Here insert full name and address or legal title of Contractor)

A Corporation duly organized under the laws of the State of _____ as Surety, hereinafter called the Surety, are held and firmly bound unto Eastern Oregon University, as Obligee, hereinafter called Obligee, in the sum of ten percent (10%) of the total amount of the Bid for Work herein described, for the payment of which sum well and truly be made, as agreed and liquidated damages, the said Principal and the said Surety, bind ourselves, our heir, executors, administrators, successors and assigns, jointly and severally, firmly by these presents

WHEREAS, the Principal has submitted a Bid for the Eastern Oregon University Ballfield Complex – Phase 1

NOW, THEREFORE, if the Obligee shall accept the Bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such Bid, and given such good and sufficient payment and performance bonds as may be specified in the Contract Documents for the faithful performance of such Contract and for the prompt payment of labor and materials furnished in the prosecution thereof, then this obligation shall be null and void, otherwise remain in full force and effect.

The Surety, for value received, hereby stipulates, and agreed that the obligation of the Surety and this bond shall be in no way impaired or affected by any extension of time within which the Obligee may accept such Bid, and the Surety does hereby waive notice of any such extension.

_____ (Seal)

PRINCIPAL

_____

Title

_____

Address

_____ (Seal)

SURETY

_____

Title

_____

Address

CONTRACTOR'S REGISTRATION

NAME OF FIRM:

ADDRESS:

Oregon State Department of Labor and Industries Contractor Registration Number:

SIGNATURE:

By:_____ Date:_____

Title:_____

RESPONSIBILITY INQUIRY FORM

EOU will determine the responsibility of a Firm prior to award and execution of a contract. In addition to this form, EOU may obtain any information EOU deems necessary to make the determination. EOU will notify the firm of any other documentation required, which may include, but is not limited to, Oregon Department of Revenue Letter of Debt Compliance, recent financial information, bonding capacity, credit information, record of performance under previous contracts, etc. EOU may postpone the award of the Contract to complete its investigation and evaluation. Failure to promptly provide requested information and clearly demonstrate Responsibility may result in a rejection and ineligibility of contract award.

1. Does your firm have the appropriate financial, material, equipment, facility, and personnel resources and expertise, or ability to obtain the resources and expertise, necessary to demonstrate the capability of the firm to meet all contractual obligations? YES ☐ / NO ☐

2. The number of years in business providing services/goods/equipment required under the prospective contract:_____

3. a) is your firm experiencing financial distress or having difficulty securing financing? YES ☐ / NO ☐

   b) Does your firm have sufficient cash flow to fund day to day operations throughout the contract period? YES ☐ / NO ☐

   If "YES" on question 3.a) or "NO" on question 3.b) please provide additional details:

Response

4. Within the last 3- year period has your firm had one or more contracts terminated for default by any federal, state, or local government agency, or any lawsuits filed against it by creditors or involving credit disputes? YES ☐ / NO ☐

   If "YES" please explain (without regard to judgements, including jurisdiction and date of final judgement or dismissal)

Response

5. Within the last 3- year period has your firm filed for bankruptcy action, filed for reorganization, made a general assignment of assets for benefits of creditors, or had an action for insolvency institute again it? YES ☐ / NO ☐

   If "YES" indicate the filing dates, jurisdictions, type of actions, ultimate resolution, and dates of judgement or dismissal, if applicable.

Response

6. Does your firm have all required licenses, insurance and/or registrations to complete the Work and is the firm legally authorized to do business in the State of Oregon? YES ☐ / NO ☐

   If "No", please explain.

Response

Within the last 5- year period has your firm completed projects of a similar nature with a satisfactory record of performance? [For purposes of this question, a satisfactory record of performance means that the cost associated with and time available to perform a previous contract remained within your firms control, your firm stayed within the time and budget allotted for the procurement and otherwise performed the contract in a satisfactory manner.]

YES ☐ / NO ☐

If "No" please explain.

Response

AUTHORIZED SIGNATURE:

By signature below, the undersigned Authorized Representative on behalf of the Bidder certifies that the responses provided on this form are complete, accurate, and not misleading:

Name of firm:	RFP# FP-2022-09 EOU Ballfield Complex – Phase 1
Authorized Signature:	Date:
Print Name:	Title:

FIRST TIER SUBCONTRACTOR DISCLOSURE

Instructions for Submitting Form

Submit the First-Tier Subcontractor Disclosure form in any of the following manners:

- With the bid.
- No later than ***two working hours*** after the time set for opening bids. (For example, by 4:00 p.m. after a 2:00 p.m. bid closing) in the same manner as the bids were submitted.

Instruction for First-Tier Subcontractor Disclosure

When the contract value for a public improvement is greater than $100,000 bidders are required to disclose information about first-tier subcontractors that will furnish labor or labor and materials (See ORS 279C.370). Specifically, when the contract amount of the first-tier subcontractor is greater than or equal to: (1) 5% of the total project bid, but at least $15,000, or (2) $350,000 regardless of the percentage of the total project bid, you must disclose the following information about the subcontractor not later than two working hours after the time set for opening bids:

- The name of the subcontractor.
- The Category of work that the subcontractor will be performing.
- The dollar value of the subcontract

If your bid is greater than $100,000 and you will not be using any first-tier subcontractors, you are still required to submit the form, with the appropriate box checked or enter “NONE” on the first line.

If your bid is greater than $100,000 and you are not subject to the above disclosure requirements, you are still required to submit the form, with the appropriate box checked or enter “NONE” on the first line.

THE OWNER MUST REJECT BIDS if the bidder fails to submit the disclosure form with this information by the stated deadline.

To determine disclosure requirements, the Owner recommends that you disclose subcontractor information for any subcontractor as follows:

7. Determine the lowest possible prime contract price. That will be the base bid amount less all alternate deductive bid amounts (exclusive of any options that can only be exercised after bid award).
8. Provide the required disclosure information for any first-tier subcontractor whose potential contract services are greater than or equal to: (1) 5% of the lowest contract price, but at least $15,000, or (2) $350,000 regardless of the percentage. Total all possible work for each subcontract in making this determination, (for example, if a subcontract will provide $15,000 worth of services on the base bid and $40,000 on an additive alternate, then the potential amount of the subcontractor’s services is $55,000. Assuming that $55,000 exceeds 5% of the lowest contract price, provide the disclosure for both the $15,000 and the $40,000 services).

FIRST-TIER SUBCONTRATOR DISCLOSURE FORM

Project Name: _____

Owner: _____

Bid Opening Date: _____

Name of Bidding Contractor: _____

Contact Name: _____ **Phone No:** _____

☐ *CHECK THIS BOX IF YOU WILL NOT BE USING ANY FIRST-TIER SUBCONTRACTORS OR IF YOU ARE NOT SUBJECT TO THE DISCLOSURE REQUIREMENTS (SEE INSTRUCTIONS).*

FIRST-TIER SUBCONTRACTORS

Firm Name	
Category of Work	$

Firm Name	
Category of Work	$

Firm Name	
Category of Work	$

Firm Name	
Category of Work	$

Firm Name	
Category of Work	$

Firm Name	
Category of Work	$

Firm Name	
Category of Work	$

(Attach additional sheets as necessary)

It is the responsibility of Bidders to submit this Disclosure Form and any additional sheets, with the Project Name clearly marked, at the location indicated by the specified disclosure deadline. See Instructions to Bidders.

EASTERN OREGON UNIVERSITY

PUBLIC IMPROVEMENT CONTRACT #FP-2022-09B

This Public Improvement Contract for **EOU Ballfield Complex – Phase 1**, made by and between EOU, hereinafter called "Owner", and **« »** hereinafter called the "Contractor" (collectively the "Parties"), shall become effective on **« »** or the date this Public Improvement Contract has been signed by all the Parties and all required EOU Administrative approvals have been obtained, whichever is later.

Project Name and Description:

Eastern Oregon University Ballfield Complex Phase 1 located south of the football stadium, east of 6th street and north of C Avenue, on the Owner's campus.

Project Architect / Owner's Representative:

Szabo Landscape Architecture
1000 NW Wall Street, Suite 205
Bend, OR 97703

The Owner and the Contractor agree as follows:

I. Contract Documents, Contract Price, and Work.

A. The Contract Documents. The Contract Documents include the documents identified as such in the Eastern Oregon General Conditions for Public Improvement Contracts (the "General Conditions") and as enumerated below and any amendments or modifications executed by the parties pursuant to the terms of the Contract. Unless otherwise stated, terms used in this Public Improvement Contract have the definition assigned to them in the General Conditions.

B. Contract Price. The Contractor, in consideration of the Contract Price of **$ « »** be paid to the Contractor by Owner in the manner and at the time provided in the Contract Documents, and subject to the terms and conditions provided for in the Contract Documents, hereby agrees to perform all Work described in and reasonably inferred from the Contract Documents. The Contractor acknowledges and agrees that the Contract Price is a lump sum, which shall be subject to additions or deductions only as provided in the Contract Documents. Contractor further agrees that Contractor is solely responsible for all costs of completing the Work that exceed the Contract Price and that Contractor is deemed to have allowed correct and sufficient amounts in the Contract Price to cover its related obligations under or arising from the Contract. The Contractor shall fully execute the Work described in the Contract Documents and all Work reasonably inferable therefrom, with the exception of any Work specifically indicated in the Contract Documents to be the responsibility of others.

II. Date of Commencement and Completion

A. Commencement. The date of the commencement of the Work shall be as follows:

[« »] The date of this Agreement.

[« »] A date set forth in a notice to proceed issued by the Owner.

[« »] Established as follows:

B. Substantial Completion, Final Completion, and Liquidated Damages for Delay

1. Substantial Completion. Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

[« »] Not later than it is understood that the Owner reserves the right to reject any and all bids, to adjust the scope of the work within reasonable limits, including to meet approved budgets, and to postpone award for a reasonable (« ») Days from the date of commencement of the Work.

[« »] By the following date: « »

2. Final Completion. Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Final Completion of the entire Work within [ ] Days of achieving Substantial Completion.

3. Liquidated Damages for Delay. Performance of the Work within the Contract Time, including but not limited to achieving Substantial Completion by the date required by the Contract Documents, is the essence of the Contract. The Contractor acknowledges that the Owner will sustain damages as a result of the Contractor's failure to achieve Substantial Completion of the Project in accordance with the Contract Documents. These damages may include, but are not limited to, delays in completion and use of the Project, and costs associated with Contract administration, additional costs paid to the Architect and the Owner's other contractors and consultants, and use of temporary facilities. The Contractor and the Owner acknowledge that the actual amount of damages would be difficult to determine accurately and agree that the following liquidated damages figure represents a reasonable estimate of such damages and is not a penalty.

a. Liquidated damages will be **$1,000** for each day or partial day of delay that Substantial Completion extends beyond the required date of Substantial Completion.

b. The Contractor agrees to pay to the Owner the liquidated damage sums set forth above for each day of delay or any fraction thereof, and further agrees that the Owner may deduct such sums from payments the Owner otherwise owes to the Contractor under the Contract. If such deduction does not result in payment to the Owner of the assessed liquidated damages in full, the Contractor will promptly pay any and all remaining sums due to the Owner upon demand.

III. Representatives.

A. Contractor's Representative. Contractor has named **« »** its' authorized Representative to act on its behalf in all matters related to the Contract. Contractor shall not remove or replace its representative without the written consent of the Owner. Contractor must submit a request to remove or replace its representative to the Owner at least 30 days prior to the proposed removal and replacement.

B. Owner's Representative. Unless otherwise specified in the Contract Documents, the Owner designates _____ 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.

IV. Payment

A. Progress Payments. Provided that the Contractor submits a complete application for payment meeting all requirements of Section E of the General Conditions by the [« »] day of the month and otherwise complies with the conditions for payment in the Contract Documents, the Owner shall pay to the Contractor the amount due under the Contract Documents by the [« »] day of the month.

B. Final Payment. Provided that the Contractor submits a complete application for payment meeting all requirements of Section E of the General Conditions and otherwise complies with the conditions for final payment in the Contract Documents and all other requirements for Final Completion are satisfied, the Owner shall pay to the Contractor the final amount due under the Contract Documents within [« »] days of the Owner's final acceptance of the Work. The Contractor's acceptance of final payment shall constitute a waiver of any and all claims by the Contractor and its Subcontractors.

C. Interest. Payments due and unpaid under the Contract shall bear interest from the date payment is due at the following rate: [« »].

V. 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.

VI. Insurance and Payment and Performance Bonds.

A. Insurance. During the term of this Contract, Contractor shall comply and shall require all of its Subcontractors to comply with the insurance requirements set forth in Exhibit A and shall provide proof of such compliance, including copies of insurance policies, upon Owner's request.

B. Bonds. The Contractor shall obtain performance and payment bonds meeting the requirements of Section G.2 of the General Conditions.

VII. Dispute Resolution.

Claims and disputes arising out of the Contract or the Project that are not resolved pursuant to the Claims Review Process set forth in Section D.3 of the General Conditions shall be resolved by litigation as set forth in Section B.16 of the General Conditions.

VIII. Suspension and/or Termination

A. By the Owner. The Contract may be suspended or terminated by the Owner as set forth in Section J of the General Conditions.

B. By the Contractor. In addition, the Contractor may terminate the Contract for cause in the event that the Owner fails to pay undisputed amounts owed to the Contractor pursuant to the Contract Documents; provided that the Contractor provides seven (7) Days written notice of its intent to terminate and Owner fails to cure within such seven (7) Day period. In the event that the Contractor

terminates for cause, the Contractor shall be entitled to compensation for Work properly executed. Contractor shall not be entitled to lost profit or other compensation for Work not performed.

IX. 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.

X. Compliance with Law.

Contractor will comply with all federal, state, and local laws applicable to the Work under this Contract, and all regulations and administrative rules established pursuant to those laws, including without limitation, the following requirements of the Oregon Public Contracting Code set forth below, even if such requirements ordinarily would not apply to the Work under ORS 352.138 as set forth in Section A.4.5 of the General Conditions. In the event of a conflict between the provisions set forth below and similar provisions in the General Conditions, the provisions set forth below will govern.

A. ORS 279C.605 (Notice of Claim on Bond). Any person claiming a right of action under ORS 279C.600 must file a notice of claim as provided in ORS 279C.605.

B. ORS 279C.800 to 279C.870 (Payment of Prevailing Wage Required).

1. This Contract is subject to payment of prevailing wages under ORS 279C.800 to 279C.870. Each worker the Contractor, subcontractor or other person who is party to the contract uses in performing all or part of the Contract must be paid not less than the applicable prevailing rate of wage for each trade or occupation as defined by the Director of the State of Oregon Bureau of Labor and Industries ("BOLI") in the applicable publication entitled Definitions of Covered Occupations for Public Works Contracts in Oregon. The latest prevailing wage rates for public works contracts in Oregon are contained in the following publications: The Prevailing Wage Rates for Public Works Projects in Oregon, the PWR Apprenticeship Rates, and any amendments to the PWR rates or Apprenticeship rates. Such publications can be reviewed electronically at http://www.boli.state.or.us/BOLI/WHD/PWR/pwr_state.shtml.

2. This Contract is not subject to payment of prevailing wages under the federal Davis-Bacon Act (40 U.S.C. 3141 et seq.). Notwithstanding Section 17.l.xii.a of this Section, if this Contract is also subject to payment of prevailing wages under the Davis-Bacon Act, Contractor and any subcontractors must pay the higher of the federal prevailing wage rate or the state prevailing wage. The latest federal prevailing wage rates can be reviewed electronically at http://www.wdol.gov/Index.aspx. Contractors shall follow all prevailing wage rules including posting the Davis Bacon Poster at the worksite and submitting certified payroll records. The poster is available at http://www.dol.gov/whd/regs/compliance/posters/fedprojc.pdf. The payroll form is at http://www.dol.gov/whd/forms/wh347instr.htm.

3. The applicable prevailing wages under subsections will be those in effect on the start of the Construction Phase as described in Section 3.b of this Contract, and shall be incorporated in the GMP Amendment or, if applicable, the Early Work Amendment.

4. The Contractor and all Subcontractors will keep the prevailing wage rates for this Project posted in a conspicuous and accessible place in or about the Project.

5. The Owner will pay a fee to the Commissioner of the Oregon Bureau of Labor and Industries as provided in ORS 279C.825. The fee will be paid to the Commissioner under the administrative rule of the Commissioner.

6. If the Contractor or any Subcontractor also provides for or contributes to a health and welfare plan or a pension plan, or both, for its employees on the Project, it will post notice describing such plans in a conspicuous and accessible place in or about the Project. The notice will contain information on how and where to make claims and where to obtain future information.

C. ORS 279C.836 (Public Works Bond Required).

1. The Contractor will file a public works bond with the Construction Contractors Board pursuant to ORS 279C.836 before starting work on the Project, unless exempt under ORS 279C.836(2) (7) or (8).

2. The Contractor will include in every subcontract a provision requiring the Subcontractor to file a public works bond with the Construction Contractors Board pursuant to ORS 279C.836 before starting work on the Project, unless exempt under ORS 279C.836(2), (7) or (8).

D. ORS 279C.845 (Prevailing Wage Certification; Additional Retainage).

1. The Contractor and every Subcontractor will file certified statements with the Owner in writing in the form prescribed by the Commissioner of the Bureau of Labor and Industries, certifying the hourly rate of wage paid each worker whom the Contractor or Subcontractor has employed upon such public work, and further certifying that no worker employed upon such public work 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 will be verified by the oath of the Contractor or the Contractor's surety or Subcontractor or Subcontractor's surety that the Contractor and any Subcontractor has read such statement and certificate and knows the contents thereof, and that the same is true to the Contractor or Subcontractor's knowledge. The certified statements will 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. Audit will need access to these documents to help verify and validate the labor portion of the Cost of the Work. See also Section C.2 of the General Conditions.

2. The certified statement will be delivered or mailed by Contractor or Subcontractor to the Owner. Certified statements for each week during which the Contractor or Subcontractor employs a worker upon the public work will be submitted once a month, by the fifth business day of the following month. Information submitted on certified statements may be used only to ensure compliance with the provisions of ORS 279C.800 to 279C.870. Notwithstanding any other provision of this Contract and in addition to any other retainage required under this Contract, the Owner will retain 25 percent of any amount earned by the Contractor until the Contractor filed the certified statements with the Owner as required by this Section. The Owner will pay the retainage

required under this Section within 14 days after the Contractor files the certified statements required by this Section.

3. Contractor and each Subcontractor will preserve the certified statements for a period of three years from the date of completion of the Contract.

XI. Miscellaneous Provisions.

A. Headings. The headings used in the Contract are solely for convenience of reference, are not part of the Contract and are not to be considered in construing or interpreting the Contract.

B. Savings Clause. Should any provision of the Contract, at any time, be held to be invalid or unenforceable for any reason, and if the provisions of the Contract that are essential to each party's interests otherwise remain valid and enforceable, then the remaining provisions of the Contract shall remain in full force and effect and the court shall give the offending provision the fullest meaning and effect permitted by law.

C. Coordination of Work. The Contractor agrees to coordinate all Work with the activities of the Owner and the Owner's separate contractors and consultants at or adjacent to the Project site, including but not limited to the Owner's planned renovation of Inlow Hall, to minimize interference and disruption to such other activities. The Contractor specifically acknowledges that it has made consideration for the Inlow Hall renovation project in its schedule for the Project and in agreeing to the dates for Substantial Completion and Final Completion.

XII. Enumeration of Contract Documents

The Contract is comprised of the following Contract Documents:

A. This Public Improvement Contract

B. The General Conditions

C. Drawings:

RE: Previous Bid Package Sheet Index(es)

D. Specifications:

RE: Previous Specifications Table of Contents

E. Addenda, if any:

All addenda issued.

F. The following exhibits:

Exhibit A: Contractor's Required Insurance

G. The Solicitation Document and addenda thereto, Instructions to Offerors, and Supplemental Instructions to Offerors

H. The accepted Offer

I. Contract Amendments, Change Orders, and Change Directives issued after execution of this Public Improvement Contract.

To the extent that the accepted Offer includes disclaimers or limitations of liability, they are expressly rejected and not made part of the Contract unless otherwise expressly incorporated herein. Any conflict or discrepancy between the accepted Offer and any other Contract Documents shall be resolved in favor of the other Contract Documents or the interpretation requiring the greater quantity or quality of work. Conflicts and discrepancies between Contract Documents not involving the accepted Offer shall be resolved in the manner set forth in Section A.3.1 of the Contract Documents.

In witness whereof, Eastern Oregon University executes this Contract and the Contractor does execute the same as of the day and year indicated below.

CONTRACTOR DATA:

Contractor Name and Address:

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.]

SIGNATURES:

CONTRACTOR SIGNATURE:

By_____

Signature Date

_____

Print Name Title

By_____

John Garlitz, Director Date
Director of Facilities & Planning

By _____

LeeAnn Case, Interim Vice President Date
Vice President of Finance & Administration

PUBLIC IMPROVEMENT CONTRACT – EXHIBIT A

INSURANCE REQUIREMENTS

Project No. 2021-01A-FP

I. CONTRACTOR'S INSURANCE

As a condition precedent to payment Contractor shall at all times provide and maintain for itself and require its Subcontractors to provide and maintain the following types and the following minimum limits of insurance written on an occurrence basis by a company or companies rated A/IX or better in the most recent edition of "Best's Insurance Guide" (or such lesser rating as may be approved by Owner in writing) and authorized to do business in the state in which the Project is located.

A. Workers' Compensation and Employer's Liability:

(i) State: Statutory

(ii) Employers Liability:

$1,000,000 Each Accident

$1,000,000 Each Disease

$1,000,000 Disease, Each Employee

B. Commercial General Liability (Occurrence Form):

(i) Combined Bodily Injury and Property Damage:

$2,000,000 Each Occurrence

$2,000,000 Personal and Advertising Injury

$4,000,000 General Aggregate

$4,000,000 Products/Completed Operations Aggregate

$ 50,000 Fire Damage Legal Liability

$ 10,000 Medical Expenses Per Person

These limits may be satisfied using any combination of primary CGL and excess/umbrella coverage so long as the excess/umbrella is true follow-form and meets the scope of coverage and exclusions outlined herein

The scope of coverage must meet the following:

(1) Premises Operations must be included.

(2) Elevators and Escalators must be included.

(3) Coverage for Independent Contractors and work performed on your behalf by subcontractors must be included.

(4) Pollution Liability and Hazardous Materials Liability must be included.

(5) Contractual Liabilities must be included (including the contract obligations specified in the Indemnification Paragraph(s) of the Owner-Contractor Agreement)

(6) The Products and Completed Operations Insurance must be carried for the duration of the applicable statute of repose or for six (6) years after final payment, whichever is longer.

(7) There can be no exclusions for subsidence, collapse, explosion or underground property damage.

(8) There can be no Additional Insured vs. Named Insured cross-suit exclusion. The policies shall provide for cross-liability coverage as would be achieved under the standard Insurance Services Office "separation of insureds" clause.

(9) There shall be no Montrose language, anti-pyramiding exclusion, or exclusion limiting coverage to damages which first begin to occur within the policy period.

(10) The limits shall not be eroded or wasted by defense costs.

(11) The policy and the additional insured coverage shall be primary and non-contributory with any insurance maintained by Owner, its affiliates, subsidiaries, directors, officers, employees and agents. (Copies of all policy endorsements that might affect coverage for the Project must be provided with the Insurance Certificate.)

(12) The policy may not contain a cyber terrorism exclusion.

(13) The policy may not contain an exclusion for breach of contract.

(14) The policy may not contain an exclusion for intangible property.

(15) The policy may not contain an exclusion for property of others in your care, custody or control.

C. Business Auto:

Combined Bodily Injury and Property Damage

$1,000,000 Each Accident

The following coverages must be included:

(1) Owned Automobiles

(2) Non-Owned and Hired Automobiles

D. Excess/Umbrella Liability Coverage:

$5,000,000 Each Occurrence with a per project endorsement

$5,000,000 Aggregate

Coverage will follow form on the general liability and auto liability policies be at least as broad those policies.

Coverage shall be carried for the duration of the applicable statute of repose or for six (6) years after final payment, whichever is longer.

The policy must provide that coverage will be triggered by exhaustion of the applicable primary policies above and shall not require payment or exhaustion of any other policies.

E. **Professional Liability Insurance**. Limits shall not be less than $1,000,000 per claim and $2,000,000 aggregate. Such insurance must have no exclusion for bodily injury or property damage and no exclusion for pollution-related liability. This insurance shall include a retroactive date which predates the commencement of Work under the Agreement, including but not limited to construction manager services, and such coverage must continue for or include an extended reporting period of at least six (6) years after substantial completion and acceptance of the Project, or until the expiration of all applicable statute of repose, whichever is longer.

F. **Certificates and Certified Copies of Policies**. Copies of all policy endorsements that might reduce coverage from that provided by the standard ISO form must be provided to Owner and approved in writing and Owner's approval must be submitted to Owner with each Insurance Certificate warranting that there is no other reduction in coverage. Evidence of Contractor's compliance with this Exhibit, including the insurance required of Subcontractors, shall be filed with Owner and be acceptable to Owner prior to commencement of the Work. For those insurance coverages that are required to remain in force after final payment, additional certificates (or certified copies of the policies) evidencing continuation of such coverage shall be submitted at the time of the application for final payment and upon each annual renewal for the duration of coverage required. Without limiting its remedies, Contractor agrees that it will reimburse Owner for the costs of Owner's insurance provided for the Project if Contractor fails to provide evidence of coverage as required herein. Upon Owner's request at any time, Contractor will immediately provide an actual certified copy of its insurance policies. Provision of the certificates and copies of policies as required herein shall be a condition precedent to payment.

G. **Notice of Cancellation, Reduction or Expiration.** Insurance policies required by this Agreement shall contain a provision that coverages or limits afforded under the policies will not be canceled, reduced or allowed to expire until at least 30 days' prior written notice has been given to Owner or, in the alternative, Contractor shall, in writing, inform Owner that Contractor shall provide 30 days written notice to Owner before any policy expires or is cancelled. Information concerning reduction of limits on account of claims paid or to be paid shall be furnished by the Contractor to Owner within three (3) business days of when Contractor learns that revised or reduced limits are likely. When Contractor becomes aware of imminent cancellation, expiration or reduction in coverage or available limits, Contractor within three (3) business days shall procure other policies of insurance that meet all requirements of this Agreement without any lapse in coverage and notify Owner in writing of the potential reduction in coverage or cancellation and describe the manner in which it has provided or will provide replacement coverage of this insurance along with a written explanation of any differences in coverage. No work will be performed without this insurance being in full force and effect.

H. **Owner's Right to Terminate or Cure.** Failure of Contractor or a Subcontractor to secure and maintain insurance with the coverages and limits required by this Agreement shall be a material breach of the Contract entitling Owner, in its discretion and without waiving any other remedies, to (i) withhold payments or recoup payments already made to Contractor for work on the Project, (ii) terminate the Contractor for cause, and (iii) purchase replacement insurance at the expense of the Contractor. Contractor consents to Owner procuring replacement insurance in Contractor's name and Contractor will cooperate in all respects with Owner's efforts in this regard. Alternatively, at Owner's discretion, Owner may purchase an Owner's protective policy or other similar policy that affords to Owner coverages and limits providing reasonably equivalent protections as Owner would have received if Contractor and Subcontractors maintained the insurance required by this Agreement. Owner's costs incurred in finding replacement insurance or an Owner's protective policy shall either

be reimbursed directly by Contractor or may be offset against amounts owed by Owner to Contractor on this Project or other projects.

I. Insurance In Excess of Requirements. In the event Contractor or any Subcontractor(s) purchase insurance in excess of the coverages or limits required under this Agreement, such excess coverages or limits shall apply and be deemed to have been required herein and be complaint with all requirements of this Exhibit.

J. No Waiver by Owner. The insurance requirements under this Agreement can only be waived or modified by Owner by an express written instrument signed by Owner acknowledging the reduced coverages or limits. No other act or omission by Owner or its agents, including but not limited to (i) implicit or verbal acceptance or approval of reduced coverages or limits or (ii) failure to require proof of compliant insurance, shall amount to Owner's waiver of the insurance requirements of this Agreement.

K. Subcontractor Insurance. All Subcontractors' insurance shall meet all insurance requirements of Contractor as provided in this Agreement, including, but not limited to, the types of insurance, extent and durations of coverages, and notice requirements, except that the limits of insurance for Subcontractors shall be no less than the following:

Workers' Compensation and Employer's Liability: same as above.

Commercial General Liability (Occurrence Form): Combined Bodily Injury and Property Damage:

$2,000,000 Each Occurrence

$2,000,000 Personal and Advertising Injury

$2,000,000 General Aggregate

$2,000,000 Products/Completed Operations Aggregate

$ 100,000 Fire Damage Legal Liability

$ 10,000 Medical Expenses Per Person

Business Auto: same as above.

Excess/Umbrella Liability Coverage: none required.

L. Waiver of Subrogation. All of General Contractor's and all of its subcontractors' liability insurance policies, including worker's compensation, shall contain a waiver of subrogation against Owner.

M. Additional Insureds. All of General Contractor's and Subcontractors' liability insurance policies shall contain an endorsement expressly naming Owner, its affiliates, subsidiaries, directors, officers, employees and agents (including but not limited to those listed below) as Additional Insureds (as opposed to blanket endorsements) for both on-going operations and completed operations. The coverage under the additional insured endorsement shall (i) be primary and noncontributory with respect to any insurance maintained by the Additional Insureds, (ii) provide the same coverages and limits to the Additional Insured as are afforded to the Named Insured as required by this Agreement, (iii) shall provide coverage to the Additional Insureds for the products-completed operations hazard, (iv) these requirements are to be complied with for the same durations as the coverages afforded to the Named Insured as required by this Agreement, and (v) waive all rights of subrogation against the Additional Insureds. In the event that Contractor cannot comply with all of these requirements, Contractor shall obtain a Project Specific Endorsement naming Owner and its affiliates as Named

Insureds on all primary and excess/umbrella policies required herein. The following additional persons or entities affiliated with Owner shall be named as Additional Insureds:

_____ _____ _____

_____ _____ _____

N. **Cyber.** Contractor and its subcontractors shall maintain throughout the term of this Agreement Professional / Technology Liability insurance and Network Security & Privacy Liability insurance covering liabilities for first- and third-party losses resulting or arising from acts, errors, or omissions in connection with the services provided under this Agreement. Such insurance shall have limits of not less than $5,000,000.00. Such coverage shall include an extended reporting period of not less than 90 days beyond the termination date of such coverage. The coverage must be sufficient to cover all damages Contractor or its subcontractors and vendors may be obligated to pay as damages as a result of a Security Breach. For the purposes of this Section, "Security Breach" means:

(i) the failure by the Contractor, or any of its subcontractors, to properly handle, manage, store, destroy or otherwise control, or the unauthorized disclosure by the Contractor or its subcontractors of:

(a) Personal information in any format, including but not limited to Protected Health Information or other personal / individual data or information regarding health, financial or other information that is generally considered private in nature; or

(b) third party corporate information in any format specifically identified as confidential and protected under a confidentiality agreement or similar contract; or

(c) any other information the release or disclosure of which may cause liabilities for first- and third-party losses resulting or arising from acts, errors, or omissions in connection with the services provided under this Agreement.

(ii) an unintentional violation of the Contractor's privacy policy or

(iii) any misappropriation that results in the violation of any applicable data privacy laws or regulations; or

(iv) any other act, error, or omission by Contractor in its capacity as such which is reasonably likely to result in the unauthorized disclosure of Personal Data or loss of Confidential or Personal Information, regardless of cause (including, without limitation, Contractor's or its subcontractor's negligence and unlawful third-party acts).

The Cyber coverage must provide coverage of the following**:**

(i) Wrongful acts, claims, and lawsuits anywhere in the world.

(ii) Contractual liability coverage for the indemnity in this Agreement.

(iii) Coverage for all damages incurred by Company or its affiliates including, defense costs, forensics investigation, public relations/crisis management costs, data breach notification costs, credit protection services, credit restoration services, regulatory investigations, civil fines and penalties, data breach mitigation services, litigation costs and settlement costs.

(iv) Violation or infringement of any right of privacy, including breach of security and breach of security/privacy laws, rules or regulations globally, now or hereinafter constituted or amended.

(v) Data theft, damage, or any loss of data.

(vi) Unauthorized disclosure, destruction, or corruption, including without limitation, unauthorized access, unauthorized use, identity theft, theft of personally identifiable information or confidential corporate information in whatever form.

(vii) Transmission of a computer virus or other type of malicious code.

(viii) Participation in a denial-of-service attack on third party computer systems.

(ix) Loss or denial of service.

(x) Privacy regulatory defense and payment of civil fines.

(xi) Payment of credit card provider penalties, and breach response costs (including without limitation, notification costs, forensics, credit protection services, call center services, identity theft protection services, and crisis management/public relations services).

O. Builders Risk - Contractor shall procure and pay for an All Risk Builder's Risk Policy, providing full replacement value, covering Owner, Contractor and all Subcontractors of every tier as their interests may appear. The policy shall include coverage for theft, vandalism, malicious mischief, collapse, windstorm, falsework, testing and startup, temporary buildings and debris removal, including demolition and replacement occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss. The policy shall provide Flood and Earthquake coverage, cover damage from water from any source, cover materials in temporary storage or transit and provide coverage for resultant damage even if caused by faulty workmanship or defective products. The policy shall not have any co-insurance provisions. Deductibles shall be approved by Owner in writing or shall be the sole obligation of the Contractor.

END OF EXHIBIT A

PERFORMANCE AND PAYMENT BOND

Know all persons by these presents, that _____, hereinafter called the PRINCIPAL, and _____ a CORPORATION or partnership duly authorized to do a general surety business in Oregon, as SURETY, are jointly and severally held and bound unto the Eastern Oregon University in La Grande, Oregon, hereinafter called the OBLIGEE in the sum of

DOLLARS _____ **($_____)**

for the payment of which we jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns, firmly by these presents.

The condition of this bond is such that, whereas, _____

(Contractor)

the PRINCIPAL herein, on the _____ Day of _____, entered into a Contract with the OBLIGEE, for the _____ Project, which Contract is made a part hereof as if fully incorporated herein.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION are such that if Principal shall faithfully, punctually and completely perform and abide with the covenants, terms, conditions and provisions of said Contract and any extensions thereof in all respects and within the time prescribed therein, including, but not limited to, the terms of any warranty and guarantee required under the said Contract; shall pay all laborers, mechanics, subcontractors, material and equipment suppliers and all persons supplying to Principal or its subcontractors and suppliers at any tier labor, materials, supplies or equipment for the prosecution of the work or any part thereof; shall fully defend, indemnify and hold Obligee harmless from all cost and damage that Obligee may suffer by reason of Principal's failure to do so; and shall in all respects perform said Contract according to applicable law, then this obligation shall be null and void; otherwise, it shall remain in full force and effect.

In any event, this obligation shall remain in full force and effect for the applicable period of limitations or repose, whichever is longer.

Surety acknowledges that Obligee does not owe any duty to Surety to advise, notify or consult with Surety on any matters relating to the Principal or the Project, including, but not limited to, Principal's payments to Subcontractors or Principal's use of Project funds.

No prepayment or delay in payment and no change, extension, addition or alteration of any provision of said Contract and no forbearance on the part of Obligee shall operate to relieve Surety from liability on this bond, and Surety hereby consents to any such changes, extensions, additions and alterations without further notice to or consent by Surety.

In the event arbitration, litigation or any other proceeding is brought upon this bond by Obligee and judgment or award is entered in Obligee's favor, Surety shall pay all of Obligee's costs incurred in such arbitration, litigation or other proceeding, including any attorney and expert witness fees.

In the event there is an arbitration clause in said Contract, Surety agrees to participate in and to be bound by any such arbitration to the same extent Principal is bound.

No right of action shall accrue on this bond to or for the use of any person or corporation other than Obligee or its heirs, executors, administrators, successors or assigns.

Executed this _____ day of _____, 2026.

_____ (Seal)

PRINCIPAL

_____

Title

_____

Address

_____ (Seal)

SURETY

_____

Title

_____

Address

COUNTERSIGNED:

_____

Resident Agent

_____

Address

PAYMENT BOND

(Bond No.)

KNOW ALL MEN BY THESE PRESENTS, that the undersigned, _____ _____ as Principal and _____ as Surety, a corporation organized and existing under the laws of the state of _____, are held and bound unto Eastern Oregon University in La Grande, Oregon, for the use and benefit of all persons or entities that provide labor, materials, equipment or supplies for use under the Contract described below, in the penal sum of_____ Dollars ($_____), lawful money of the United States of America, for the payment of which Principal and Surety bind themselves and their heirs, executors, administrators, successors and assigns, jointly and severally.

WHEREAS the Principal has entered into a Contract dated _____, 202_ with Obligee for the _____ project ("Project"), which Contract is made a part hereof as if fully incorporated herein.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION are such that if Principal shall promptly make payment to all persons or entities that provide labor, material, equipment or supplies for use under said Contract, then this obligation shall be null and void; otherwise, it shall remain in full force and effect.

In any event, this obligation shall remain in full force and effect for the applicable period of limitations or repose, whichever is longer.

Surety acknowledges that Obligee does not owe any duty to Surety to advise, notify or consult with Surety on any matters relating to the Principal or the Project, including, but not limited to, Principal's payments to Subcontractors or Principal's use of Project funds.

Principal and Surety hereby jointly and severally agree that any person or entity that provides labor, material, equipment or supplies for use under said Contract and has not been paid in full may sue on this bond for the use of such person or entity, prosecute the suit to final judgment for such sums as may be justly due and owing claimant and have execution thereon. Obligee shall not be liable for the payment of any damages, costs or expenses (including attorney fees) awarded in any such suit.

No prepayment or delay in payment and no change, extension, addition or alteration of any provision of said Contract and no forbearance on the part of Obligee shall operate to relieve Surety from liability on this bond, and Surety hereby consents to any such changes, extensions, additions and alterations without further notice to or consent by Surety.

In the event arbitration, litigation or any other proceeding is brought upon this bond by Obligee and judgment or award is entered in Obligee's favor, Surety shall pay all of Obligee's costs incurred in such arbitration, litigation or other proceeding, including any attorney and expert witness fees.

Except as expressly provided above, no right of action shall accrue on this bond to or for the use of any person or corporation other than Obligee or its heirs, executors, administrators, successors or assigns.

Executed this _____ day of _____, 202_.

_____ (Seal)

PRINCIPAL

_____

Title

_____

Address

_____ (Seal)

SURETY

_____

Title

_____

Address

COUNTERSIGNED:

_____

Resident Agent

_____

Address

END OF SECTION

EASTERN OREGON UNIVERSITY
GENERAL CONDITIONS
FOR PUBLIC IMPROVEMENT CONTRACTS

February 26, 2026

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

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EASTERN OREGON UNIVERSITY GENERAL CONDITIONS FOR PUBLIC IMPROVEMENT CONTRACTS ("Eastern Oregon University 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 prepare Plans 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.

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 claim, dispute, controversy, request, notice, demand or other problem asserted 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 Eastern Oregon University 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 Public Improvement Contract, Eastern Oregon University General Conditions, Supplemental General Conditions if any, Plans, Specifications, Construction Change Directives, the accepted Offer, Solicitation Document and addenda thereto, Instructions to Offerors, and Supplemental Instructions to Offerors.

CONTRACT PERIOD, as set forth in the Contract Documents, means the total period of time beginning with the full execution of a Contract and, if applicable, the issuance of a Notice to Proceed and concluding upon Final Completion. However, this definition of Contract Period will not establish a period of limitation or repose with respect to the enforcement any obligations either Owner or Contractor have under the Contract Documents.

CONTRACT PRICE, means the total amount payable to Contractor as adjusted in accordance with 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 and the cost of delivery; cost of labor which shall only include the applicable prevailing wage and fringe benefit (if applicable, and if paid to or on behalf of the employee) rate plus a maximum of a 10% markup on the prevailing wage (but not the fringe benefit) to cover Contractor's labor burden including but not limited to social security, Medicare, unemployment insurance, workers' compensation insurance; substantiated project cost increases for specific insurance (including, without limitation, Builder's Risk Insurance and Builder's Risk Installation Floater) or bond premiums; rental cost of equipment, and machinery required for execution of the Work; and the additional costs of field personnel directly attributable to the Work; travel expense reimbursement only if specifically authorized and only to the extent allowable under the Eastern Oregon University Contractor Travel Reimbursement Policy, hereby incorporated by reference.

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, pandemic (except for the COVID-19 pandemic), 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.

D/M/W/ESB/SDVBE REPORT, means an accurate report by the Contractor to the Owner identifying all disadvantaged business enterprises, minority-owned businesses, women-owned businesses, emerging small businesses, and service disabled business enterprises (D/M/W/ESB/SDVBE), as those terms are defined in ORS 200.005, or as self-reporting as otherwise meeting the same requirements of ORS 200.005, receiving contracts throughout the course of the Work. An initial D/M/W/ESB/SDVBE Report is required (see Section E.2.9) and D/M/W/ESB/SDVBE Reports are required annually (see Section E.2.9) and as a condition of final payment (see Section K.1). The initial report shall include the total number of contracts and subcontracts awarded to D/M/W/ESB/SDVBE and the dollar value of their respective contracts and subcontracts. The annual reports shall include the total number of contracts and subcontracts awarded to D/M/W/ESB/SDVBE, 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 D/M/W/ESB/SDVBE and the dollar value of their respective contracts and subcontracts including all Contracts and Change Orders incorporated during the course of the project.

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.

OFFER, means a bid in connection with Instructions to Bidders or a proposal in connection with a Request for Proposals, or Solicitation Document. May also be referenced as "Bid", "Quote", or "Proposal" based on the type of Solicitation Document

OFFEROR, means a bidder in connection with Instructions to Bidders or a proposer in connection with a Request for Proposals, or Solicitation Document. May also be referenced as "Bidder", "Quoter" or "Proposer" based on the type of Solicitation Document.

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), labor rates and fringe benefits above the applicable prevailing wage and fringe benefit (if applicable, and if paid to or on behalf of the employee), Contractor's labor burden for fringe benefit if paid to the employee, 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 Eastern Oregon University an Oregon public university. 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 Eastern Oregon University General Conditions is intended to abrogate the separate design professional responsibilities of Architects under ORS Chapter 671 or of Engineers under ORS Chapter 672 or any of their respective duties and obligation under any contracts with the Owner.

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, Change Orders, Construction Change Directives, D/M/W/ESB/SDVBE Reports, correspondence, certificate(s) of occupancy, and other documents listed in Subsection B.9.1 of these Eastern Oregon University General Conditions, recording all Services performed.

SOLICITATION DOCUMENT, means Instructions to Bidders or Offerors or a Request for Proposal or a Request for Quotes or any other written document issued by Owner that outlines the required Specifications necessary to submit a Bid, Proposal, or other response.

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 or indirect contract with the Contractor, or another Subcontractor of any tier, to perform one or more items of the Work or supply equipment and/or materials. For the avoidance of doubt the term Subcontractor includes sub-subcontractors and sub-suppliers of materials and equipment at all tiers.

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 without unreasonable interruption. 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.3.2.

SUBSTITUTIONS, means items that in function, performance, reliability, quality, and general configuration are the same or better than the product(s) specified. Substitutions also means the performance of the Work by a labor force other than what is submitted in the Offer. 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 Eastern Oregon University 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 construction and 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, and reasonably inferable from, 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, and reasonably inferable from, 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 amendments, Change Orders and Construction Change Directives, with those of later date having precedence over those of an earlier date;
(b) The Supplemental General Conditions;
(c) Eastern Oregon University General Conditions;
(d) The Public Improvement Contract;
(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.

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 an Offer, 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. Contractor shall at all times be responsible for all utility locates regardless of the ownership of such utility infrastructure or service.

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.4.5 Pursuant to ORS 352.138, the Owner, as a public university, is not subject to certain provisions of Oregon law, including certain provisions of the public contracting code. To the extent these General Conditions or other Contract Documents include certain of the provisions that are not applicable to public universities under ORS 352.138, those

provisions nonetheless are part of the Contract and are enforceable against the Contractor to the extent they impose requirements or obligations on the Contractor.

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. Nothing contained in this Contract shall be deemed or construed to (1) make Contractor or any Subcontractor the agent, servant, or employee of the Owner, or (2) create any partnership, joint venture, or other association between Owner and Contractor or any Subcontractor.

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, state, county, and regional taxes (including but not limited to Oregon's corporate activity tax) 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 Owner or 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 and omissions (including but not limited to negligent acts and omissions) 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.2.4 Review or approval by Owner or its agents of Contractor's means, methods, techniques, procedures or submittals, or of any other aspect of Contractor's Work or services shall not relieve Contractor of its sole liability for any damages resulting from or arising out of defects or deficiencies in the Contractor's means, methods, techniques, procedures or submittals, or of any other aspect of Contractor's Work or services.

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 or non-conforming Work shall be corrected at the Contractor's expense.

B.3.3 Work done and materials furnished may 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

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 LAWS AND 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 or arbitrator to be unenforceable, 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, Change Orders, 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 or arbitration, Contractor shall retain all such records until all litigation or arbitration 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 or arbitration 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 Eastern Oregon University General Conditions, and to assume toward the Contractor all of the obligations and responsibilities which the Contractor assumes toward the Owner thereunder, unless 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, which will include the Owner's project for the renovation of Inlow Hall. Contractor shall coordinate work with the Owner's 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. The Contractor specifically acknowledges that the Owner's project to renovate Inlow Hall will occur concurrent with the Contractor's Work, and Contractor has fully taken into account the Inlow Hall renovation project in agreeing to its obligations in the Contract, including its obligations to coordinate its Work activities and schedule with the work activities and schedule of the contractor(s) performing the work on the Inlow Hall renovation project.

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 Union County for the State of Oregon; provided, however, (1) 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, or (2) if jurisdiction cannot be obtained over another person or entity involved in a common issue of law or fact in dispute, then at the Owner's election the Claim may be brought in any such court where jurisdiction may be obtained over such involved person or entity.. In no event shall this section be construed as a waiver by the State of Oregon on 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. The Contractor shall ensure a provision equivalent to this Section B.16 is included in all agreements with Subcontractors.

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 of 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 subsubcontractor), 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

If Owner fails to receive funding, appropriations, allocations or other expenditure authority as contemplated by Owner's budget and Owner determines, in its assessment and ranking of the policy objectives explicit or implicit in Owner's budget, Owner may determine it is necessary to and may terminate the Public Improvement 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 at all tiers. 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 firsttier 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 Pursuant to ORS 279C.505 and as a condition precedent 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.3.1.5 Demonstrate that an employee drug testing program is in place as follows:

(a) Contractor represents and warrants that Contractor has in place at the time of the execution of this Contract, and shall maintain during the term of this Contract, a Qualifying Employee Drug Testing Program for its employees that includes, at a minimum, the following:

(1) A written employee drug testing policy,

(2) Required drug testing for all new Subject Employees or, alternatively, required testing of all Subject Employees every 12 months on a random selection basis, and

(3) Required testing of a Subject Employee when the Contractor has reasonable cause to believe the Subject Employee is under the influence of drugs.

(b) A drug testing program that meets the above requirements will be deemed a "Qualifying Employee Drug Testing Program." For the purposes of this section, an employee is a "Subject Employee" only if that employee will be working on the project job site. Contractor shall require each Subcontractor providing labor for the project to:

(1) Demonstrate to the Contractor that it has a Qualifying Employee Drug Testing Program for the Subcontractor's Subject Employees,

and represent and warrant to the Contractor that the Qualifying Employee Drug Testing Program is in place at the time of subcontract execution and will continue in full force and effect for the duration of the subcontract, or

(2) Require that the Subcontractor's Subject Employees participate in the Contractor's Qualifying Employee Drug Testing Program for the duration of the subcontract.

C.3.2 Pursuant to ORS 279C.515, and as a condition precedent to Owner's performance hereunder, Contractor agrees:

C.3.2.1 If Contractor fails, neglects or refuses to pay promptly a person's claim for labor or services that the person provides to the Contractor or a Subcontractor in connection with the project as such claim becomes due, the proper officer that represents the Owner may pay the amount of the claim and charge the amount of the payment against funds due or to become due Contractor under this Contract. Paying a claim in this manner shall not relieve the Contractor or the Contractor's surety from obligation with respect to an unpaid claim.

C.3.2.2 If the Contractor or a first-tier Subcontractor fails, neglects or refuses to pay a person that provides labor or materials in connection with the public contract for a public improvement within thirty (30) Days after receiving payment from Owner or a contractor, the contractor or first-tier Subcontractor owes the person the amount due plus interest charges that begin at the end of the 10-Day period within which payment is due under ORS 279C.580(3) and that end upon final payment, unless payment is subject to a good faith dispute as defined in ORS 279C.580. The rate of interest on the amount due is nine percent per annum. The amount of interest may not be waived.

C.3.2.3 If the Contractor or a Subcontractor fails, neglects or refuses to pay a person that provides labor or materials in connection with the Contract, the person may file a complaint with the Construction Contractors Board, unless payment is subject to a good faith dispute as defined in ORS 279C.580. Every contract related to this Contract must contain a similar clause.

C.3.3 Pursuant to ORS 279C.580, Contractor shall include in each subcontract for property or services the Contractor enters into with a first-tier Subcontractor, including a material supplier, for the purpose of performing a construction contract:

(a) A payment clause that obligates the Contractor to pay the first-tier Subcontractor for satisfactory performance under the subcontract within ten (10) Days out of amounts the Owner pays to the Contractor under the Contract;

(b) A clause that requires the Contractor to provide the first-tier Subcontractor with a standard form that the first-tier Subcontractor may use as an application for payment or as another method by which the Subcontractor may claim a payment due from the Contractor;

(c) A clause that requires the Contractor, except as otherwise provided in this paragraph, to use the same form and regular administrative procedures for processing payments during the entire term of the subcontract. The Contractor may change the form or the regular administrative procedures the Contractor uses for processing payments if the Contractor:

(1) Notifies the Subcontractor in writing at least 45 days before the date on which the Contractor makes the change; and

(2) Includes with the written notice a copy of the new or changed form or a description of the new or changed procedure.

(d) An interest penalty clause that obligates the Contractor, if the Contractor does not pay the first-tier Subcontractor within thirty (30) Days after receiving payment from Owner, to pay the first-tier Subcontractor an interest penalty on amounts due in each payment the Contractor does not make in accordance with the payment clause included in the subcontract under paragraph (a) of this subsection. Contractor or first-tier Subcontractor is not obligated to pay an interest penalty if the only reason that the Contractor or first-tier Subcontractor did not make payment when payment was due is that the Contractor or first-tier Subcontractor did not receive payment from Owner or Contractor when payment was due. The interest penalty applies to the period that begins on the day after the required payment date and that ends on the date on which the amount due is paid; and is computed at the rate specified in ORS 279C.515(2).

(e) A clause which requires each of Contractor's Subcontractors to include, in each of their contracts with lower-tier Subcontractors or suppliers, provisions to the effect that the first- tier Subcontractor shall pay its lower-tier Subcontractors and suppliers in accordance with the provisions of paragraphs (a) through (d) above and requiring each of their Subcontractors and suppliers to include such clauses in their subcontracts and supply contracts.

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

Pursuant to ORS 279C.530, and as a condition precedent 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 precedent to Owner's performance hereunder, Contractor shall comply with ORS 279C.520, as amended from time to time and incorporated herein by this reference: 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, Specifications, 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: 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) Fixed Fee: 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) Time and Material: 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. The Contractor or Subcontractor who performs the Work shall be allowed to add up to ten percent (10%) markup to the Direct Costs as full compensation for profit,
Overhead and other indirect costs for Work performed with the Contractor's or Subcontractor's own forces

Each ascending tier Subcontractor or the Contractor that did not perform the Work, will be allowed to add up to five percent (5%) supplemental markup on the Direct Costs of the Work (but not the above allowable markups) covered by a Change Order. No additional markup shall be permitted for any third tier or greater descending Subcontractor.

Example: $20,000 of Direct Costs Work performed by a 2nd Tier Subcontractor

	Markup	Allowed Total Fee Plus Markup
General Contractor	5%	$1,000.00
1st Tier Sub Contractor	5%	$1,000.00
2nd Tier Sub Contractor	10%	$22,000.00

(d) Payments made to the Contractor shall be complete compensation for Overhead, profit, and all costs and impacts (including but not limited to the cumulative impact of other Change Orders) 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 deemed waived. 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, 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 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, arbitration, 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 the time of execution of the Contract. 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 or indirectly 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.1.8 Owner may at any time and at its discretion issue a construction change directive adding to, modifying or reducing the scope of Work. Contractor and Owner shall negotiate the need for any additional compensation or additional Contract Time related to the change, subject to the procedures for submitting requests or Claims for additional compensation or additional Contract Time established in this Section D. Unless otherwise directed by Owner, Contractor shall proceed with the Work while any request or Claim is pending, including but not limited to, a request or Claim for additional compensation or additional Contract Time resulting from Work under a Change Order or Construction Change Directive. 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 Work without a written stop work order from the Owner.

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; or

(b) Affect only a portion of the Work and do not necessarily prevent or delay the prosecution of other parts of the Work nor the completion of the whole Work within the Contract Time; or

(c) Do not impact activities on the accepted critical path schedule; or

(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) 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) 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 agrees 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) 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 not reasonably anticipatable. 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 reasonably 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 Eastern Oregon University 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 by Contractor is made in accordance with the time and procedural requirements in these General Conditions, it shall be deemed waived.

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 may 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.

D.3.8 Should any suit, action or arbitration be commenced in connection with any dispute arising out of this Contract, the prevailing party shall be entitled to recover its costs and disbursements, investigation costs and fees, expert witness costs and fees, and attorney costs and fees, as the court or arbitrator may adjudge reasonable, incurred in connection with such dispute before trial or arbitration, at trial or arbitration, upon any motion for reconsideration, upon any appeal or petition for review, and upon any collection efforts or proceedings.

SECTION E
PAYMENTS

E.1 SCHEDULE OF VALUES

The Contractor shall submit, by or before the pre-construction conference, 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 fourteen (14) days from the date of the receipt of the accurate invoice.

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 ten (10) Days stating the reason or reasons the application for payment is defective or improper or the reasons for the dispute.

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 that are defective or 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 or non-conforming 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 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 D/M/W/ESB/SDVBE Report within ten (10) Days of Contractor's execution of the Contract, or if there will be a Guaranteed Maximum Price (GMP) Amendment, then within ten (10) Days of Contractor's execution of the GMP Amendment. Contractor shall submit annual D/M/W/ESB/SDVBE Reports on June 30 of each year the Contract is active. Contracts (or GMP Amendments) 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 D/M/W/ESB/SDVBE Report otherwise due on that June 30. The final D/M/W/ESB/SDVBE Report shall be filed with the application for final payment. Timely receipt of D/M/W/ESB/SDVBE 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, or the applicable Eastern Oregon University standard.

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 If the Contract Price exceeds $500,000, the Owner shall place amounts withheld as retainage into an interest-bearing escrow account pursuant to ORS 701.420(2)(b).

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 one percent per month on the final payment due Contractor, interest to commence thirty (30) 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 fifteen (15) 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 thirty (30) Days after the end of the 15 Day period.

E.5.1.4

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.5.2 As provided in subsections C.2.2 and C.2.3, additional retainage in the amount of 25% of amounts earned shall be withheld and released in accordance with ORS 279C.845(7) when the Contractor fails to file certified statements as required by section C.2.1.

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. References to liens and lien waivers in these General Conditions shall not be construed as Owner's concession that such liens are valid under Oregon law.

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 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.2.7 Contractor shall comply with all Owner safety rules and regulations. Prior to commencement of any Work, Contractor shall be required to complete an Owner Contractor Safety Orientation and submit all Owner required safety plans.

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. To the fullest extent permitted by law, Contractor shall indemnify, defend (with counsel of Owner's choice), reimburse 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 to the extent caused by the negligence or other 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 wellbeing 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 to the extent 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, the Contractor shall indemnify, hold harmless, reimburse and defend (with counsel approved by Owner) the Owner and Owner's agents, employees, officers and directors from, for, and against suits, actions, awards, penalties, liabilities, claims, damages, losses and expenses, whether actual or merely alleged and whether directly incurred or from a third party, including but not limited to attorneys' and expert witnesses' fees, and related costs, disbursements, and expenses, arising out of or resulting from performance of the Work including, but not limited to, any such suit, action award, penalty, liability, claim, damage, loss, or expense attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, but only to the extent caused by the negligence, breach of contract, or other wrongful acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they are responsible, or by failure of any such person or entity to perform as required by this Agreement.

G.1.3 To the fullest extent permitted by law, 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 Contractor shall comply and shall require Subcontractors to comply with the Insurance Requirements in Exhibit A.

SECTION H
SCHEDULE OF WORK

H.1 CONTRACT PERIOD

H.1.1 Time is of the essence of the Contractor's performance under the Contract. 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 a 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, 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.2.2 All Work shall be completed during normal weekdays (Monday through Friday) between the hours of 7:00 a.m. and 5:00 p.m. unless otherwise specified in the Contract Documents. Unless otherwise specified in the Contract Documents, no Work shall be performed during the following holidays:

- New Year's Day
- Martin Luther King Day
- Memorial Day
- Independence Day
- Labor Day
- Veterans Day
- Thanksgiving Day
- Christmas Day

When a holiday falls on a Sunday, the following Monday shall be recognized as a legal holiday. When a holiday falls on Saturday, the preceding Friday shall be recognized as a legal holiday.

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 or non-conforming. Contractor shall promptly remove from the premises and replace all defective or non-conforming 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 or non-conforming (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 or non-conforming 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. The Owner shall give Contractor notice of defects with reasonable promptness. Contractor shall perform such corrective work within a reasonable time after Owner's demand. If Contractor fails to complete the corrective work within such period as Owner determines reasonable, or at any time in the event of corrective 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 provision shall limit or negate Contractor's obligation to perform the Work in accordance with the Contract Documents (or time limitations for Owner's enforcement of those obligations), 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 or repose 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 for Owner's convenience in whole or in part whenever Owner determines, in the Owner's sole discretion, that termination of the Contract is in the best interest of Owner and/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 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 (refer also to 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 D/M/W/ESB/SDVBE 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 two (2) complete and approved sets of O & M Manuals in paper form and one (1) 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 and notarized by the Contractor and signed by the Architect/Engineer (if applicable) and Owner to be valid. The Owner shall provide the final signature on the 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. In addition to any off-site training required by the Contract Documents, training shall include a formal session conducted at the Work site 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.

The Owner's property is tobacco free, drug free, and weapons free areas. Contractor shall be required to ensure that its employees,

Subcontractors and agents shall comply with the Owner Drug, Tobacco and Weapon Free Campus policies, hereby incorporated by reference.

K.9 SURVIVAL

Without limiting the survivability of any other provision of the Contract, that by its nature survives termination, all corrective obligations, 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.

SECTION 01-10-00 SUMMARY

PART 1 GENERAL

1.1 REQUIREMENTS

A. Owner Occupancy

1. Cooperate with Eastern Oregon University to minimize conflict and to facilitate Eastern Oregon University's operations.
2. Schedule the Work to accommodate Eastern Oregon University use of the site and facilities.

B. Contractor Use of Site and Premises – Includes building interiors during renovations and remodels:

1. Arrange use of site and premises to allow:
    a. Work by Others.
    b. Work by Eastern Oregon University.
    c. Use of Eastern Oregon University campus pathways and facilities by public.
2. Provide access to and from site as required by law and by Eastern Oregon University:
    a. Do not obstruct roadways, sidewalks, or other public ways without permit.
    b. Do not obstruct building corridors or other areas of the project in use by Eastern Oregon University.
    c. Limit parking and staging areas to areas designated by Eastern Oregon University.
3. Time Restrictions:
    a. In compliance with the City of La Grande Ordinance #3241, Section 12.5 Noise Disturbances: Limit exterior work between the hours of 7:00am and 9:30pm, except by special permit granted by the La Grande Chief of Police.
    b. Limits to interior work to be determined on a per project basis.
4. Utility Outages and Shutdown:
    a. Limit disruption of utility services to hours the site is unoccupied or as approved by Eastern Oregon University.
    b. Do not disrupt or shut down life safety systems and utilities, which may impact the campus or other facilities, including but not limited to electrical service, plumbing service, network service, fire sprinklers and fire alarm system, without 7 days notice to Eastern Oregon University and authorities having jurisdiction.
5. Prevent accidental disruption of utility services to other facilities.

C. Overtime Work

1. To permit arrangements for inspections, the Contractor shall notify the Owner's Representative at least 48 hours in advance of any overtime work, including nights, weekends, and holidays. Do no overtime work without obtaining approval by the Owner's Representative.
2. The Contractor shall reimburse the Architect and Owner for any expenses incurred by them because of Contractor's overtime work.

D. Work in Public Right of Way

1. The Contractor shall obtain any required Right-of-Way Work Permits, pay Permit Fees, and comply with governing Regulatory Agency requirements, including providing any additional Insurance required by Public Authority.

E. Protecting Existing Utilities

1. Drawings indicate approximate location of any known, concealed Utility Lines. Before starting work, Contractor shall determine exact location of any of these Lines that could be damaged by Contract Work.
2. Contractor shall assume that other unknown Utility Lines do exist, and Contractor shall proceed with caution when working in areas that could conceal unknown Utilities. If such Utility Lines are encountered, immediately request disposition instructions from Architect and Owner's Representative.
3. If Utility Lines are damaged, remove, repair, or replace Lines as directed. Additional compensation and/or extensions of time, if any, caused by removing, repairing, or replacing Lines will be determined in accordance with General Conditions.

F. Correction Period for Non-Complying Work

1. Contractor's response to notice of Work to be Corrected shall be accomplished during the following time periods:
    a. Emergency Work:
        1. Failures or deficiencies constituting immediate danger or health hazard to People or likely damage to Property.
        2. Response Time: 24 hours per day 7 days per week.
    b. Urgent Work:
        1. Failures or deficiencies which do not immediately endanger Persons or Property, but would soon do so if not corrected.
        2. Response Time: Between 7AM and 4PM on Mondays through Fridays and within 3 calendar days following receipt of Notice.
    c. Routine Work:
        1. Failures or deficiencies of less importance that do not meet criteria of Emergency or Urgent work.
        2. Response Time: Between 7AM and 4PM on Mondays through Fridays and within 5 calendar days following receipt of Notice.

END OF SECTION

SECTION 01-20-00 PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedures for preparation and submittal of applications for progress payments.

1.02 DEFINITIONS

A. Architect's Supplemental Instruction (ASI): Minor change in Work directed by Architect.

B. Proposal Request (PR): A formal request from Architect or Owner to Contractor for change in Contract Sum and Time required to perform the proposed change in Work. Proposal Request is not a directive to perform the proposed change.

C. "Construction Change Directive" and "Change Order" have meanings defined in AIA Document A201.

D. Extraordinary Contract Administration: Architectural service to enforce Contract Documents resulting from Contractor's failure to comply with requirements for Contractor's request for accelerated procedures.

1.03 SCHEDULE OF VALUE

A. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect and Owner for approval.

B. Forms filled out by hand will not be accepted.

C. Submit a printed schedule on AIA Form G703 – Application and Certificate for Payment Continuation Sheet. Contractor's standard form or electronic media printout will be considered and must be approved by owner prior use.

D. Submit Schedule of Value in duplicate within 15 days after date of Owner-Contractor Agreement.

E. 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.

F. Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.

G. Revise schedule to list approved Change Orders, with each Application for Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the General Conditions to the Public Improvement Contract.

B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to the Owner for approval.

C. Forms filled out by hand will not be accepted.

D. Present required information in typewritten form.

E. Form: AIA G702 Application and Certificate for Payment and AIA G703 – Continuation Sheet including continuation sheets when required.

F. Execute certification by signature of authorized officer.

G. Use data from approved Schedule of Values or Bid Schedule. Provide dollar value in each column for each line item for portion of work performed and for stored Products.

H. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.

I. Include the following with the application:

1. Construction progress schedule, revised and current as specified in Section 01 3000.
2. Project Record Documents as specified in Section 01 7800, for review by Owner which will be returned to the Contractor.
    a. Alternative: Review Record Documents with the Owner prior to submitting Application.
3. Preliminary Closeout Documents when specified in Section 01 7800

J. When the Owner 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.

K. The Owner may request a meeting with the Contractor to review and walk the work for which the invoice is submitted.

L. On or before the last day of month for which payment is due submit application for Payment to the Owner.

1.05 PAYMENT FOR PRODUCTS STORED OFF THE PROJECT SITE

A. When delay or added cost to Owner can be avoided by storing Products off Site, Owner will make payment to Contractor for said Products provided that Contractor shall:

1. Locate Storage Facilities as close as possible to Project Site.
2. Make Storage Facilities available for Architect's visual inspection.
3. Segregate and label Stored Products for specified Project.
4. Assume all risk for loss.
5. Assume responsibility for exceeding Product "shelf-life".
6. Protect Stored Products and provide applicable Insurance against their damage, discoloration, and theft, naming the Owner and any Mortgagee as Additional Insureds.
7. Submit itemized Inventory and Schedule of Values for Stored Products together with Certificate of Insurance.
8. Submit payment requests to Owner as part of Contractor's regular Progress Payment Request.
9. Reimburse Owner for damages sustained if Stored Products are not delivered to Jobsite when needed.
10. Submit to Owner, with copy to Architect, a written Waiver of Lien insuring Owner against claims for unpaid Storage Costs.
11. Upon receipt of payment from Owner prepare and issue to Owner, with a copy for Architect and any Mortgagee, a Bill of Sale for Stored Products. (See required Bill of Sale Form bound hereinafter.)

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01-30-00 ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preconstruction meeting.

B. Progress meetings.

C. Progress photographs.

D. Coordination drawings.

E. Submittals for review, information, and project closeout.

F. Number of copies of submittals.

G. Submittal procedures.

1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Stages of the Work, Work covered by each contract, and occupancy.

B. Section 01 3216 - Construction Progress Schedule: Form, content, and administration of schedules.

C. Section 01 7000 - Execution and Closeout Requirements: Additional coordination requirements.

D. Section 01 7800 - Closeout Submittals: Project record documents.

E. Section 01 9113 - General Commissioning Requirements: Additional procedures for submittals relating to commissioning.

1. Where submittals are indicated for review by both Architect and the Commissioning Authority, submit one extra and route to Architect first, for forwarding to the Commissioning Authority.

2. Where submittals are not indicated to be reviewed by Architect, submit directly to the Commissioning Authority; otherwise, the procedures specified in this section apply to commissioning submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

A. Owner will schedule a meeting after Notice of Award.

B. Attendance Required:

1. Owner.

2. Architect.

3. Contractor.

4. Other’s as request by the Owner.

C. Agenda:

1. Execution of Owner-Contractor Agreement.
2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
5. Designation of personnel representing the parties to Contract, Owner and Architect.
6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
7. Scheduling.
8. Review of Tree and Plant Protection provisions as described in Section 01 5320.
9. Review of Contractor Use of Site and Premises provisions as described in Section 01 1000.

D. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.02 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work on a weekly basis at minimum.

B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

C. Attendance Required: Job superintendent, major Subcontractors and suppliers as needed, Owner, Architect/Engineers, as appropriate to agenda topics for each meeting.

D. Agenda:

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. Review of submittals schedule and status of submittals.
6. Review of RFIs schedule and status of RFIs.
7. Review of PCOs and status of PCOs.
8. Maintenance of progress schedule.
9. Corrective measures to regain projected schedules.
10. Planned progress during succeeding work period and specific required progress photos related to the work.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to Work.

E. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.03 PROGRESS PHOTOGRAPHS

A. Submit photographs to architect and owner periodically as requested and at the end of the project.

B. Maintain an electronic set of all photographs at project site for reference.

C. Provide photographs of site and construction prior to the start of Work and throughout progress of Work produced by an experienced photographer.

D. In addition to periodic, recurring views, take photographs of each of the following events:

1. Completion of site clearing.
2. Excavations in progress.
3. Foundations in progress and upon completion.
4. Structural framing in progress and upon completion.
5. Enclosure of building, upon completion.
6. Final completion, minimum of ten (10) photos.

F. Views:

1. Provide non-aerial photographs from four cardinal views at each specified time, until Date of Substantial Completion.
2. Consult with Architect and Owner for instructions on views required.
3. Provide factual presentation.

G. Digital Photographs: 24-bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.

1. Delivery Medium: Via email or ftp site.
2. The Contractor may elect to have professional photographs taken upon completion of the project. These may be edited to enhance the quality of the image, but should not alter the image or misrepresent the work performed.

3.04 COORDINATION DRAWINGS

A. Review drawings prior to submission to Architect.

3.05 SUBMITTALS FOR REVIEW

A. 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.

B. Submit to Architect and Owner for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

C. Samples will be reviewed only for aesthetic, color, or finish selection.

D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 7800 - CLOSEOUT

SUBMITTALS.

3.06 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:

1. Design data.
2. LEED submittals and reports.
3. Certificates.
4. Test reports.
5. Inspection reports.
6. Manufacturer's instructions.
7. Manufacturer's field reports.
8. Other types indicated.

B. Submit for Architect's knowledge as contract administrator or for Owner. No action will be taken.

3.07 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.
6. All closeout documents organized and saved to flash card.

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

3.08 NUMBER OF COPIES OF SUBMITTALS

A. Documents for Review and Information:

1. Documents 11x17 or smaller: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
2. Documents larger than 11x17 inches: Submit PDF plus the number of hard copies that Contractor requires, plus two copies that will be retained by Architect.

C. Documents for Project Closeout:

D. Provide one digital copy of submittal originally reviewed in closeout documents. Submit one flash card with all closeout documents as described in 01 7800 Closeout Submittals.

E. Provide one hard copy as described in 01 7800 Closeout Submittals, if requested by the Owner.

F. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect and one retained by Owner.

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

3.09 SUBMITTAL PROCEDURES

A. Transmit each submittal with approved 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. Deliver submittals to Architect and Owner at business addresses.

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

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

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

I. Provide space for Contractor and Architect review stamps.

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

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

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

END OF SECTION

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SECTION 01-31-13 PROJECT COORDINATION

PART 1 GENERAL

1.01 RELATED SECTIONS

A. Cutting & Patching: Section 01045

B. Summary of Work: Section 01010

C. Project Meetings: Section 01200

D. Construction Progress Schedules: Section 01320

E. Shop Drawings, Product Data, & Samples: Section 01330

F. Temporary Facilities: Section 01500

G. Contract Closeout: Section 01700

H. Cleaning: Section 01710

1.02 CONSTRUCTION ORGANIZATION & START-UP

A. Establish on-site Lines of Authority and Communications including the following:

1. Schedule and conduct Pre-construction Meeting and Progress Meetings as specified in Section 01200.

2. Establish procedures for Intra-project Communications including:

a. Submittals

b. Reports & Records

c. Recommendations

d. Coordination Drawings

e. Schedules

f. Resolution of Conflicts

3. Contract Documents Interpretation:

a. Consult with Architect to obtain interpretation.

b. Assist in resolution of questions or conflicts which may arise.

c. Transmit written interpretations to Subcontractors and to other concerned parties.

4. Permits & Approvals:

a. Verify that Subcontractors have obtained required Permits and Inspections for Work and for Temporary Facilities.

5. Control use of Site:

a. Supervise Field Engineering and Project Layout.

b. Allocate Field Office Space and Work and Storage Areas for use of each Subcontractor.

1.03 COORDINATING SUBCONTRACTORS' WORK

A. Coordinate the Work of all Subcontractors and make certain that, where the Work of one Trade is dependent upon the Work of another Trade, the Work first installed is properly placed,

installed, aligned, and finished as specified or required to properly receive subsequent Materials applied or attached thereto.

B. Direct Subcontractors to correct defects in Substrates they install when Subcontractors of subsequent Materials have a reasonable and justifiable objection to such surfaces.

C. Do not force Subcontractors to apply or install Product to improperly placed or improperly finished Substrate that would result in an unsatisfactory or unacceptable finished Product.

1.04 COORDINATING WORK WITH OWNER'S WORK

A. Coordinate, and make certain that, where Work of either party is dependent upon the other party, the Work first performed is properly placed, installed, aligned, and finished as required to permit the proper installation of the following Work.

B. If the Other Work in any way interferes with the Contractor's Work, so notify the Owner sufficiently in advance so that the Owner has reasonable time to make necessary adjustments.

C. If the Contractor's Work in any way interferes with the Other Work, so notify the Owner as soon as possible. If the Contractor's Work must be modified to accommodate the Owner's Work, the Contract Sum and/or the Contract Time will, when necessary, be adjusted by a Change Order.

1.05 CLOSE-OUT DUTIES

A. Mechanical & Electrical Equipment start-up:

1. Comply with requirements specified in Section 01650.

B. At completion of Work of each Subcontract, conduct inspection to assure that:

1. Work is acceptable.
2. Specified cleaning has been accomplished.
3. Temporary Facilities and Debris have been removed from Site.

C. Substantial Completion:

1. Conduct inspection and prepare list of Work to be completed or corrected.
2. Assist Architect and Owner in inspection.
3. Supervise correction and completion of Work as established in Architect's Inspection Reports.

D. Final Completion:

1. Assist Architect and Owner in inspection.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

SECTION 01-32-16 CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.01 SUMMARY

A. This Section specifies administrative and procedural requirements, in addition to those defined in the General Conditions, for Baseline Progress Schedule preparation, monthly Progress Schedule updates, change in Contract Time analysis, submittal schedules, and short interval schedules.

B. Related Sections:
   1. Contract Modification Procedures
   2. Progress Payment Procedures
   3. Temporary Facilities & Controls
   4. Closeout Procedures

C. Owner forms included by reference for this Section include (see Appendix A):
   1. Short Interval Schedule

D. Total Float is defined as the amount of time between the earliest start date and the latest start date, or between the earliest finish date and the latest finish date of an activity on the Progress Schedule. Float is not for the exclusive use of either the Contractor or the Owner, unless otherwise identified in the Contract Documents.
   1. Extension of time for Contract performance will be granted only to the extent that equitable time adjustments to the affected activity or activities exceed the total float time along the affected paths of the current Progress Schedule at the time a Field Order, or Change Order, was issued for the change.

E. All Progress Schedule submittals, including monthly Progress Schedule updates, will be reviewed jointly by the Owner's Representative and the Contractor. Such review of the Contractor's schedules shall not constitute an approval or acceptance of the Contractor's construction means, methods, or sequencing, or its ability to complete the Work in a timely manner.

F. As used in this Section, "Progress Schedule" refers collectively to "Baseline Progress Schedule" and "monthly Progress Schedule updates"

1.02 PROGRESS SCHEDULE

A. Within fourteen (14) calendar days after the Notice-to Proceed (NTP), the Contractor shall prepare and submit to the Owner, for review and comment, a software copy and a PDF copy of a preliminary Progress Schedule utilizing a Critical Path Method (CPM) logic based on the Contract Documents and provide comments within fourteen (14) calendar days of receipt from the Contractor. The Contractor shall responds to all comments and provide the Owner a Baseline Progress Schedule within fourteen (14) calendar days of receipt of the Owner's comments.

B. Once the Baseline Progress Schedule is submitted to the Owner, the Progress Schedule shall be formally established as the baseline file within the Contractor's scheduling software. This baseline file shall not be modified without the Owner's written approval via a (no cost) Contract Change Order.
   1. The amount specified in Section 01 29 76 shall be withheld from the Contractor's monthly Application for Payment if the Baseline Progress Schedule and the Submittal

Schedule, referenced in Section 1.5 of this Section, are past due and such amount may, at the Owner's sole judgment and discretion, be reduced from the Contract Sum by unilateral Change Order (See Section 01 29 76 "Progress Payment Procedures").

C. The Baseline Progress Schedule shall be the basis that the Contractor shall use to: plan, organize, and execute the Work; record and report actual work performed and progress through updates, and; show how the Contractor plans to complete all remaining Work. The Baseline Progress Schedule and monthly Progress Schedule updates shall be the basis for consideration and analysis of request for time extensions as specified below. The schedule shall be in the form of an activity based precedence diagram.

D. The Baseline Progress Schedule and monthly Progress Schedule updates shall be constructed to show the order in which the Contractor proposes to carry out the Work, and to indicate the restrictions of access to and availability of the work area, and availability and use of manpower, materials, equipment, and all activities of trade contractors, equipment vendors, and suppliers. The Progress Schedule shall be prepared in sufficient details with the assignment and coding of all activities by the Contractor and Subcontractors in consideration of, but not limited to the following Work activities:
    1. Access and availability to the Project Site, including road closures;
    2. Identification of interfaces and dependencies with preceding, concurrent, and succeeding contractors if applicable;
    3. The type of work to be performed and labor trades involved;
    4. All procurement, manufacturing, fabrication (both on-site and off-site), and delivery activities for all major materials and equipment;
    5. Shutdowns of exiting Owner's equipment and utility services;
    6. Required delivery dates of OFCI equipment and materials;
    7. Testing, air balancing, and commissioning activities, including submission and approval of test results;
    8. Approvals by regulatory agencies or other third parties, including obtaining an Occupancy Permit;
    9. Coordination for Owner's occupancy including Owner's cleaning, OFOI equipment and furnishings installations;
    10. Planning for phased occupancy by the Owner, with intermediate completion dates;
    11. Contractor's preliminary cleaning and final cleaning operations
    12. Contractor's Final Punchlist Report, Owner's Final Inspection (Punch List), Contractor's corrections, and Owner's re-inspection;
    13. Substantial Completion and Final Completion activities and milestones, an d Final Acceptance.

E. The activities defined in the Progress Schedule shall represent the planned duration in anticipation of normal man-power and equipment utilizations in durations of whole working days. No activity durations shall exceed twenty two (22) working days. If approved by the Owner, longer durations may be allowed for non-construction activities such as procurement, delivery, or submittal activities. All durations shall be determined based upon resource planning under contractually defined on-site work conditions. In calculating activity durations, normal inclement weather shall be considered. The Contractor shall schedule the Work to minimize the effect of adverse weather. The Contractor shall also protect the work site from the effects of adverse weather or take other necessary measures such that the Work can be completed within the time established in the Contract Documents and include these provisions in the schedule as appropriate.

F. Schedule activity identification codes shall not be alphanumeric unless approved by the Owner.
    1. Activity Description: Provide adequate information to readily identify each activity up to 48 characters in the general descriptive format: action, item, location (such as Install Steel Studs 3rd Floor).
    2. The Critical Path shall be clearly indicated in all diagrams submitted. An activity is critical when it is part of the longest duration pathway(s) through the CPM network or when total float is less than or equal to zero.
    3. Clearly identify activities that are planned to use overtime, double shifts, work on weekends of holidays.
    4. Include a listing of activities with open ends and out-of-sequence progress.

G. Certification: When requested by Owner, submit certification that each Subcontractor and major equipment supplier has participated in, reviewed, and concurs with the Progress Schedule as it relates to the Work.

1.03 MONTHLY PROGRESS SCHEDULE UPDATES

A. The Contractor is required to prepare and submit monthly Progress Schedule updates and to participate in monthly schedule update meetings with the Owner as described below:
    1. Timely submission of updates is of significant and crucial importance to the management of this Project. Lack of, or late receipt of, updates diminishes their Value to the Contractor and Owner. If a monthly Progress Schedule update is not submitted to and reviewed with the Owner prior to submitting it's monthly Application for Payment, the monthly Schedule of Values amount for Progress Schedule updates may, at the Owner's sole judgment and discretion, be reduced from the Contract Sum by unilateral Change Order (see Section 01 29 76, "Progress Payment Procedures")

B. The Contractor shall prepare a monthly Progress Schedule update to reflect the work progress achieved since the previous update. Historical performance data and/or record shall not be changed without the approval of the Owner.

C. The Contractor shall use and maintain an fixed end date when generating the required reports and diagrams for the Owner as specified by this Section. The fixed end date shall be the Substantial Completion date. The fixed end date will be adjusted in subsequent updates only to reflect approved time extensions incorporated by Change Orders.

D. The Project shall be rescheduled each reporting period with:
    1. An updated data date.
    2. Actual start/finish dates.
    3. Percent complete.
    4. Remaining durations for each activity in the "status" or "current" file.

E. Show changes occurring since the previous schedule submission such as:
    1. Any major changes in scope
    2. Activities modified since previous submissions including, but not limited to, logic changes.
    3. Revised projections for progress and completion, as applicable.
    4. Any other identifiable changes.

F. The Contractor shall account for all rainy days, snow days, for major events, and similar excusable non-compensable delays, during which little or no work is progressed and that are acknowledged by the Owner, in the period within which the events occur.

G. The Construction Progress Meeting shall be held prior to the Owner's review and comment of the Contractors draft Application for Payment, unless otherwise approved by the Owner.

1. The Contractor shall provide copies of two tabular reports:

a. A flow report clearly indicating the current critical path through Substantial Completion.

b. A report of activities sored by early start dates commencing with the previous monthly progress update and including all updated activities during the previous month. Actual Progress of the previous month shall be recorded and incorporated into the update.

2. The Contractor shall provide copies of a narrative report to include:

a. A description of the Work that has progressed.

b. An explanation of the Work that had been scheduled or shown to be performed in the previous period but was not performed, and why it was not performed.

c. Anticipated delay and impact on the schedule.

d. Corrective action recommended and its effect.

e. A discussion of the Work schedule for the upcoming period noting any issues or events that could impact the Work.

f. Contractor's intentions to make a logic or original activity duration change(s). No logic or original activity duration changes can occur until after it is included in the report and discussed in Construction Progress Meeting. Such proposed changes can be shown, including their impacts; however, the changes cannot be already made and incorporated unless otherwise approved by the Owner.

3. The Contractor and Owner shall review these reports and discuss any differences made or issues raised.

1.04 CHANGES IN CONTRACT TIME

A. It is the Owner's desire and intent to resolve all issues affecting the Substantial Completion date in a timely, efficient, effective, and proactive manner. To achieve this goal the Owner and Contractor shall participate in an analysis of all delays and advances of the schedule.

B. Assessment of such impacts due to changes or other events must be performed on the most recent update of the Progress Schedule. Further impacts due to changes or other events shall be assessed utilizing the Progress Schedule update that represents the data date closest to, and just prior to, the date of the impacting event.

C. The logic and planning element of the Progress Schedule are the Contractor's responsibility.

D. The submission of a valid monthly Progress Schedule update and the completion of a delay analysis impacting the critical path are conditions precedent to the review and approval of any request for a Contract Time extension. Failure to complete monthly Progress Schedule updates and to participate in the analysis will defer consideration of any time extensions by the Owner until the Work is completed and all as-bult progress can be analyzed by the Owner. Further, the Owner will assess liquidated damages, if any, regardless of the status of any requests for time extensions pending, until any such requests are resolved.

E. No Contract Time shall be modified unless directed by an approved Change Order. No Contract Time Change Orders will be considered until the Director of Facilities is updated and agrees with reasoning and justification for a Contract Time extension.

1.05 SUBMITTAL SCHEDULE

A. General: Within ten (10) calendar days following Owner's receipt of the Baseline Progress Schedule, the Contractor shall prepare and submit to the Owner a complete schedule of work-related submittals based on the Progress Schedule, as required by the Contract Documents ("Submittals Schedule"). Correlate Submittal Schedule with the listing of principal subcontractors.

B. Form: Prepare a Submittal Schedule in chronological sequence of submittals. Show category of submittal, name of Subcontractor, generic description of work covered, related Specifications Section numbers, activity or event code on the Progress Schedule baseline file, scheduled date for first submission, and blank columns for actual date of submission, re-submittal(s), and final release of acceptance by the A/E. The Submittal Schedule shall be prepared in sufficient detail and in consideration of, but not limited to, the following:

1. Preparation and submission of shop drawings, layout drawings, product data, material samples, and mock-ups.

1.06 SHORT INTERVAL SCHEDULE

A. Short Interval Schedule: Prepare and update weekly a four (4) week Short Interval Schedule. Show previous week of actual progress (planned vs. actual performance). Forecast three (3) weeks of start and completion dates for each activity, task, or event in comparison to the Contractor's Construction Progress Schedule.

1. Activities in the Short Interval Schedule shall relate directly to activities in the Progress Schedule.

B. Format for the Short Interval Schedule shall be similar to the Owner's form. The Contractor my submit an alternative format that must first be approved by the Owner. The format shall include comment annotation as necessary.

C. Copies of the Short Interval Schedule shall be provided to the Construction Progress Meetings and will be used as the basis for discussion of progress and planned work at the meetings.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Requirements:
   1. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
   2. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action.

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.3 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Architect's Digital Data Files: Electronic copies of digital data files of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.

   1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.

      a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
      b. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Architect.
      c. Electronic copies of digital data files and drawings shall be issued in PDF form only. DWG files will not be issued by Architect or sub-consultants.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

    a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow seven days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow seven days for review of each resubmittal.

D. Paper Submittals: Place a permanent label or title block on each submittal item for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 8 inches (150 by 200 mm) on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
3. Include the following information for processing and recording action taken:

    a. Project name.
    b. Date.
    c. Name of Architect.
    d. Name of Contractor.
    e. Name of subcontractor.
    f. Name of supplier.
    g. Name of manufacturer.
    h. Submittal number or other unique identifier, including revision identifier.

        1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

    i. Number and title of appropriate Specification Section.
    j. Drawing number and detail references, as appropriate.
    k. Location(s) where product is to be installed, as appropriate.
    l. Other necessary identification.

4. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

    a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.

5. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will discard submittals received from sources other than Contractor.

    a. Transmittal Form for Paper Submittals: Provide locations on form for the following information:

        1) Project name.
        2) Date.
        3) Destination (To:).
        4) Source (From:).
        5) Name and address of Architect.
        6) Name of Construction Manager.
        7) Name of Contractor.
        8) Name of firm or entity that prepared submittal.
        9) Names of subcontractor, manufacturer, and supplier.
        10) Category and type of submittal.
        11) Submittal purpose and description.
        12) Specification Section number and title.
        13) Specification paragraph number or drawing designation and generic name for each of multiple items.
        14) Drawing number and detail references, as appropriate.
        15) Indication of full or partial submittal.
        16) Transmittal number.
        17) Submittal and transmittal distribution record.
        18) Remarks.
        19) Signature of transmitter.

E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.

    a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., CPE-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., CPE-061000.01.A).

3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner**,** containing the following information:

    a. Project name.
    b. Date.
    c. Name and address of Architect.
    d. Name of Construction Manager.
    e. Name of Contractor.
    f. Name of firm or entity that prepared submittal.
    g. Names of subcontractor, manufacturer, and supplier.
    h. Category and type of submittal.
    i. Submittal purpose and description.

j. Specification Section number and title.
k. Specification paragraph number or drawing designation and generic name for each of multiple items.
l. Drawing number and detail references, as appropriate.
m. Location(s) where product is to be installed, as appropriate.
n. Related physical samples submitted directly.
o. Indication of full or partial submittal.
p. Transmittal number.
q. Submittal and transmittal distribution record.
r. Other necessary identification.
s. Remarks.

F. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

G. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

H. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements:

1. Post electronic submittals as PDF electronic files directly to Project Web site specifically established for Project.

   a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

2. Action Submittals: Submit three paper copies of each submittal unless otherwise indicated. Architect will return two copies.
3. Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated. Architect will not return copies.
4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

   a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
   b. Provide a notarized statement on original paper copy certificates and certifications where indicated.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams showing factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before or concurrent with Samples.
6. Submit Product Data in the following format:

    a. PDF electronic file.
    b. Three paper copies of Product Data unless otherwise indicated. Architect will return two copies.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Identification of products.
    b. Schedules.
    c. Compliance with specified standards.
    d. Notation of coordination requirements.
    e. Notation of dimensions established by field measurement.
    f. Relationship and attachment to adjoining construction clearly indicated.
    g. Seal and signature of professional engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 24 by 36 inches.
3. Submit Shop Drawings in the following format:

    a. PDF electronic file.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

    a. Generic description of Sample.
    b. Product name and name of manufacturer.
    c. Sample source.
    d. Number and title of applicable Specification Section.

3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.

4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

    a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

    a. Number of Samples: Submit two full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return one set with submittal with options selected.

6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

    a. Number of Samples: Submit two sets of Samples. Architect will retain one sample set; remainder will be returned.

        1) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Submit product schedule in the following format:

    a. PDF electronic file.

F. Coordination Drawings Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."

G. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."

H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures.

I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."

J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."

K. Maintenance Data: Comply with requirements specified in Section 017823 "Operation and Maintenance Data."

L. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

M. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

N. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

O. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

P. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

Q. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

R. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

S. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

T. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.

U. Schedule of Tests and Inspections: Comply with requirements specified in Section 014000 "Quality Requirements."

V. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

W. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

X. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

Y. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION

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SECTION 01-35-15 ENVIRONMENTAL DESIGN REQUIREMENTS

PART 1 GENERAL

1.1 DESIGN REQUIREMENTS

A. All major renovations and new construction projects will strive to meet energy efficiency performance targets as defined by the University on a project by project basis. Care should be taken to implement industry best practice regardless of a LEED certification goal.

B. The costs and benefits of LEED certification and/or pursuit of a higher level should be evaluated with the Project Steering Committee.

END OF SECTION

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SECTION 01-45-00 CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

1.01 RELATED SECTIONS

A. Shop Drawings, Product Data and Samples: Section 01330

B. Testing Laboratory Services: Section 01453

C. Contract Closeout: Section 01700

1.02 EXTENT OF WORK

A. Contractor shall implement and maintain aggressive Quality Control Program conforming to the following requirements:

1. Monitor quality of all Work, including that of Subcontractors and Service Providers, to ensure that Work complies with Contract Documents.
2. Include compliance with currently approved Progress Schedule.
3. Include continuing inspections of Work.

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

1. Prior to submission to Architect, and in compliance with requirements specified in Section 01330, review and approve Shop Drawings, Product Data, and Samples for compliance with Contract Documents.
2. Prior to starting Work, review appropriate Contract Drawings & Specifications, Shop Drawings, Product Data, Samples, and Contract Modifications, as well as affected Existing Conditions.
3. Work closely and cooperate with Architect, Owner and Jurisdiction Having Authority. Attend required Meetings, and execute decisions reached by the owner.
4. Assign and maintain at Jobsite, Supervisory Personnel acceptable to Owner, who have authority to act in Contractor's behalf at all times Work is being performed, including any Overtime Periods.
5. Schedule and coordinate inspections and tests with Regulatory Agency Inspectors and with Testing Agency Personnel.
6. Submit to Architect and Owner signed Reports of Inspections and Tests made by Building Officials, Special Inspectors, and any others performing inspections or tests.
7. Schedule and coordinate required Pre-Installation Conferences.
8. Assure that Record Documents, including those prepared by Subcontractors, are accurately maintained and up to date.
9. Schedule and coordinate specified System and Equipment demonstrations and training sessions for Owner's Personnel.
10. Make final inspections with Subcontractors of all Work to determine that Work is in compliance with Contract Documents. Prior to calling for Architect's Substantial Completion and Final Inspections, verify that Work deficiencies discovered during Contractor's inspections have been satisfactorily corrected.
11. Accompany Architect during Architect's inspections.
12. Coordinate final closeout procedures, including those of Subcontractors, to assure compliance with procedures specified in Section 01770.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

SECTION 01-45-30 TESTING LABORATORY SERVICES

PART 1 GENERAL

1.01 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

A. Inspections and testing required by laws, ordinances, rules, regulations, and orders of Public Authorities; See General Conditions and Chapter 17 of the Oregon Structural Specialty Code. The Owner will select and contract with the Inspection and Testing company.

B. Product Certification; See respective Specification Sections.

C. Equipment testing, adjusting, and balancing; See respective Specification Sections.

1.02 COSTS

A. Paid by Owner:

1. For Testing Laboratory services specified in this Section.

2. For Code-required Special Inspections of Masonry, Welding, and Concrete.

B. Paid by Contractor:

1. For re-inspections and re-testing required because of defective Work or ill-timed notices.

1.03 LABORATORY'S DUTIES

A. Provide qualified Personnel for specified inspections, sampling, and testing.
B. Ascertain and certify compliance with Contract Documents.

B. When requested by Architect, provide interpretation of Test results

C. Promptly submit written Inspection & Test Reports to:

1. Owner

2. Building Official

3. Contractor

4. Architect

D. Additionally, submit copies of the following Reports to:

1. Tested Earthwork: Geotechnical Engineer and Owner.

2. Tested Asphaltic Concrete: Architect and Owner.

3. Tested Structural Work: Architect and Owner.

E. Include the following in Test Reports:

1. Date issued.

2. Project title and location.

3. Testing Laboratory name and address.

4. Inspector's name.

5. Date of inspection or sampling.

6. Record of temperature and weather.

7. Date of test.

8. Identification of Product tested.
9. Test location in Project.
10. Type of inspection or test.
11. Observations regarding compliance with Contract Documents.

F. Laboratory is not authorized to:

1. Release, revoke, alter, or enlarge on Contract Documents requirements.
2. Approve or accept any portion of Work.
3. Assume any duties of Contractor.
4. Stop Work.

1.04 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with Laboratory Personnel; provide access to Work and to Manufacturer's operations.

B. Provide to Laboratory representative samples of materials to be tested, in required quantities.

C. Furnish casual labor and facilities:

1. For access to Work to be tested.
2. To obtain and handle Test Samples at Site.
3. To facilitate inspections and tests.
4. For Laboratory's exclusive use for storage and curing of Test Samples until removed to Laboratory.

D. Notify Laboratory at least 24 hours in advance of operations to allow for Personnel assignments and Test scheduling.

E. Repair any Test Holes to match original conditions.

1.05 LIABILITY

A. Laboratory service is provided for Owner's self-assurance and does not relieve Contractor's responsibility to comply with Contract Documents.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

SECTION 01-50-00 TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary utilities

B. Temporary telecommunications services

C. Temporary sanitary facilities.

D. Temporary Controls: Barriers, Exterior Enclosures

E. Security requirements.

F. Waste removal facilities and services

G. Project Identification sign.

H. Field offices

1.02 TEMPORARY UTILITIES

A. EOU will provide temporary utilities. The contractor is responsible for making connections to these facilities after obtaining approval from EOU:

1. Electrical power, consisting of connection to existing facilities.

2. Water supply, consisting of connection to existing facilities.

B. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.03 TEMPORARY TELECOMMUNICATIONS SERVICES

A. The Contractor is responsible for providing a wireless and/or wired connection to the field office at time of project mobilization.

1.04 TEMPORARY SANITARY FACILITIES

A. In unoccupied renovations or unoccupied zones of a building renovation, use of facility is permitted during construction when fully operational. Otherwise, provide and maintain required facilities and enclosures.

B. Maintain daily in clean and sanitary condition.

1.05 TEMPORARY CONTROLS

A. Barriers

1. 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.

2. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.

3. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

B. Fencing

1. Provide and maintain 6 foot minimum height chain link fencing around any portion of the construction site where conditions potentially dangerous to students, staff, or visitors may

exist. Equip with vehicular and pedestrian gates with locks. Submit to Owner two keys for each gate lock.

C. Exterior Enclosures

1. Provide temporary weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons.

D. Interior Enclosures When Working In An Occupied Building

1. Provide temporary partitions and ceilings as indicated to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.
2. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces.

1.06 SECURITY

A. Provide security and facilities to protect Work, existing facilities, and Eastern Oregon University's operations from unauthorized entry, vandalism, or theft. The Contractor is responsible for ensuring the work site, equipment and materials are safe and secure.

1.07 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. Coordinate access and haul routes with governing authorities and Owner.

C. Provide and maintain access to fire hydrants, free of obstructions.

D. Designated existing on-site roads may be used for construction traffic.

E. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

1.08 WASTE REMOVAL

A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

B. Recycle materials as required.

C. Provide containers with lids. Schedule trash to be removed the site periodically.

D. 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.

E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.09 BULLETIN BOARD

A. Provide 1 weatherproof 4x4 ft. Bulletin Board where regularly visible to Workers.

B. Display employee benefits such as Health & Welfare Plan, Pension Plan, etc., if any; Equal Opportunity Employment Requirements; Emergency Telephone Numbers; and other important data in addition to those items required by the Bureau of Labor and Industry, OSHA, and any other state, federal or local requirements.

1.010 PROJECT IDENTIFICATION

A. Owner, at their discretion, may require contractor to install a project identification/information sign. Format and content of the sign will be directed by the Owner and/or Architect. Owner will pay for costs of sign.

B. No other signs are allowed without Owner permission, except those required by law.

1.011 FIELD OFFICES

A. Office: If designated office space is not predetermined and provided by the Owner, the Contractor is responsible for providing an office for their employees. The office location must be approved by EOU prior to placement.

B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.

C. At Contractor's option, and pending Owner approval, portable buildings or mobile homes suitable for Office use may be used.

1.012 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 indicated.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore existing facilities used during construction to original condition.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01-60-00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Section 01 25 00 "Substitution Procedures" for requests for substitutions.

1.2 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.3 ACTION SUBMITTALS

A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Form of Approval: As specified in Section 01 33 00 "Submittal Procedures."
b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 01 33 00 "Submittal Procedures." Show compliance with requirements.

1.4 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.

1.6 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
3. Refer to other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 01 77 00 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
3. Products:

    a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.

b. Non-restricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

4. Manufacturers:

a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
b. Non-restricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.

5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 01 25 00 "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.

4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION

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SECTION 01-61-16 VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements for Indoor-Emissions-Restricted products.

B. Requirements for VOC-Content-Restricted products.

C. Requirement for installer certification that they did not use any non-compliant products.

1.02 RELATED REQUIREMENTS

A. Section 01-30-00 - Administrative Requirements: Submittal procedures.

1.03 DEFINITIONS

A. Indoor-Emissions-Restricted Products: All products in the following product categories, whether specified or not:
   1. Interior paints and coatings applied on site.
   2. Interior adhesives and sealants applied on site, including flooring adhesives.
   3. Flooring.
   4. Composite wood.
   5. Products making up wall and ceiling assemblies.
   6. Thermal and acoustical insulation.
   7. Other products when specifically stated in the specifications.

B. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
   1. Interior paints and coatings applied on site.
   2. Interior adhesives and sealants applied on site, including flooring adhesives.
   3. Wet-applied roofing and waterproofing.
   4. Other products when specifically stated in the specifications.

C. Interior of Building: Anywhere inside the exterior weather barrier.

D. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.

E. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.

F. Inherently Non-Emitting Materials: Products composed wholly of minerals or metals, unless they include organic-based surface coatings, binders, or sealants; and specifically the following:
   1. Concrete.
   2. Clay brick.
   3. Metals that are plated, anodized, or powder-coated.
   4. Glass.
   5. Ceramics.
   6. Solid wood flooring that is unfinished and untreated.

1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.

B. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings; 2005 (Reapproved 2018).

C. CAL (CDPH SM) - Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers Version 1.2; 2017.

D. CARB (ATCM) - Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products; Current Edition.

E. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board; 2020.

F. CHPS (HPPD) - High Performance Products Database; Current Edition.

G. CRI (GLP) - Green Label Plus Testing Program - Certified Products; Current Edition.

H. GreenSeal GS-36 - Standard for Adhesives for Commercial Use; 2013.

I. SCAQMD 1113 - Architectural Coatings; 1977, with Amendment (2016).

J. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

K. SCS (CPD) - SCS Certified Products; Current Edition.

L. UL (GGG) - GREENGUARD Gold Certified Products; Current Edition.

1.05 SUBMITTALS

A. See Section 01-30-00 - Administrative Requirements for submittal procedures.

B. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.

C. Installer Certifications Regarding Prohibited Content: Require each installer of any type of product (not just the products for which VOC restrictions are specified) to certify that either 1) no adhesives, joint sealants, paints, coatings, or composite wood or agrifiber products have been used in the installation of installer's products, or 2) that such products used comply with these requirements.

1.06 QUALITY ASSURANCE

A. Indoor Emissions Standard and Test Method: CAL (CDPH SM), using Standard Private Office exposure scenario and the allowable concentrations specified in the method, and range of total VOC's after 14 days.
   1. Wet-Applied Products: State amount applied in mass per surface area.
   2. Paints and Coatings: Test tinted products, not just tinting bases.
   3. Evidence of Compliance: Acceptable types of evidence are the following;
      a. Current UL (GGG) certification.
      b. Current SCS (CPD) Floorscore certification.
      c. Current SCS (CPD) Indoor Advantage Gold certification.
      d. Current listing in CHPS (HPPD) as a low-emitting product.
      e. Current CRI (GLP) certification.
      f. Test report showing compliance and stating exposure scenario used.
   4. Product data submittal showing VOC content is NOT acceptable evidence.
   5. Manufacturer's certification without test report by independent agency is NOT acceptable evidence.

B. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
   1. Evidence of Compliance: Acceptable types of evidence are:
      a. Report of laboratory testing performed in accordance with requirements.
      b. Published product data showing compliance with requirements.
      c. Certification by manufacturer that product complies with requirements.

C. Composite Wood Emissions Standard: CARB (ATCM) for ultra-low emitting formaldehyde (ULEF) resins.
   1. Evidence of Compliance: Acceptable types of evidence are:
      a. Current SCS "No Added Formaldehyde (NAF)" certification; www.scscertified.com.
      b. Report of laboratory testing performed in accordance with requirements.
      c. Published product data showing compliance with requirements.
      d. Certification by manufacturer that product complies with requirements.

D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 PRODUCTS

2.01 MATERIALS

A. All Products: Comply with the most stringent of federal, State, and local requirements, or these specifications.

B. Indoor-Emissions-Restricted Products: Comply with Indoor Emissions Standard and Test Method, except for:
   1. Composite Wood, Wood Fiber, and Wood Chip Products: Comply with Composite Wood Emissions Standard or contain no added formaldehyde resins.
   2. Inherently Non-Emitting Materials.

C. VOC-Content-Restricted Products: VOC content not greater than required by the following:
   1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.
   2. Aerosol Adhesives: GreenSeal GS-36.
   3. Joint Sealants: SCAQMD 1168 Rule.
   4. Paints and Coatings: Each color; most stringent of the following:
      a. 40 CFR 59, Subpart D.
      b. SCAQMD 1113 Rule.
      c. CARB (SCM).
   5. Wet-Applied Roofing and Waterproofing: Comply with requirements for paints and coatings.

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.

B. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

END OF SECTION

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SECTION 01-63-00 PRODUCT SUBSTITUTIONS

PART 1 GENERAL

1.01 GENERAL

A. Wherever a Material, Article, or piece of Equipment is identified on the Drawings or in the Specifications by reference to manufacturers', trade names, catalog numbers, or similar designation, such reference is intended to establish a standard of quality, performance, or design intent.

B. As a public entity, the Owner shall allow consideration of approved equal products. Products of other manufacturers may be considered acceptable provided they are demonstrated to be equal or superior in quality, function, durability, serviceability, and compatibility with the design intent, as determined by the Owner.

C. Approval of substitutions is not automatic. Approval shall be granted only by written determination of the Owner, with technical evaluation by the Engineer.

D. Engineering review is limited to evaluation of technical equivalency. Approval does not relieve the Bidder or Contractor of responsibility for compliance with the Contract Documents, nor does it constitute approval of means, methods, constructability, cost, or schedule impacts.

1.02 SUBSTITUTIONS DURING BIDDING PERIOD

A. This Section supplements, and does not modify, the requirements of Section 1.7 of the Instruction to Bidders.

B. Product substitution requests during the bid period shall be submitted by a Bidder. Requests submitted solely by the manufacturers, suppliers, or representatives will not be considered.

C. Manufacturers or suppliers may provide technical information; however, the Bidder shall be the sole submitting party and shall be responsible for the completeness, accuracy, applicability, pricing, schedule impacts, and coordination of the proposed substitution.

D. Unless otherwise exempt under ORS 279C.345, if a Bidder proposes to use Materials, Equipment, products, or methods other than those specified, the Bidder shall submit a written substantiation request to the Engineer by the ‘‘Request for Clarifications or Change or Protest Bid Documents’’ date and time specified in the Invitation to Bid. Substitution requests received after this deadline will not be considered.

E. Substitution requests shall be submitted by email to the Engineer, with a copy to the Owner. No specific substitution request form is required. Use of proprietary or third-party substitution request forms, including CSI substitution forms, is not required. If such forms are used for convenience, signature lines shall not be construed as authorization or approval. Each substitution request shall include, at a minimum:
   1. Identification of the specified product, including Specification section, page, and paragraph.
   2. Identification of the proposed substitute, including complete product description.
   3. Detailed comparison demonstrating functional, performance, and qualitative equivalency or superiority.
   4. Identification of all differences from the specified product.
   5. Identification of any changes required to the Work, including related systems or coordination.
   6. Statement of impacts, if any, to cost, schedule, space requirements, or design.
   7. Manufacturer’s technical data, test reports, and certifications, clearly marked to show

compliance.

F. The Engineer shall review the substitution request for technical equivalency only and provide a recommendation to the Owner.

G. If a substitution is approved, such approval and any resulting modifications to the Contract Documents shall be issued by written Addendum prior to the Bid Opening. No substitution shall be considered approved unless acknowledged by Addendum.

H. If no Addendum is issued, Bidders shall bid the products specified in Contract Documents.

1.03 SUBSTITUTIONS AFTER CONTRACT AWARD

A. After Contract Award, substitution requests shall be submitted only by the Contractor and shall be evaluated in accordance with the Contract Documents and Change provisions.

B. Approval of post-award substitution may be considered when, in the Owner's determination:
   1. The specified product is unavailable within the Contract Time.
   2. The specified product has been discontinued.
   3. The specified product has been replaced by a demonstrably superior product.
   4. The specified product does not comply with applicable codes.
   5. The substitution is otherwise determined to be in the Owner's best interest.

C. Approved substitutions after award shall be authorized by Change Order or Construction Change Directive, as applicable. No adjustment to Contract Sum or Contract Time shall be implied unless expressly stated.

1.04 CONTRACT COMPLIANCE

A. Approval of a substitution does not relieve Contractor from responsibility for proper execution of the Work and for compliance with other Contract requirements.

B. All costs, redesign, re-coordination, delays, or impacts resulting from an approved substitution shall remain the responsibility of the Contractor unless expressly stated otherwise in writing.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

SECTION 01-70-00 CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 CONTRACT CONDITIONS

A. Comply with Contract Condition requirements and specified Administrative Procedures in closing out Work.

1.02 SUBSTANTIAL COMPLETION INSPECTION

A. When Contractor considers Work substantially complete, as defined in General Conditions, he shall submit to the Owner and Architect:

1. Written notice that Work, or designated portion thereof, is substantially complete.
2. List of Items to be completed or corrected.

B. Architect will, as soon as possible thereafter, make inspection to determine completion status.

C. Should Architect determine that Work is not substantially complete:

1. Architect will promptly notify Contractor in writing, giving reasons therefore.
2. Contractor shall remedy Work deficiencies, and send second notice of substantial completion to Architect.
3. Architect will re-inspect Work.

D. When the Owner and Architect concur, that Work is substantially complete, he will:

E. Prepare Certificate of Substantial Completion, accompanied with Contractor's list of items to be completed or corrected, as verified and amended by Owner and/or Architect.

F. The Owner, Architect and Contractor will sign the Certificate accepting of the responsibilities assigned to them in the Certificate.

1.03 FINAL INSPECTION

A. When Contractor considers Work complete, he shall submit written certification that:

1. Contract Documents have been reviewed.
2. Contractor has inspected Work for compliance with Contract Documents.
3. Work has been completed in accordance with Contract Documents.

B. Equipment and Systems have been tested in presence of Owner's Representative and are operational.

1. Work is complete and ready for final inspection.
2. The Owner and Architect will inspect Work to verify completion status as soon as possible after receipt of Contractor's Certification.
3. Should the Owner or Architect consider Work incomplete or defective:

C. Architect will promptly notify Contractor in writing, listing incomplete or defective Work.

D. Contractor shall immediately remedy deficiencies, and send second written certification to Architect that Work is complete.

E. Owner and Architect will re-inspect Work.

F. When Architect finds Work acceptable under Contract Documents, he will request Contractor to make closeout submittals.

1.04 REINSPECTION FEES

A. Architect will make 1 Substantial Completion Inspection to determine any Work Deficiencies and 1 Final Completion Inspection to ascertain that Deficiencies have been satisfactorily corrected.

B. Should Architect be required to make more than 2 Inspections due to Contractor's failure to correct specified Deficiencies:

1. Owner will compensate Architect for such additional services.

2. Owner will deduct Architect's compensation amount from Contractor's final payment as follows:

a. Architect's time at current Billing Rates.

b. Architect's Employees' time at current Billing Rates.

c. Others at 1.10 times direct cost incurred.

d. Charges will be made for necessary travel time, inspection time, inspection report writing time, auto expense computed using the EOU Contractor Travel Reimbursement Policy rates.

1.05 EVIDENCE OF PAYMENTS & RELEASE OF LIENS

A. Contractor shall submit the following:

1. Contractor's Affidavit of Payment of Debts and Claims, AIA Doc. G706.

2. Contractor's Affidavit of Release of Liens, AIA Doc. G706A including the following:

a. Consent of Contractor's Surety to Final Payment, AIA Doc. G707.

b. Contractor's Release or Waiver of Liens.

c. Separate releases or waivers of lien for Subcontractors, Suppliers, and others with lien rights against Owner's Property, together with list of those parties.

B. Contractor shall duly sign and execute all Submittals, before delivery to Owner.

1.06 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ARCHITECT

A. Certificate of Insurance for Products & Completed Operations: AIA Document A 201.

B. Project Record Documents: See Section 01 7800

C. Owner's Operating & Maintenance Manual: See Section 01 7800

1.07 SPARE PARTS & MAINTENANCE MATERIALS SUBMITTAL TO OWNER

A. Specific Requirements: See Specification Sections.

B. Products: Identical to those included in Project Work.

C. Storage Location: On Project premises where directed by Owner.

D. Required Submittals:

1. As required by Specifications

1.08 DEMONSTRATIONS

A. Instruct Owner in operation of all Systems and Equipment in accordance with Section 01730.

1.09 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit final statement of accounting to Architect, including the following:
    1. Original Contract Sum
    2. Additions and deductions resulting from:
        a. Previous Change Orders
        b. Other adjustments
        c. Deductions for uncompleted Work
        d. Deductions for Re-inspection Payments
    3. Total Contract Sum, as adjusted.
    4. Previous payments.
    5. Sum remaining due.
B. Owner will prepare and issue final Change Order, reflecting approved adjustments to Contract Sum not previously made by Change Orders.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01-74-19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

A. Eastern Oregon University requires that projects generate the least amount of trash and waste possible.

B. Contractor shall employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.

C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.

D. Required Recycling, Salvage, and Reuse: Recycle materials as possible. The local waste collector and landfill has a list of materials it will accept that can be found on their website: https://waste-pro.com/recycling/

E. Methods of trash/waste disposal that are not acceptable are:

1. Burning on the project site.
2. Burying on the project site.
3. Dumping or burying on other property, public or private.
4. Other illegal dumping or burying.
5. Incineration, either on- or off-site.

F. Regulatory Requirements: The General Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state, and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PLAN IMPLEMENTATION

A. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.

1. Provide containers as required.
2. Provide adequate space for pick-up and delivery and convenience to subcontractors.
3. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.

B. Hazardous Wastes are to be handled and disposed of in accordance with all applicable regulations.

C. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.

D. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.

E. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION

SECTION 01-78-00 CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project Record Documents.

B. Operation and Maintenance Data.

C. Warranties and Bonds.

1.02 RELATED REQUIREMENTS

A. Section 00 7200 - General Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.

B. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

C. Individual Product Sections: Specific requirements for operation and maintenance data.

D. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

A. Project Record Documents: Submit documents to Owner with claim for final Application for Payment.

B. Operation and Maintenance Data:

1. Submit a preliminary draft or proposed formats and outlines of contents before start of Work. Owner and Architect will review draft and return one copy with comments.

2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.

3. Submit electronic and if requested hard copies (one to Owner and one to Architect) of completed documents 15 days prior to final inspection. These copies will be reviewed and returned after final inspection, with Architect and Owner comments. Revise content of all document sets as required prior to final submission.

4. Submit one hard copy set and one digital set of revised final documents in final form within 10 days after final inspection.

C. Warranties and Bonds:

1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.

2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.

3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Reviewed shop drawings, product data, and samples.
6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:

1. Manufacturer's name and product model and number.
2. Product substitutions or alternates utilized.
3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:

1. Measured depths of foundations in relation to finish first floor datum.
2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
4. Field changes of dimension and detail.
5. Details not on original Contract drawings.

G. Record Drawings will be reviewed each month prior to payment.

H. At completion of project, provide Record Drawings to Design Team for drafting.

3.02 OPERATION AND MAINTENANCE DATA

A. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and

systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:

1. Product data, with catalog number, size, composition, and color and texture designations.

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:

1. Description of unit or system, and component parts.
2. Identify function, normal operating characteristics, and limiting conditions.
3. Include performance curves, with engineering data and tests.
4. Complete nomenclature and model number of replaceable parts.

B. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

C. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

D. Provide servicing and lubrication schedule, and list of lubricants required.

E. Include manufacturer's printed operation and maintenance instructions.

F. Include sequence of operation by controls manufacturer.

G. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

H. Additional Requirements: As specified in individual product specification sections.

3.05 OPERATION AND MAINTENANCE MANUALS

A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

B. Prepare data in the form of an instructional manual.

C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

E. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.

F. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.

G. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

H. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.

I. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:

1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.

2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:

   a. Significant design criteria.

   b. List of equipment.

   c. Parts list for each component.

   d. Operating instructions.

   e. Maintenance instructions for equipment and systems.

   f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.

3. Part 3: Project documents and certificates, including the following:

   a. Shop drawings and product data.

   b. Air and water balance reports.

   c. Certificates.

   d. Photocopies of warranties and bonds.

   e. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

   f. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Architect, Consultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

3.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

3.07 ELECTRONIC COPIES

A. Provide all closeout submittals, including Record Drawings, Record Specifications, Operation and Maintenance Manuals, RFI's, Submittals, Demonstration Videos, and Warranty information, organized on a single Flash Card, labeled for this project.

END OF SECTION

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SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory.
2. Emergency manuals.
3. Operation manuals for systems, subsystems, and equipment.
4. Product maintenance manuals.
5. Systems and equipment maintenance manuals.

1.2 CLOSEOUT SUBMITTALS

A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. Architect will comment on whether content of operations and maintenance submittals are acceptable.
2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operations and maintenance manuals in the following format:

1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.

    a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
    b. Enable inserted reviewer comments on draft submittals.

2. Three paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves. Architect will return two copies.

C. Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.

1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information.

B. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

C. Title Page: Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name and contact information for Contractor.
6. Name and contact information for Construction Manager.
7. Name and contact information for Architect.
8. Name and contact information for Commissioning Authority.
9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
10. Cross-reference to related systems in other operation and maintenance manuals.

D. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

E. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

F. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

G. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.

1. Binders: Heavy-duty, three-ring, vinyl-covered, binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

    a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

    a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions and procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Flood.
3. Gas and/or water leak.
4. Power failure.
5. Water outage.
6. System, subsystem, or equipment failure.
7. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

2.3 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
2. Performance and design criteria if Contractor is delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.4 PRODUCT MAINTENANCE MANUALS

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.

4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

F. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION

SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.

B. Related Requirements:

1. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.2 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit one set(s) of marked-up record prints.
2. Number of Copies: Submit copies of record Drawings as follows:

a. Initial Submittal:

1) Submit record digital data files and one set(s) of plots.
2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal:

1) Submit PDF electronic files of scanned record prints and three set(s) of prints.
2) Print each drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit one paper copy of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit one paper copy of each submittal.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised Drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

    a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    b. Record data as soon as possible after obtaining it.
    c. Record and check the markup before enclosing concealed installations.

2. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:

1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to Architect for resolution.
4. Architect will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.

C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Architect.
    e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. Note related Change Orders and record Drawings where applicable.

B. Format: Submit record Specifications as annotated PDF electronic file.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as annotated PDF electronic file.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as PDF electronic file.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

END OF SECTION

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SECTION 01-79-00 DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.01 SUMMARY

A. Demonstration of products and systems to be commissioned and where indicated in specific specification sections.

B. Training of Owner personnel in operation and maintenance is required for:

1. All software-operated systems.
2. HVAC systems and equipment.
3. Plumbing equipment.
4. Electrical systems and equipment.
5. Landscape irrigation equipment.
6. Snow melt equipment.
7. Fire alarm equipment.
9. Access Control and Security equipment.
10. Audio Visual equipment.
11. Elevators and conveying equipment.
12. Items specified in individual product Sections.

C. Training of Owner personnel in care, cleaning, maintenance, and repair is required for:

1. Roofing, waterproofing, and other weather-exposed or moisture protection products.
2. Finishes, including flooring, wall finishes, ceiling finishes.
3. Fixtures and fittings.
4. Landscape systems such as plantings and irrigation fixtures and fittings.
5. Items specified in individual product Sections.

1.02 RELATED REQUIREMENTS

A. Section 01 7800 - Closeout Submittals: Operation and maintenance manuals.

B. Section 01 9113 - General Commissioning Requirements: Additional requirements applicable to demonstration and training.

C. Other Specification Sections: Additional requirements for demonstration and training.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures; except:

1. Make all submittals specified in this section, and elsewhere where indicated for commissioning purposes, directly to the Commissioning Authority.
2. Submit one copy to the Commissioning Authority, not to be returned.
3. Make commissioning submittals on time schedule specified by Commissioning Authority.
4. Submittals indicated as "Draft" are intended for the use of the Commissioning Authority in

preparation of overall Training Plan; submit in editable electronic format, Microsoft Word 2003 preferred.

B. Draft Training Plans: Owner will designate personnel to be trained; tailor training to needs and skill-level of attendees.

1. Submit to Commissioning Authority for review and inclusion in overall training plan.
2. Submit not less than four weeks prior to start of training.
3. Revise and resubmit until acceptable.
4. Provide an overall schedule showing all training sessions.
5. Include at least the following for each training session:
    a. Identification, date, time, and duration.
    b. Description of products and/or systems to be covered.
    c. Name of firm and person conducting training; include qualifications.
    d. Intended audience, such as job description.
    e. Objectives of training and suggested methods of ensuring adequate training.
    f. Methods to be used, such as classroom lecture, live demonstrations, hands-on, etc.
    g. Media to be used, such a slides, hand-outs, etc.
    h. Training equipment required, such as projector, projection screen, etc., to be provided by Contractor.

C. Training Manuals: Provide training manual for each attendee; allow for minimum of two attendees per training session.

1. Include applicable portion of O&M manuals.
2. Include copies of all hand-outs, slides, overheads, video presentations, etc., that are not included in O&M manuals.
3. Provide one extra copy of each training manual to be included with operation and maintenance data.

D. Training Reports:

1. Identification of each training session, date, time, and duration.
2. Sign-in sheet showing names and job titles of attendees.
3. List of attendee questions and written answers given, including copies of and references to supporting documentation required for clarification; include answers to questions that could not be answered in original training session.
4. Include Commissioning Authority's formal acceptance of training session.

E. Video Recordings: Submit digital video recording of each demonstration and training session for Owner's subsequent use.

1. Format: DVD Disc.
2. Label each disc and container with session identification and date.

1.04 QUALITY ASSURANCE

A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.

1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.

2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DEMONSTRATION - GENERAL

A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.

B. Demonstrations conducted during Functional Testing need not be repeated unless Owner personnel training is specified.

C. Demonstration may be combined with Owner personnel training if applicable.

D. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.

1. Perform demonstrations not less than two weeks prior to Substantial Completion.

2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

E. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.

1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.02 TRAINING - GENERAL

A. Commissioning Authority will prepare the Training Plan based on draft plans submitted.

B. Conduct training on-site unless otherwise indicated.

C. Owner will provide classroom and seating at no cost to Contractor.

D. Do not start training until Functional Testing is complete, unless otherwise specified or approved by the Commissioning Authority.

F. The Commissioning Authority is responsible for determining that the training was satisfactorily completed and will provide approval forms.

G. Training schedule will be subject to availability of Owner's personnel to be trained. Provide a training schedule to the owner a minimum of two weeks before training. Adjust training dates as requested by the Owner. Once schedule has been approved by Owner failure to conduct sessions according to schedule will be cause for Owner to charge Contractor for personnel "show-up" time.

H. Review of Facility Policy on Operation and Maintenance Data: During training discuss:

1. The location of the O&M manuals and procedures for use and preservation; backup copies.
2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
3. Typical uses of the O&M manuals.

I. Product- and System-Specific Training:

1. Review the applicable O&M manuals.
2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.
3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
4. Provide hands-on training on all operational modes possible and preventive maintenance.
5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
6. Discuss common troubleshooting problems and solutions.
7. Discuss any peculiarities of equipment installation or operation.
8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
9. Review recommended tools and spare parts inventory suggestions of manufacturers.
10. Review spare parts and tools required to be furnished by Contractor.
11. Review spare parts suppliers and sources and procurement procedures.

J. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide a complete written response within three days.

END OF SECTION

SECTION 03-30-00 CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Concrete formwork.

B. Floors and slabs on grade.

C. Concrete reinforcement.

D. Joint devices associated with concrete work.

E. Miscellaneous concrete elements, including site walls, stairs, footings and curbs, equipment pads, equipment pits, light pole bases, flagpole bases, thrust blocks, and manholes as noted on the Drawings and as specified herein.

F. Concrete curing.

1.02 RELATED SECTIONS & REQUIREMENTS

A. Section 03-35-11 - Concrete Floor Finishes: Densifiers, hardeners, applied coatings, and polishing.

B. Section 071900 Water Repellents

C. Section 07-92-00 - Joint Sealants: Products and installation for sealants and joint fillers for saw cut joints and isolation joints in slabs.

D. Section 321313 Concrete Paving

E. Section 321373 Site Joint Sealants

1.03 REFERENCE STANDARDS

A. American Concrete Institute (ACI)

B. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary; 2019 (Reapproved 2022).

C. ACI PRC-211.1 - Selecting Proportions for Normal-Density and High Density-Concrete - Guide; 2022.

D. ACI PRC-223 - Shrinkage-Compensating Concrete - Guide; 2021.

E. ACI PRC-302.1 - Guide to Concrete Floor and Slab Construction; 2015.

F. ACI PRC-304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).

G. ACI PRC-305 - Guide to Hot Weather Concreting; 2020.

H. ACI PRC-306 - Guide to Cold Weather Concreting; 2016.

I. ACI PRC-308 - Guide to External Curing of Concrete; 2016.

J. ACI PRC-347 - Guide to Formwork for Concrete; 2014 (Reapproved 2021).

K. ACI SPEC-117 - Specification for Tolerances for Concrete Construction and Materials; 2010 (Reapproved 2015).

L. ACI SPEC-301 - Specifications for Concrete Construction; 2020.

M. American Society for Testing and Materials (ASTM)

N. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.

O. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2023.

P. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.

Q. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2019, with Editorial Revision (2022).

R. ASTM C579 - Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes; 2023.

S. ASTM C618 - Standard Specification for Coal Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2023, with Editorial Revision.

T. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures; 2023.

U. ASTM C845/C845M - Standard Specification for Expansive Hydraulic Cement; 2018.

V. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2020.

W. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures; 2020.

X. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2022.

Y. ASTM D471 - Standard Test Method for Rubber Property--Effect of Liquids; 2016a (Reapproved 2021).

Z. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics; 2023.

AA. ASTM E1155/E1155M - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers; 2023.

BB. ASTM E1155M - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers (Metric); 2014.

CC. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2018a.

DD. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2017 (Reapproved 2023).

EE. COE CRD-C 572 - Handbook for Concrete and Cement Corps of Engineers Specifications for Polyvinylchloride Waterstop; 1974.

FF. Standard Specifications for Public Works Construction (Green Book), latest edition and amendments

GG. The most current revisions of each recommended standard, bulletin, or specification to apply to the work of this Section.

1.04 SUBMITTALS

A. See Section 01-30-00 - Administrative Requirements for submittal procedures and Section 01 63 00, or applicable Product Substitution section. Partial or incomplete submittals are considered not acceptable and will be returned without a review.

B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
   1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.
   2. For chemical-resistant waterstops, provide data on ASTM D471 test results.
   3. For membrane-forming, moisture emission-reducing, curing and sealing compound, provide manufacturer's installation instructions,.

C. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions. Mix

1. Indicate proposed mix design complies with requirements of ACI CODE-318-19 Section 26.4 and Chapter 5 - Concrete Quality, Mixing and Placing.
2. Product Data: For each of the following.
    a. Portland cement.
    b. Fly ash.
    c. Aggregates.
    d. Admixtures:
        1) Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, air entrainment, aggregates, temperature at time of concrete placement, relative humidity at time of concrete placement, curing conditions, and use of other admixtures.
    e. Reinforcement.
    f. Sub-slab membrane/vapor retarders.
    g. Liquid floor treatments.
    h. Curing materials.
    i. Joint fillers.
    j. Repair materials.
3. Desing Mixtures: For each concrete mixture, include the following:
    a. Indicate proposed mix design complies with admixture manufacturer's written recommendations.
    b. Mixture identification.
    c. Minimum 28-day compressive strength.
    d. Durability exposure class.
    e. Maximum w/cm.
    f. Calculated equilibrium unit weight.
    g. Slump limit.
    h. Air content.
    i. Nominal maximum aggregate size.
    j. Synthetic micro-fiber content.
    k. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted.
    l. Intended placement method.
    m. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

D. Statement of Mix Design: Submit Statement of Mix Design prepared by a certified batch plant. Statement of Mix Design to contain following information that has been certified by batch plant's or contractor's Engineer [Landscape Architect will not review these items, but will review certification.] Statement of Mix Design to include the following:

1. Name, address, and telephone number of batch plant.
2. Mix design number.
3. Date of mix design.
4. Integral color admixture used, type, manufacturer, and amount, if specified.
5. Gradations and proportions for cement, sand, aggregate, and water.
6. Proportions of other additives, if specified.
7. Material weights, specific gravity, and absolute volumes.
8. Basis of testing, ie. UBC 2605 D4 and Title 24 2604 D4.
9. 28-day PSI strength rating.
10. Signature of testing laboratory manager.

E. Accompanying mix design, submit materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.

F. Batch plant shall be able to show a minimum of ten (10) years experience in batching specialty architectural concrete. If required, plant shall furnish a list of similar sized jobs or special Mix Design / Materials List.

G. Test Reports: Submit report for each test or series of tests specified.

H. Test Reports: Submit termite-resistant sheet manufacturer's summary of independent laboratory and field testing for effectiveness in subterranean termite exclusion.

I. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.

J. Shop Drawings:
   1. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
   2. Location of construction joints is subject to approval of the Architect.

K. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

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

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI SPEC-301 and ACI CODE-318.
   1. Maintain one copy of each document on site.

B. Follow recommendations of ACI PRC-305 when concreting during hot weather.

C. Follow recommendations of ACI PRC-306 when concreting during cold weather.

1.06 MOCK-UPS

A. Construct and erect mock-up panel for architectural concrete surfaces indicated to receive special treatment or finish as result of formwork.
   1. Panel Size: Sufficient to illustrate full range of treatment.
   2. Locate where directed.

B. Mock-up may remain as part of the Work for architectural concrete surfaces only.

C. Prepare mock-up for each wall finish as indicated on the Drawings or, if not specified on Drawings, provide 4-feet in length.

D. Completed mock-ups shall include examples of all specified joints, edge treatments, joint caulking, and sealers. Obtain Landscape Architect's approval of mock-ups.

E. Maintain sample panel exposed to view for duration of concrete work. Accepted mock-ups may not be incorporated into the work. Remove mock-ups from site upon completion of Work and only when directed by Landscape Architect.

1.07 RESPONSIBILITY

A. The Contractor shall be responsible for protection of the work, and of the public and private property adjacent to the work and shall exercise due caution to avoid damage to such property. The work shall be protected and maintained throughout the contract period, including during suspension of work, and until final acceptance of the work. Contractor shall repair or replace damaged improvements including damage from acts of vandalism, theft, and graffiti removal. Repairs or replacements shall be at least equal to original condition of the existing improvement and shall match in finish and dimension.

B. Contractor shall check architectural, structural, mechanical, and electrical drawings for anchor bolt schedules and locations, anchors, inserts, conduits, sleeves and any other items which are

required to be cast in concrete, and make necessary provisions as required so that reinforcing steel will not interfere with the placement of such embedded items.

C. Prior to work of this section, verify that previously installed work is complete to the point where this installation may properly commence. Verify that work of this section may be installed in accordance with the design, pertinent codes, regulations, and portions of the referenced standards.

D. In the event of discrepancy, immediately notify the Landscape Architect.

E. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved.

1.08 DELIVERY, STORAGE AND HANDLING

A. Store materials in a dry and protected location. Protect reinforcing steel and dowels from rusting, deformation, staining, and moisture damage.

1.09 WARRANTY

A. See Section 01-78-00 - Closeout Submittals for additional warranty requirements.

B. Moisture Emission-Reducing Curing and Sealing Compound, Penetrating: Provide non-prorated warranty to cover cost of flooring delamination failures for 20 years.
   1. Include cost of repair or removal of failed flooring, remediation with a moisture vapor impermeable surface coating, and replacement of flooring with comparable flooring system.

PART 2 PRODUCTS

2.01 FORMWORK

A. Formwork Design and Construction: Comply with guidelines of ACI PRC-347 to provide formwork that will produce concrete complying with tolerances of ACI SPEC-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 Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
   2. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

2.02 REINFORCEMENT MATERIALS

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi). See S0.1 for additional requirements.

2.03 CONCRETE MATERIALS

A. General Requirements For Concrete
   1. Concrete shall be batched, mixed, and transported in accordance with ASTM C94 - "Specifications for Ready Mixed Concrete."
   2. Concrete shall be supplied from a single source, using a single cement supplier. Obtain all concrete materials from same source throughout job.
   3. Concrete Delivery Time: Use of concrete loads exceeding 90 minutes from time of batch plant must be approved in writing by Architect.
   4. Proportion and mix of cement, aggregate, admixture and water to attain required plasticity and strength in accordance with current edition of ACI Manual of Concrete Practice and PCA "Design and Control of Concrete Mixtures."
   5. Concrete mixtures to be designed by an approved commercial testing laboratory, using approved materials to obtain specified minimum compressive strength.
   6. Accelerators: Do not use corrosive accelerators such as calcium chloride.

7. Batch plant must provide certification of a single source supply for cement, sand, and aggregate for the entire project.

B. Cements
   1. All cement shall be manufactured and produced in the United States of America.
   2. Use same brand of cement from single source throughout entire project.
   3. Gray cement – shall be Portland cement, Type II, low alkali per ASTM C150.
   4. White cement – shall be White Portland cement, Type II, low alkali per ASTM C150.

C. Cement for Architectural Work:
   1. ASTM C150/C150M, Type I - Normal Portland type.
   2. Acquire cement for entire project from same source.

D. Blended, Expansive Hydraulic Cement: ASTM C845/C845M, Type S.
   1. Products:
      a. Euclid Chemical Company; EUCON MSA: www.euclidchemical.com/#sle.
      b. Substitutions: See Section 01-60-00 - Product Requirements.

E. Sands:
   1. Sand shall be conform to ASTM C33, C40, and C117, with 100% passing a 3/8 inch sieve.
   2. Sand shall be clean, hard, washed, and free of clay, silt, loam organic matter, and shall conform to the gradation specified below.
   3. Sand for white cement concrete shall be “White Ole” from a local source.
   4. Clean, hard, and durable, conforming to.
   5. Use same sand from single source throughout entire project

F. Coarse Aggregates
   1. Coarse aggregate shall be composed of clean, hard sound, durable, gravel, and/ or crushed rock, uniform in quality, free of shale, mica, schist, organic matter, oil, alkali or other deleterious substances.
   2. Concrete mix design aggregate range should be ½” – ¾” crushed granite rock. Pea-gravel only concrete mix designs are not allowed.
   3. Provide fine and coarse aggregate for each type finish from one clean and reliable source for entire Project.

G. Fly Ash: ASTM C618, Class C or F.
   1. Fly ash may be used in a concrete mix design when approved by the Architect.
   2. The combined amount of fly ash and Portland cement shall be based on its 28 day compressive strength, within the minimum cement mix design. Fly ash used shall be from the same source and of the same class throughout the project.
   3. Furnish a Certificate of Compliance from the supplier identifying the type of fly ash and stating that the fly ash complies with ASTM C 618, Type F.
   4. Fly ash shall not be used with Type III Portland cement.

H. Calcined Pozzolan: ASTM C618, Class N.

I. Silica Fume: ASTM C1240, proportioned in accordance with ACI PRC-211.1.

J. Water: ASTM C1602/C1602M;
   1. Shall be from a potable source, and not detrimental to concrete.
   2. Free from deleterious materials such as oils, acids, and organic matter.

2.04 ADMIXTURES

A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

B. High Range Water Reducing Admixture: ASTM C494/C494M Type F.

C. Shrinkage Reducing Admixture:
   1. ASTM C494/C494M, Type S.
      a. Crack-Reducing Admixture: ASTM C494/C494M, Type S, producing a 10-fold reduction in incidence and size of cracks compared to plain concrete or conventional shrinkage-reducing admixtures, when tested in accordance with ASTM C 1581.
         1) Basis of Design Product: Subject to compliance with requirements, provide BASF Corporation MasterLife CRA 007 or comparable product by another manufacturer.
   2. Chemical admixtures may be used in a concrete mix only when approved by the Architect.
   3. Chemical admixtures shall conform to ASTM standards unless otherwise specified and shall be compatible with other ingredients of the concrete mixture.
   4. Chemical Admixtures – shall conform to ASTM C494 and ASTM C1017.
   5. Air Entrainment Admixtures – shall conform to ASTM C260. If approved for use, shall not exceed 2%.

2.05 ACCESSORY MATERIALS

A. Non-Shrink Cementitious Grout: Premixed compound consisting of nonmetallic aggregate, cement, water reducing and plasticizing agents.
   1. Grout: Comply with ASTM C1107/C1107M.

B. Non-Shrink Epoxy Grout: Moisture-insensitive, two-part; consisting of epoxy resin, nonmetallic aggregate, and activator.
   1. Composition: High solids content material exhibiting positive expansion when tested in accordance with ASTM C827/C827M.
      a. Maximum Height Change: Plus 4 percent.
      b. Minimum Height Change: Plus 1 percent.
   2. Minimum Compressive Strength at 7 days, ASTM C579: 12,000 pounds per square inch.
   3. Minimum Compressive Strength at 7 days, ASTM D695: 12,000 pounds per square inch.

2.06 BONDING AND JOINTING PRODUCTS

A. Waterstops: PVC, complying with COE CRD-C 572.

B. Slab Isolation Joint Filler: 1/2-inch thick, height equal to slab thickness, with removable top section forming 1/2-inch deep sealant pocket after removal.

C. Slab Contraction Joint Device: Preformed linear strip intended for pressing into wet concrete to provide straight route for shrinkage cracking.

2.07 CURING MATERIALS

A. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309 Type I.
   1. Products:
      a. Euclid Chemical Company; COLOR-CRETE CURE AND SEAL VOC: www.euclidchemical.com/#sle.
      b. Dayton Superior
      c. Laticrete International, Inc.
      d. W. R. Meadows, Inc; 1100-Clear: www.wrmeadows.com/#sle.
      e. Substitutions: See Section 01-60-00 - Product Requirements.

2.08 CONCRETE MIX DESIGN

A. Admixtures: Add acceptable admixtures as recommended in ACI PRC-211.1 and at rates recommended or required by manufacturer.

B. Normal Weight Concrete: As Tested Per ACI 318-19 Section 26.4
   1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 3,000 pounds per square inch.
   2. Fly Ash Content: Maximum 20 percent of cementitious materials by weight.
   3. Specified concrete strengths shall be verified by standard 28 day cylinder tests per ASTM C39, when special inspection is required.

2.09 REINFORCING STEEL AND RELATED MATERIALS

A. Reinforcing Steel: Conforming to ASTM A615, clean and free of rust, dirt, grease or oils. Comply with Section 03200 and as shown on Drawings.

B. Tie Wire: 16-gauge plain cold-drawn steel conforming to ASTM A82, clean, and free of rust, dirt, grease or oils.

C. Provide polyethylene closed end sleeve or approved alternate at expansion joint dowels at 18 inches on center or as shown on the Drawings.

2.10 EXPANSION JOINT MATERIALS

A. Expansion Joint Material: W. R. Meadows or equal, Ceramar flexible foam resilient filler, full depth of slab, 3/8 inch thickness unless shown otherwise on Drawings.

B. Joint Cap: W. R. Meadows, "SealTight Snap Cap", or approved equal, size required for expansion material.

2.11 CONSTRUCTION JOINT DOWELS

A. 3/8-inch-diameter reinforcing bar, free of dirt, grease, and oils. Encase 50 percent of each dowel in a Speed DowelTM plastic sleeve to allow parallel lateral movement of each dowel.

B. Contact Greenstreak, (800) 325-9504 or www.greenstreak.com.

2.12 JOINT SEALANTS

A. Joint sealant for cast-in-place site concrete shall be per Section 321373.

2.13 COLORED ADDITIVES

A. Colored additives containing carbon black are not allowed.

B. Integral Color Admixture (Liquid):
   1. Per Drawings.
   2. Design mix shall be adjusted when cement substitutes such as fly ash or blast furnace slag is used in the mix design.

C. Sealer
   1. Sealer for cast-in-place site concrete shall be per Section 071900.

2.14 CONCRETE SURFACE RETARDER (SAND-BLASTING AND ACID ETCHING NOT ALLOWED)

A. Grace Euro-Tard in-form surface retarder or approved equal. Depth of etch to be submitted and approved on mock-up

2.15 CONCRETE PLANTER WALLS AND PLANTER CURBS

A. Where indicated with soil backfill, provide elastomeric waterproofing and protection board; provide product submittals.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

B. Prior to work of this section, carefully inspect previously installed work. Verify all such work is complete to the point where this installation may properly commence.

C. Verify that work of this section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.

D. In the event of discrepancy, immediately notify the Architect.

E. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.02 PREPARATION

A. Formwork: Comply with requirements of ACI SPEC-301. Design and fabricate forms to support all applied loads until concrete is cured and for easy removal without damage to concrete.

B. Verify that forms are clean and free of rust before applying release agent.

C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.

D. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Comply with ASTM E1643. 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 granular fill before placing vapor retarder as indicated on drawings. Do not use sand.

3.03

3.04 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

A. Comply with requirements of ACI SPEC-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.

B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

3.05 PLACING CONCRETE

A. Notification

1. Notify the Engineer at least two working days in advance of placing concrete
2. Notify Architect not less than 24 hours prior to commencement of placement operations.

B. Preparation Before Placing

1. Hardened concrete and foreign materials shall be removed from the inner surfaces of the conveying equipment.
2. Form work shall have been completed; excess water shall have been removed; reinforcement shall have been secured in place; expansion joint material, anchors and other embedded items shall have been positioned; and the entire preparation shall have been approved on the day prior to the placing of the concrete.
3. Semiporous subgrades shall be sprinkled sufficiently to eliminate suction and extremely porous subgrades shall be sealed in an approved manner.

4. Before placing of any concrete, all forms shall be thoroughly cleaned, washed out with water, and made tight. Before reinforcing steel is placed on top of and/or adjacent to forms which have been sealed, the surface sealer shall be wiped off so that none may be tracked over, or in any other way come in contact with, the reinforcing steel. Bottoms of forms shall be cleaned and wet down before placing concrete.
5. All encrustations shall be removed from forms and reinforcing steel at construction joints.
6. Before depositing new concrete on or against hardened concrete, retighten forms and roughen surface of hardened concrete as follows. Concrete which has been placed longer than 3-1/2 hours, but less than 6-1/2 hours, prepare by removing all laitance from concrete by wire brushing. Concrete which has been placed longer than 6-1/2 hours, prepare by sand blasting to roughen surfaces. Thoroughly clean of foreign matter and laitance, and moisten with water.

C. Place concrete in accordance with ACI PRC-304.

D. Place concrete for floor slabs in accordance with ACI PRC-302.1.

E. Place concrete with shrinkage-compensating expansive component in accordance with ACI PRC-223.

F. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

G. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

H. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

I. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

J. Placement

1. Concrete shall be handled from the mixer to the place of final deposit as rapidly as practicable by methods which will prevent separation or loss of ingredients. Conveying equipment shall be of a size and design to ensure a continuous flow of concrete at the delivery end.
2. Concrete shall be deposited continuously, or in layers of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause the formation of seams, planes or weakness within the section, or visible pour lines in the finish surface.
3. All concrete shall be consolidated by vibration, spading, rodding, or forking so that the concrete is thoroughly worked around the reinforcement, around the embedded items, and into corners of forms, eliminating all air or stone pockets which may cause honeycombing, pitting, or planes of weakness. All mechanical vibrators shall have a minimum frequency of 7,000 rpm and shall be operated by competent workmen. Over-vibration and use of vibrators to transport concrete within forms shall not be allowed. Vibrators shall be inserted and withdrawn at many points, from 15 to 30 inches apart, for 5 to 15 seconds duration. A spare vibrator shall be kept on the job site during all concrete placing operations. Particular care shall be given at exposed concrete surfaces.

3.06 REPAIR OF SURFACE DEFECTS

A. All form tie holes shall be filled and repairable defective areas patched immediately after the forms have been removed. Remove fins and burrs.

B. Removal

1. After forms have been removed, any concrete which is not formed as shown on the plans, or which is out of alignment or level beyond required tolerances shall be removed and

replaced. Defective surfaces may be repaired and patched in accordance with the following procedure. All conditions requiring patches and completed patches will be inspected. Patches disapproved as not restoring the quality and appearance of the surrounding work shall be removed and replaced so as to match the surrounding work.

C. Repair Procedure

1. All honeycombed and other defective concrete shall be removed to sound concrete, but in no case to a depth of less than 1 inch. The area to be patched and an area of at least 6 inches wide surrounding it shall be dampened to prevent absorption of water from the patching mortar. A bond of neat Portland Cement and water, and, if permitted, some fine sand passing a No. 30 sieve shall be mixed to the consistency of thick cream and shall then be well brushed into the surface. Other concrete bonding agents may be used when approved. The patching mixture shall be made of the same material and of approximately the same proportions as used for the concrete.

3.07 SLAB JOINTING

A. Locate joints as indicated on drawings.

B. Anchor joint fillers and devices to prevent movement during concrete placement.

C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.

D. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab.

3.08 FLOOR FLATNESS AND LEVELNESS TOLERANCES

A. Correct the slab surface if tolerances are less than specified.

B. Minimum F(F) Floor Flatness and F(L) Floor Levelness Values:
1. Exposed to View and Foot Traffic: F(F) of 20; F(L) of 15, on-grade only.
2. Under Thick-Bed Tile: F(F) of 20; F(L) of 15, on-grade only.
3. Under Carpeting: F(F) of 25; F(L) of 20, on-grade only.
4. Under Thin Resilient Flooring and Thinset Tile: F(F) of 35; F(L) of 25, on-grade only.

C. Measure F(F) Floor Flatness and F(L) Floor Levelness in accordance with ASTM E1155/E1155M (ASTM E1155M), within 48 hours after slab installation; report both composite overall values and local values for each measured section.

D. Correct the slab surface if composite overall value is less than specified and if local value is less than two-thirds of specified value or less than F(F) 13/F(L) 10.

E. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.09 CONCRETE FINISHING

A. Repair surface defects, including tie holes, immediately after removing formwork.

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

C. Concrete Slabs: Finish to requirements of ACI PRC-302.1 and as follows:
1. Other Surfaces to Be Left Exposed: Trowel as described in ACI PRC-302.1, minimizing burnish marks and other appearance defects.

D. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:100 nominal.

E. At exposed concrete floor in dugouts, provide light brushed finish.

F. Sand-Blasting and Acid Etching NOT ALLOWED

G. Finishes For Walls
   1. 'Sand' Finish: Apply surface retarder per manufacturer's recommendations and per approved mock-up's.
   2. Edge and joint finish
      a. Use special tools to produce rounded edge corners and intermediate line scoring.
      b. Mark-off lines shall be formed with curved edging tool, neat and true to line, uniform throughout. Conform to markings shown on drawings.

H. Sealer
   1. Remove all dirt, dust, oil, grease, asphalt and other foreign matter. Cleanse with caustics and detergents as necessary. Apply sealer in two coats using an ordinary garden sprayer. Apply first coat evenly and uniformly as soon as possible after final finishing. Apply second coat when all trades have completed work and structure is ready for occupancy.

3.10 CURING AND PROTECTION

A. General
   1. Freshly deposited concrete shall be immediately protected from premature drying and excessively hot or cold temperatures, mechanical injury, and shall be maintained without drying at a relatively constant temperature for the period of time necessary for the hydration of the cement and proper hardening of the concrete. Complying with requirements of ACI PRC-308.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
   1. Normal concrete: Not less than seven days.

C. Initial Curing

   1. Initial curing shall immediately follow the finishing operation. Concrete shall be kept continuously moist at least overnight. One of the following materials or methods shall be used.
      a. Absorptive mat or fabric kept continuously wet
      b. Sand or other covering kept continuously wet
      c. Curing compounds
   2. Compounds shall be applied in accordance with the recommendations of the manufacturer and shall not be used on any surfaces against which additional concrete or other cementitious finishing materials are to be bonded, nor on surfaces on which curing is prohibited by these specifications.

D. Formed Surfaces: Cure by moist curing with forms in place for full curing period.

E. Surfaces Not in Contact with Forms:
   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 Sheet: Lap strips not less than 3 inches and seal with waterproof tape or adhesive; secure at edges.
      b. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

F. Final Curing
   1. Immediately following the initial curing and before the concrete has dried, additional curing shall be accomplished by one of the following materials or methods.

a. Continuing the method used in initial curing.
b. Waterproof paper covering.
c. Other moisture-retaining coverings as approved.

2. The final curing shall continue until the cumulative number of days or fractions thereof, not necessarily consecutive, during which temperature of the air in contact with the concrete is below 50°f has totaled seven days. If high early strength of concrete has been used, the final curing shall continue for a total of three days. Rapid drying at the end of the curing period shall be prevented.
3. Steel forms heated by the sun and all wood forms in contact with the concrete during the final curing period shall be kept wet. If forms are to be removed during the curing period, one of the above curing materials or methods shall be employed immediately. Such curing shall be continued for the remainder of the curing period.
4. During the curing period, the concrete shall be protected from damaging mechanical disturbances, particularly load stresses, heavy shock, and excessive vibration. All finished concrete surfaces shall be protected from damage caused by construction equipment, materials, or methods, and by rain or running water. Self-supporting structures shall not be loaded in such a way as to over-stress the concrete.

3.11 EXPANSION JOINTS

A. Provide premolded expansion joints to full depth of concrete where indicated on the drawings. Install with top edge 3/4 inch below the surface and tool adjacent concrete edges to a 1/8 inch radius. Use steel pins to hold material in place during placing and floating of concrete. After a minimum of 28 days after concrete has been placed and finished, fill tops of expansion joints with backer rod and sealant to 1/8 inch below surface of slabs. See Section 321373 for “sanding” of joint sealant. No traffic shall be permitted to travel over sealed joints until sealer is thoroughly dry.

3.12 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01-40-00 - Quality Requirements.

B. Provide free access to concrete operations at project site and cooperate with appointed firm.

C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.

D. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.

E. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.

F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

3.13 DEFECTIVE CONCRETE

A. Defective concrete work shall be removed and replaced at Contractor's expense.

B. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.

C. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.

D. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

E. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

3.14 PROTECTION

A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

SECTION 03-30-00 CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete formwork.

B. Floors and slabs on grade.

C. Concrete reinforcement.

D. Joint devices associated with concrete work.

E. Miscellaneous concrete elements, including equipment pads, equipment pits, light pole bases, flagpole bases, thrust blocks, and manholes.

F. Concrete curing.

1.02 RELATED REQUIREMENTS

A. Section 03-35-11 - Concrete Floor Finishes: Densifiers, hardeners, applied coatings, and polishing.

B. Section 07-92-00 - Joint Sealants: Products and installation for sealants and joint fillers for saw cut joints and isolation joints in slabs.

1.03 REFERENCE STANDARDS

A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary; 2019 (Reapproved 2022).

B. ACI PRC-211.1 - Selecting Proportions for Normal-Density and High Density-Concrete - Guide; 2022.

C. ACI PRC-223 - Shrinkage-Compensating Concrete - Guide; 2021.

D. ACI PRC-302.1 - Guide to Concrete Floor and Slab Construction; 2015.

E. ACI PRC-304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).

F. ACI PRC-305 - Guide to Hot Weather Concreting; 2020.

G. ACI PRC-306 - Guide to Cold Weather Concreting; 2016.

H. ACI PRC-308 - Guide to External Curing of Concrete; 2016.

I. ACI PRC-347 - Guide to Formwork for Concrete; 2014 (Reapproved 2021).

J. ACI SPEC-117 - Specification for Tolerances for Concrete Construction and Materials; 2010 (Reapproved 2015).

K. ACI SPEC-301 - Specifications for Concrete Construction; 2020.

L. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.

M. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2023.

N. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.

O. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2019, with Editorial Revision (2022).

P. ASTM C579 - Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes; 2023.

Q. ASTM C618 - Standard Specification for Coal Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2023, with Editorial Revision.

R. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures; 2023.

S. ASTM C845/C845M - Standard Specification for Expansive Hydraulic Cement; 2018.

T. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2020.

U. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures; 2020.

V. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2022.

W. ASTM D471 - Standard Test Method for Rubber Property--Effect of Liquids; 2016a (Reapproved 2021).

X. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics; 2023.

Y. ASTM E1155/E1155M - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers; 2023.

Z. ASTM E1155M - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers (Metric); 2014.

AA. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2018a.

BB. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2017 (Reapproved 2023).

CC. COE CRD-C 572 - Handbook for Concrete and Cement Corps of Engineers Specifications for Polyvinylchloride Waterstop; 1974.

1.04 SUBMITTALS

A. See Section 01-30-00 - Administrative Requirements for submittal procedures.

B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
   1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.
   2. For chemical-resistant waterstops, provide data on ASTM D471 test results.
   3. For membrane-forming, moisture emission-reducing, curing and sealing compound, provide manufacturer's installation instructions,.

C. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.Mix
   1. Indicate proposed mix design complies with requirements of ACI CODE-318-19 Section 26.4 and Chapter 5 - Concrete Quality, Mixing and Placing.
   2. Product Data: For each of the following.
      a. Portland cement.
      b. Fly ash.
      c. Aggregates.
      d. Admixtures:
         1) Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, air entrainment, aggregates, temperature at time of concrete placement, relative humidity at time of concrete placement, curing conditions, and use of other admixtures.
      e. Reinforcement.
      f. Sub-slab membrane/vapor retarders.
      g. Liquid floor treatments.
      h. Curing materials.
      i. Joint fillers.

j. Repair materials.

3. Desing Mixtures: For each concrete mixture, include the following:
   a. Indicate proposed mix design complies with admixture manufacturer's written recommendations.
   b. Mixture identification.
   c. Minimum 28-day compressive strength.
   d. Durability exposure class.
   e. Maximum w/cm.
   f. Calculated equilibrium unit weight.
   g. Slump limit.
   h. Air content.
   i. Nominal maximum aggregate size.
   j. Synthetic micro-fiber content.
   k. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted.
   l. Intended placement method.
   m. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

D. Test Reports: Submit report for each test or series of tests specified.

E. Test Reports: Submit termite-resistant sheet manufacturer's summary of independent laboratory and field testing for effectiveness in subterranean termite exclusion.

F. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.

G. Shop Drawings:
   1. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
   2. Location of construction joints is subject to approval of the Architect.

H. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

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

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI SPEC-301 and ACI CODE-318.
   1. Maintain one copy of each document on site.

B. Follow recommendations of ACI PRC-305 when concreting during hot weather.

C. Follow recommendations of ACI PRC-306 when concreting during cold weather.

1.06 MOCK-UPS

A. Construct and erect mock-up panel for architectural concrete surfaces indicated to receive special treatment or finish as result of formwork.
   1. Panel Size: Sufficient to illustrate full range of treatment.
   2. Locate where directed.

B. Mock-up may remain as part of the Work.

1.07 WARRANTY

A. See Section 01-78-00 - Closeout Submittals for additional warranty requirements.

B. Moisture Emission-Reducing Curing and Sealing Compound, Penetrating: Provide non-prorated warranty to cover cost of flooring delamination failures for 20 years.

1. Include cost of repair or removal of failed flooring, remediation with a moisture vapor impermeable surface coating, and replacement of flooring with comparable flooring system.

PART 2 PRODUCTS

2.01 FORMWORK

A. Formwork Design and Construction: Comply with guidelines of ACI PRC-347 to provide formwork that will produce concrete complying with tolerances of ACI SPEC-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 Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
   2. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

2.02 REINFORCEMENT MATERIALS

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi). See S0.1 for additional requirements.

2.03 CONCRETE MATERIALS

A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
   1. Acquire cement for entire project from same source.

B. Blended, Expansive Hydraulic Cement: ASTM C845/C845M, Type S.
   1. Products:
      a. Euclid Chemical Company; EUCON MSA: www.euclidchemical.com/#sle.
      b. Substitutions: See Section 01-60-00 - Product Requirements.

C. Fly Ash: ASTM C618, Class C or F.

D. Calcined Pozzolan: ASTM C618, Class N.

E. Silica Fume: ASTM C1240, proportioned in accordance with ACI PRC-211.1.

F. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

2.04 ADMIXTURES

A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

B. High Range Water Reducing Admixture: ASTM C494/C494M Type F.

C. Shrinkage Reducing Admixture:
   1. ASTM C494/C494M, Type S.
      a. Crack-Reducing Admixture: ASTM C494/C494M, Type S, producing a 10-fold reduction in incidence and size of cracks compared to plain concrete or conventional shrinkage-reducing admixtures, when tested in accordance with ASTM C 1581.
         1) Basis of Design Product: Subject to compliance with requirements, provide BASF Corporation MasterLife CRA 007 or comparable product by another manufacturer.

2.05 ACCESSORY MATERIALS

A. Non-Shrink Cementitious Grout: Premixed compound consisting of nonmetallic aggregate, cement, water reducing and plasticizing agents.
   1. Grout: Comply with ASTM C1107/C1107M.

B. Non-Shrink Epoxy Grout: Moisture-insensitive, two-part; consisting of epoxy resin, nonmetallic aggregate, and activator.

1. Composition: High solids content material exhibiting positive expansion when tested in accordance with ASTM C827/C827M.
    a. Maximum Height Change: Plus 4 percent.
    b. Minimum Height Change: Plus 1 percent.
2. Minimum Compressive Strength at 7 days, ASTM C579: 12,000 pounds per square inch.
3. Minimum Compressive Strength at 7 days, ASTM D695: 12,000 pounds per square inch.

2.06 BONDING AND JOINTING PRODUCTS

A. Waterstops: PVC, complying with COE CRD-C 572.

B. Slab Isolation Joint Filler: 1/2-inch thick, height equal to slab thickness, with removable top section forming 1/2-inch deep sealant pocket after removal.

C. Slab Contraction Joint Device: Preformed linear strip intended for pressing into wet concrete to provide straight route for shrinkage cracking.

2.07 CURING MATERIALS

A. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309 Type I.
    1. Products:
        a. Euclid Chemical Company; COLOR-CRETE CURE AND SEAL VOC: www.euclidchemical.com/#sle.
        b. Dayton Superior
        c. Laticrete International, Inc.
        d. W. R. Meadows, Inc; 1100-Clear: www.wrmeadows.com/#sle.
        e. Substitutions: See Section 01-60-00 - Product Requirements.

2.08 CONCRETE MIX DESIGN

A. Admixtures: Add acceptable admixtures as recommended in ACI PRC-211.1 and at rates recommended or required by manufacturer.

B. Normal Weight Concrete: As Tested Per ACI 318-19 Section 26.4
    1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 3,000 pounds per square inch.
    2. Fly Ash Content: Maximum 20 percent of cementitious materials by weight.
    3. Specified concrete strengths shall be verified by standard 28 day cylinder tests per ASTM C39, when special inspection is required.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

A. Formwork: Comply with requirements of ACI SPEC-301. Design and fabricate forms to support all applied loads until concrete is cured and for easy removal without damage to concrete.

B. Verify that forms are clean and free of rust before applying release agent.

C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.

D. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Comply with ASTM E1643. 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 granular fill before placing vapor retarder as indicated on drawings. Do not use sand.

3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

A. Comply with requirements of ACI SPEC-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.

B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

3.04 PLACING CONCRETE

A. Place concrete in accordance with ACI PRC-304.

B. Place concrete for floor slabs in accordance with ACI PRC-302.1.

C. Place concrete with shrinkage-compensating expansive component in accordance with ACI PRC-223.

D. Notify Architect not less than 24 hours prior to commencement of placement operations.

E. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

F. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

G. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

H. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.05 SLAB JOINTING

A. Locate joints as indicated on drawings.

B. Anchor joint fillers and devices to prevent movement during concrete placement.

C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.

D. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab.

3.06 FLOOR FLATNESS AND LEVELNESS TOLERANCES

A. Correct the slab surface if tolerances are less than specified.

B. Minimum F(F) Floor Flatness and F(L) Floor Levelness Values:
   1. Exposed to View and Foot Traffic: F(F) of 20; F(L) of 15, on-grade only.
   2. Under Thick-Bed Tile: F(F) of 20; F(L) of 15, on-grade only.
   3. Under Carpeting: F(F) of 25; F(L) of 20, on-grade only.
   4. Under Thin Resilient Flooring and Thinset Tile: F(F) of 35; F(L) of 25, on-grade only.

C. Measure F(F) Floor Flatness and F(L) Floor Levelness in accordance with ASTM E1155/E1155M (ASTM E1155M), within 48 hours after slab installation; report both composite overall values and local values for each measured section.

D. Correct the slab surface if composite overall value is less than specified and if local value is less than two-thirds of specified value or less than F(F) 13/F(L) 10.

E. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.07 CONCRETE FINISHING

A. Repair surface defects, including tie holes, immediately after removing formwork.

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

C. Concrete Slabs: Finish to requirements of ACI PRC-302.1 and as follows:
   1. Other Surfaces to Be Left Exposed: Trowel as described in ACI PRC-302.1, minimizing burnish marks and other appearance defects.

D. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:100 nominal.

E. At exposed concrete floor in dugouts, provide light brushed finish.

3.08 CURING AND PROTECTION

A. Comply with requirements of ACI PRC-308. 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.
   1. Normal concrete: Not less than seven days.

C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.

D. Surfaces Not in Contact with Forms:
   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 Sheet: Lap strips not less than 3 inches and seal with waterproof tape or adhesive; secure at edges.
      b. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

3.09 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01-40-00 - Quality Requirements.

B. Provide free access to concrete operations at project site and cooperate with appointed firm.

C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.

D. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.

E. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.

F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

3.10 DEFECTIVE CONCRETE

A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.

B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.

C. Repair or replacement of defective concrete will be determined by the Architect. 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 Architect for each individual area.

3.11 PROTECTION

A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

EOU Ballfields Complex Renovation
Sheet Indices

SZABO LANDSCAPE ARCHITECTURE
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Sheet No.	Description
Bid Package A	
LCS0.00	Cover Sheet
C-001	Civil Cover Sheet
C-002	Notes & Legend
C-010	Demolition Plan - A West
C-011	Demolition Plan - A East
C-012	Temporary Erosion & Sediment Control Plan
C-110	Grading & Drainage Plan - A West
C-111	Grading & Drainage Plan - A East
C-112	E Avenue and Sidewalk Plan
C-113	E Avenue and Sidewalk Sections
C-120	Utility Plan
C-500	Details
C-501	City STD Details
LC1.00	Non-Conforming Improvements Plan
LC2.01	Landscape Construction Details
LI3.00	Overall Landscape Irrigation Plan
LI3.01	Right-of-Way Landscape Irrigation Plan
LI4.01	Landscape Irrigation Details
LP5.00	Overall Landscape Planting Plan
LP5.01	Landscape Planting Plan
LP6.01	Landscape Planting Details
E0.00	Electrical Legends, Site Plan, & Schedules
E1.00	Electrical Details

EOU Ballfields Complex Renovation
Sheet Indices

SZABO LANDSCAPE ARCHITECTURE
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Sheet No.	Description
Bid Package B	
LCS0.00	Cover Sheet
C-001	Civil Cover Sheet
C-002	Notes & Legend
C-010	Demolition Plan
C-012	Temporary Erosion & Sediment Control Plan
C-110	Grading & Drainage Plan
C-500	Details
C-501	City STD Details
LC1.00	Overall Landscape Construction Plan
LC1.01	Baseball Field Landscape Construction Plan
LC1.01.2	Baseball Field Landscape Striping Enlargement Plan
LC1.02	North Entry Landscape Construction Plan
LC1.03	Baseball Field Landscape Fencing Plan
LC2.01	Landscape Construction Details
LC2.02	Landscape Wall Elevations
LC2.03	Landscape Construction Details
LC2.04	Landscape Fencing Elevations
LC2.05	Landscape Construction Details
LC2.06	Landscape Construction Details
LC2.07	Landscape Construction Details
LC2.08	Landscape Construction Details
LI3.00	Overall Landscape Irrigation Plan
LI3.01	Baseball Field Landscape Irrigation Plan
LI3.02	North Entry Landscape Irrigation Plan
LI4.01	Landscape Irrigation Details
LP5.00	Overall Landscape Planting Plan
LP5.01	Baseball Field Landscape Planting Plan
LP5.02	North Entry Landscape Planting Plan
LP6.01	Landscape Planting Details
E0.00	Electrical Legends, Site Plan, & Schedules
E1.00	Electrical Details
G1.00	Baseball Dugout Cover Sheet & Project Info
A2.10	Dugout Plans
A4.00	Dugout Axons & Perspectives
A4.10	Dugout Exterior Elevations & Sections
A9.00	Dugout Details
S.01	Dugout General Str. Notes & Drawing Index
S2.1	Home Dugout - Foundation & Roof Framing Plan
S2.2	Visitor Dugout - Foundation & Roof Framing Plan
S5.1	Dugout Structural Details - Foundation
S6.1	Dugout Structural Details - Framing

EOU Ballfields Complex Renovation
Sheet Indices

SZABO LANDSCAPE ARCHITECTURE
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Sheet No.	Description
Bid Package C	
LCS0.00	Cover Sheet
C-001	Civil Cover Sheet
C-002	Notes & Legend
C-010	Demolition Plan
C-012	Temporary Erosion & Sediment Control Plan
C-110	Grading & Drainage Plan
C-120	Utility Plan
C-500	Details
C-501	City STD Details
LC1.00	Overall Landscape Construction Plan
LC1.01	Softball Field Landscape Construction Plan
LC1.01.2	Softball Field Landscape Striping Enlargement Plan
LC1.02	Softball Field Landscape Fencing Plan
LC2.01	Landscape Construction Details
LC2.02	Landscape Construction Details
LC2.03	Landscape Construction Details
LI3.00	Overall Landscape Irrigation Plan
LI3.01	Softball Field Landscape Irrigation Plan
LI4.01	Landscape Irrigation Details
LP5.00	Overall Landscape Planting Plan
LP5.01	Landscape Planting Plan
LP6.01	Landscape Planting Details
E0.00	Electrical Legends, Site Plan, & Schedules
E1.00	Electrical Details

SECTION 04-20-00 UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete block.
B. Concrete facing brick.
C. Mortar and grout.
D. Reinforcement and anchorage.
E. Flashings.
F. Lintels.
G. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 03-20-00 - Concrete Reinforcing: Reinforcing steel for grouted masonry.
B. Section 03-30-00 - Cast-in-Place Concrete: Installation of dovetail slots for masonry anchors.
C. Section 07-11-13 - Bituminous Dampproofing: Dampproofing parged masonry surfaces.
D. Section 07-21-00 - Thermal Insulation: Insulation for cavity spaces.
E. Section 07-92-00 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.
C. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2019 (Reapproved 2025).
D. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.
E. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement; 2022.
F. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2022.
G. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction; 2022.
H. ASTM C55 - Standard Specification for Concrete Building Brick; 2023.
I. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2023.
J. ASTM C91/C91M - Standard Specification for Masonry Cement; 2023.
K. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2018.
L. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.
M. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2018.
N. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2019a, with Editorial Revision.
O. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2018.
P. ASTM C1072 - Standard Test Methods for Measurement of Masonry Flexural Bond Strength; 2022.

Q. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms; 2023b.

R. ASTM C1634 - Standard Specification for Concrete Facing Brick and Other Concrete Masonry Facing Units; 2023a.

S. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry; 2019a.

T. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry; 2020.

U. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.

1.05 SUBMITTALS

A. See Section 01-30-00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.

C. Shop Drawings: Indicate pertinent dimensions, materials, anchorage, size and type of fasteners, and accessories for brickwork support system.
   1. Include calculations or selections from the manufacturer's prescriptive design tables that indicate compliance with the applicable building code and project conditions.
   2. Include the design engineer's stamp or seal on each sheet of shop drawings.

D. Samples: Submit two samples of facing brick units to illustrate color, texture, and extremes of color range.

E. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

F. Manufacturer's Certificate: Certify that water repellent admixture manufacturer has certified masonry unit manufacturer as an approved user of water repellent admixture in the manufacture of concrete block.

G. Test Reports: Concrete masonry manufacturer's test reports for units with integral water repellent admixture.

1.06 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

B. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.07 MOCK-UPS

A. Construct a masonry wall as a mock-up panel sized 8 feet long by 6 feet high; include mortar, accessories, structural backup, and flashings (with lap joint, corner, and end dam) in mock-up.

B. Locate where directed.

C. Mock-up may remain as part of work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Concrete Block: Comply with referenced standards and as follows:
   1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depths as indicated on drawings for specific locations.
   2. Load-Bearing Units: ASTM C90, normal weight.
      a. Exposed Faces: Color and texture where indicated on drawings, as follows: Smooth and Split Face.
      b. Pattern: Per Elevations.
   3. Units with Integral Water Repellent: Concrete block units as specified in this section with polymeric liquid admixture added to concrete masonry units at the time of manufacture.
      a. Performance of Units with Integral Water Repellent:
         1) Water Permeance: When tested per ASTM E514/E514M and for a minimum of 72 hours.
            (a) No water visible on back of wall above flashing at the end of 24 hours.
            (b) No flow of water from flashing equal to or greater than 0.032 gallons per hour at the end of 24 hours.
            (c) No more than 25 percent of wall area above flashing visibly damp at end of test.
         2) Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
         3) Compressive Strength: ASTM C1314; maximum 5 percent decrease.
      b. Use only in combination with mortar that also has integral water repellent admixture.
      c. Use water repellent admixtures for masonry units and mortar by a single manufacturer.

B. Concrete Brick:
   1. Size: As indicated on drawings.
   2. Concrete Facing Brick: ASTM C1634; solid, normal weight; for architectural and below grade use.
      a. Exposed Faces, Color and Texture: Per Drawings.

2.02 MORTAR AND GROUT MATERIALS

A. Masonry Cement: ASTM C91/C91M, Type N.
   1. Colored Mortar: Premixed cement as required to match Architect's color sample.

B. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.
   1. Not more than 0.60 percent alkali.

C. Hydrated Lime: ASTM C207, Type S.

D. Mortar Aggregate: ASTM C144.

E. Grout Aggregate: ASTM C404.

F. Integral Water Repellent Admixture for Mortar: Polymeric liquid admixture added to mortar at the time of manufacture.
   1. Use only in combination with masonry units manufactured with integral water repellent admixture.
   2. Use only water repellent admixture for mortar from the same manufacturer as water repellent admixture in masonry units.
   3. Meet or exceed performance specified for water repellent admixture used in masonry units.

G. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.

1. Type: Type N.
2. Color: Mineral pigments added as required to produce approved color sample.
3. Water-repellent mortar for use with water repellent masonry units.

2.03 REINFORCEMENT AND ANCHORAGE : SEE STRUCTURAL

2.04 FLASHINGS

A. Metal Flashing Materials:
   1. Stainless Steel Flashing: ASTM A666/A666M, Type 304, soft temper; 26 gauge, 0.0187 inch thick; finish 2B to 2D.

2.05 MORTAR AND GROUT MIXING

A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.

B. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.

END OF SECTION

EOU Ballfields Complex Renovation
Specification Section Applicability Matrix

SZABO LANDSCAPE ARCHITECTURE
1000 nw wall st., suite 205 | bend, or 97703 | www.szabo-la.com

Specification Section #	Applicable Bid Pkg A	B	C
DIVISION 0			
00 10 00	X	X	X
00 11 16	X	X	X
00 21 13	X	X	X
00 31 00	X	X	X
00 40 00	X	X	X
00 52 00	X	X	X
00 61 13	X	X	X
00 72 00	X	X	X
DIVISION 1			
01 10 00	X	X	X
01 20 00	X	X	X
01 30 00	X	X	X
01 31 13	X	X	X
01 32 16	X	X	X
01 35 15	X	X	X
01 45 00	X	X	X
01 45 30	X	X	X
01 50 00	X	X	X
01 61 16		X	
01 63 00	X	X	X
01 70 00	X	X	X
01 74 19	X	X	X
01 78 00	X	X	X
01 79 00	X	X	X
DIVISION 3			
03 30 00	X	X	X
DIVISION 4			
04 20 00		X	
DIVISION 5			
05 52 13		X	
DIVISION 6			
06 10 00		X	
06 20 00		X	
06 41 00		X	

Specification Section #	Applicable Bid Pkg A	B	C
DIVISION 7			
07 11 13		X	
07 19 00		X	
07 41 13		X	
07 46 46		X	
07 62 00		X	
07 72 00		X	
07 92 00		X	
DIVISION 8			
08 11 13		X	
08 71 00		X	
DIVISION 9			
09 91 13		X	
09 93 00		X	
09 96 23		X	
09 97 23		X	
DIVISION 10			
10 44 00		X	
DIVISION 11			
11 68 33		X	X
DIVISION 26			
26 00 01	X	X	X
26 00 20	X	X	X
26 00 26	X	X	X
26 05 13	X		
26 05 19	X	X	X
26 05 26	X	X	X
26 05 29	X	X	X
26 05 33	X	X	X
26 05 33.16	X	X	X
26 05 53	X	X	X
26 05 60	X	X	X
26 05 83	X	X	X
26 12 00	X		
26 24 17	X	X	X
26 24 18	X	X	X

Specification Section #	Applicable Bid Pkg A	B	C
DIVISION 26, CONTINUED			
26 51 13.20	X	X	X
26 28 26	X	X	X
DIVISION 27			
27 05 00		X	X
DIVISION 31			
31 00 00	X	X	X
31 10 00	X	X	X
31 23 00	X	X	X
DIVISION 32			
32 01 90	X	X	X
32 13 13	X	X	X
32 13 73	X	X	X
32 14 45		X	
32 17 23	X		
32 18 13		X	X
32 31 13	X	X	X
32 84 00	X	X	X
32 91 13	X	X	X
32 92 20	X	X	X
32 92 23		X	X
32 93 00	X	X	X
32 94 53		X	
DIVISION 33			
33 05 16	X	X	X
33 31 00	X		
33 42 00	X	X	X

SECTION 05-52-13 PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Steel pipe and tube railings.
   2. Wall mounted handrails

1.02 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.

C. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2021.

D. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

E. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).

F. AWS D1.6/D1.6M - Structural Welding Code - Stainless Steel; 2017, with Amendment (2021).

G. AWS C3.4M/C3.4 - Specification for Torch Brazing; 2016.

H. AWS C3.5M/C3.5 - Specification for Induction Brazing; 2016, with Amendment (2017).

I. AWS C3.9M/C3.9 - Specification for Resistance Brazing; 2020.

1.03 SUBMITTALS

A. Submit items identified following the procedures outlined under Section 01 33 00 Submittals. Partial or incomplete submittals are not acceptable an will be returned without a review.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
   1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
   2. Include the design engineer's seal and signature on each sheet of shop drawings.

C. Samples: Submit two, ____ inch long samples of handrail. Submit two samples of elbow, wall bracket, and end stop.

D. Product Data: For the following:
   1. Manufacturer's product lines of mechanically connected railings.
   2. Railing brackets.
   3. Grout, anchoring cement, and paint products.

E. Product Test Reports: For pipe and tube railings, for tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.

F. Designer's Qualification Statement.

1.04 QUALITY ASSURANCE

A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located, or personnel under direct supervision of such an engineer.

PART 2 - PRODUCTS

2.01 See Editing Instruction No. 1 in the Evaluations for cautions about named manufacturers and products. For an explanation of options and Contractor's product selection procedures, see Section 016000 "Product Requirements."

2.02 RAILINGS – GENERAL REQUIREMENTS

A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.

B. Distributed Loads: Design railing assembly, wall rails, and attachments to resist distributed force of 75 pounds per linear foot applied to the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935

C. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935

D. Allow for expansion and contraction of members and building movement without damage to connections or members.

E. Dimensions: See drawings for configurations and heights.
   1. Top Rails and Wall Rails: 1-1/2 inches diameter, round.

F. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.

G. Provide slip-on non-weld mechanical fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

H. Welded and Brazed Joints: Make visible joints butt tight, flush, and hairline; use methods that avoid discoloration and damage of finish; grind smooth, polish, and restore to required finish.
   1. Ease exposed edges to a small uniform radius.
   2. Welded Joints:
      a. Carbon Steel: Perform welding in accordance with AWS D1.1/D1.1M.
      b. Stainless Steel: Perform welding in accordance with AWS D1.6/D1.6M.
   3. Brass/Bronze Brazed Joints:
      a. Perform torch brazing in accordance with AWS C3.4M/C3.4.
      b. Perform induction brazing in accordance with AWS C3.5M/C 3.5.
      c. Perform resistance brazing in accordance with AWS C3.9M/C3.9.

2.03 STEEL RAILING SYSTEM

A. Non-Weld Mechanical Fittings: Slip-on, galvanized malleable iron castings, for Schedule 40 pipe, with flush setscrews for tightening by standard hex wrench, no bolts or screw fasteners.

B. Welding Fittings: Factory- or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.

C. Exposed Fasteners: No exposed bolts or screws.

2.04 STEEL AND IRON

A. Tubing: ASTM A 500 (cold formed)

B. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
   1. Provide painted finish for exterior installations and where indicated per section 099112 Exterior Painting.

C. Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.05 FASTENERS

A. General: Provide the following:
   1. Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A 153/A 153M or ASTM F 2329 for zinc coating.

2.06 MISCELLANEOUS MATERIALS

A. Low-Emitting Materials: Paints and coatings shall comply with Section 099112 Exterior Painting.

B. Shop Primers: Provide primers that comply with Section 099112 Exterior Painting.

2.07 FABRICATION

A. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

B. Form work true to line and level with accurate angles and surfaces.

C. Accurately form components to suit specific project conditions and for proper connection to building structure.

D. Fit and shop assemble components in largest practical sizes for delivery to site.

E. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.

F. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
   1. Exterior Components: Continuously seal joined pieces by intermittent welds and plastic filler. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
   2. Interior Components: Continuously seal joined pieces by intermittent welds and plastic filler.
   3. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   4. Obtain fusion without undercut or overlap.
   5. Remove flux immediately.
   6. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces. Ease exposed edges to small uniform radius.

G. Form changes in direction by bending.

H. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

I. Close exposed ends of railing members with prefabricated end fittings.

J. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated.

2.08 STEEL FINISHES

A. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning." And Section 099112 Exterior Painting
   1. Color: as indicated on drawings.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 INSTALLATION, GENERAL

A. Install in accordance with manufacturer's instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.

C. Install railings in compliance with ADA Standards for accessible design at applicable locations.

D. Anchor railings securely to structure.

E. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

F. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
   1. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
   2. Set posts plumb within a tolerance of 1/16 inch in 3 feet
   3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet

G. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
   1. Coat, with a heavy coat of bituminous paint, concealed surfaces of aluminum that are in contact with grout, concrete, masonry, wood, or dissimilar metals.

3.03 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

3.04 ANCHORING POSTS

A. Form or core-drill holes not less than 5 inches (unless otherwise indicated on plans) deep and 3/4 inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout

3.05 ATTACHING RAILINGS

A. Attach railings to wall with wall brackets. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.

B. Secure wall brackets and railing end flanges to building construction as follows:
   1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.

3.06 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 requirements for touching up shop-painted surfaces.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas, and repair galvanizing to comply with ASTM A 780/A 780M.

END OF SECTION

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SECTION 06-41-00 ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Bat Storage
B. Dougout Bench
C. Countertops.
D. Hardware.
E. Wall-hung cubbies
F. Preparation for installing utilities.

1.02 RELATED REQUIREMENTS

A. Section 01-61-16 - Volatile Organic Compound (VOC) Content Restrictions.
B. Section 06-10-00 - Rough Carpentry: Support framing, grounds, and concealed blocking.
C. Section 09-93-00 - Staining and Transparent Finishing: Field finishing of cabinet exterior.
D. Section 12-36-00 - Countertops.

1.03 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).
B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting not less than one week before starting work of this section; require attendance by all affected installers.

1.05 SUBMITTALS

A. See Section 01-30-00 - Administrative Requirements for submittal procedures.
B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
    1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
    2. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).

1.06 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum three years of documented experience.
    1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
    2. Single Source Responsibility: Provide and install this work from single fabricator.
B. Quality Certification:
    1. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
    2. Provide designated labels on shop drawings as required by certification program.
    3. Provide designated labels on installed products as required by certification program.
    4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.

5. Replace, repair, or rework all work for which certification is refused.

1.07 MOCK-UPS

A. Provide mock-up of typical wall cabinet, countertop, and bench, including finishes.

B. Locate where directed.

C. Mock-up may remain as part of the work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage.

1.09 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Single Source Responsibility: Provide and install this work from single fabricator.

2.02 CABINETS & BENCHES

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Benches with backs; At contractors discretion, benches can be custom built or procured. Component requirements, finish and installation shall be in accordance with those of this section.

C. Exterior grade Cabinets:
   1. Finish - Exposed Exterior Surfaces: Wood.
   2. Finish - Exposed Interior Surfaces: Wood.

2.03 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

2.04 PLYWOOD PANELS

A. Exterior Plywood: 3/4" marine grade plywood manufactured for nonstructural, exterior applications; consisting of Douglas Fir faces and backs applied to grade C cores. Basis of Design Manufacturer; Roseburg Forest Products.
   1. Woodwork Quality Standard: Panels complying with specified woodwork quality standard.
   2. Face: AB Marine, Grade: Marine A; sanded;
      a. Finish: Paint.
   3. Core, Veneer Core:
      a. Inner Plies: Grade C.
   4. Products:
      a. Roseburg Forest Products: www.roseburg.com/#sle.
      b. Substitutions: See Section 01-60-00 - Product Requirements.

2.05 COUNTERTOPS

A. Countertops: See Section 12-36-00.

2.06 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application. Suitable for exterior applications.

2.07 SITE FINISHING MATERIALS

A. Stain, Shellac, Varnish, and Finishing Materials: In compliance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

2.08 FABRICATION

A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.

B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.

C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.

2.09 SHOP FINISHING

A. Sand work smooth and set exposed nails and screws.

B. For opaque finishes, apply wood filler in exposed nail and screw indentations and sand smooth.

C. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
   1. Opaque:
      a. Color: As selected by Owner
      b. Sheen: Semigloss.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

3.02 INSTALLATION

A. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.

C. Use fixture attachments in concealed locations for wall mounted components.

D. Use concealed joint fasteners to align and secure adjoining cabinet units.

E. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.

F. Secure cabinets to floor or slab using appropriate angles and anchorages.

G. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

3.03 ADJUSTING

A. Adjust installed work.

3.04 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

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SECTION 07-11-13 BITUMINOUS DAMPPROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Bituminous dampproofing.

B. Drainage panels.

1.02 RELATED REQUIREMENTS

A. Section 07-21-00 - Thermal Insulation: Rigid insulation board used as protection board.

B. Section 31-23-23 - Fill.

C. Section 33-41-00 - Subdrainage.

1.03 REFERENCE STANDARDS

A. ASTM D41/D41M - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing; 2011 (Reapproved 2023).

B. ASTM D1187/D1187M - Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal; 1997 (Reapproved 2018).

C. ASTM D1227/D1227M - Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing; 2013, with Editorial Revision (2019).

D. NRCA (WM) - The NRCA Waterproofing Manual; 2021.

1.04 SUBMITTALS

A. See Section 01-30-00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide properties of primer, bitumen, and mastics.

C. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

D. Installer's qualification statement.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with at least three years of documented experience.

1.06 FIELD CONDITIONS

A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application until dampproofing has cured.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Bituminous Dampproofing Manufacturers:
   1. Karnak Corporation: www.karnakcorp.com/#sle.
   2. Mar-flex Waterproofing & Building Products: www.mar-flex.com/#sle.
   3. W. R. Meadows, Inc: www.wrmeadows.com/#sle.

2.02 BITUMINOUS DAMPPROOFING

A. Bituminous Dampproofing: Cold-applied water-based emulsion; asphalt with mineral colloid or chemical emulsifying agent; with or without fiber reinforcement; asbestos-free; suitable for application on vertical and horizontal surfaces.

1. Asphalt-Base Emulsion for Metal Protective Coating: ASTM D1187/D1187M, Type I - Continuous water exposure within few days after drying or Type II - Continuous weather exposure after drying.
2. Emulsified Asphalt for Roofing Protective Coating: ASTM D1227/D1227M, Type II, Class 1 - Mineral colloid emulsifying agents with non-asbestos fibers.
3. VOC Content: Not more than permitted by local, State, and federal regulations.
4. Applied Thickness: 1/16 inch, minimum, wet film.
5. Products:
   a. Karnak Corporation; 220 Fibered Emulsion Dampproofing: www.karnakcorp.com/#sle.
   b. W. R. Meadows, Inc; Sealmastic Emulsion Type I (spray-grade): www.wrmeadows.com/#sle.
   c. Substitutions: See Section 01-60-00 - Product Requirements.

B. Primers, Mastics, and Related Materials: Type as recommended by dampproofing manufacturer.

2.03 BITUMEN MATERIALS

A. Cold Asphaltic Type:
   1. Emulsified Asphalt: ASTM D1227/D1227M, with fiber reinforcement other than asbestos, Type II, Class 1 or 2.
   2. Asphalt Primer: ASTM D41/D41M, compatible with substrate.

2.04 ACCESSORIES

A. Drainage Panel: 1/4-inch thick formed plastic, hollowed sandwich.

B. Protection Board: Rigid insulation; see Section 07-21-00.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions are acceptable prior to starting this work.

B. Verify substrate surfaces are durable, free of matter detrimental to adhesion or application of dampproofing system.

C. Verify that items penetrating surfaces to receive dampproofing are securely installed.

3.02 PREPARATION

A. Protect adjacent surfaces not designated to receive dampproofing.

B. Clean and prepare surfaces to receive dampproofing in accordance with manufacturer's instructions.

C. Do not apply dampproofing to surfaces unacceptable to manufacturer.

D. Apply mastic to seal penetrations, small cracks, or minor honeycombs in substrate.

3.03 APPLICATION

A. Below grade wall/foundation wall: Apply two coats of asphalt dampproofing.

B. Below grade wall/foundation wall: Patch disturbed areas of existing dampproofing with two additional coats of dampproofing of the same generic type.

C. Perform this work in accordance with manufacturer's instructions and NRCA (WM) applicable requirements.

D. Prime surfaces in accordance with manufacturer's instructions and NRCA (WM) applicable requirements.

E. Prime surfaces at a rate approved by manufacturer for application indicated, and allow primer to dry thoroughly.

F. Apply bitumen with mop.

G. Apply bitumen at a temperature limited by equiviscous temperature (EVT) plus or minus 25 degrees F; do not exceed finish blowing temperature for four hours.

H. Apply bitumen in one coat, continuous and uniform, at a rate of 25 sq ft/gal per coat.

I. Apply from 2 inches below finish grade elevation down to top of footings.

J. Seal items watertight with mastic, that project through dampproofing surface.

K. Immediately backfill against dampproofing to protect from damage, at dugout.

L. Scribe and cut boards around projections, penetrations, and interruptions.

END OF SECTION

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SECTION 07-19-00 WATER REPELLENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water repellents applied to exterior, masonry and concrete surfaces.

1.02 RELATED REQUIREMENTS

A. Section 01-61-16 - Volatile Organic Compound (VOC) Content Restrictions.

1.03 REFERENCE STANDARDS

A. ASTM C140/C140M - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units; 2023a.

B. ASTM C642 - Standard Test Method for Density, Absorption, and Voids in Hardened Concrete; 2021.

C. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings; 2005 (Reapproved 2018).

D. ASTM D5095 - Standard Test Method for Determination of the Nonvolatile Content in Silanes, Siloxanes and Silane-Siloxane Blends Used in Masonry Water Repellent Treatments; 1991 (Reapproved 2022).

E. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

1.04 SUBMITTALS

A. See Section 01-30-00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide product description, details of tests performed, limitations, and chemical composition.

C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention; cautionary procedures required during application.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Manufacturer's Qualification Statement.

F. Installer's Qualification Statement.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01-60-00 - Product Requirements for additional provisions.
   2. Extra Water Repellent Material: Two gallons of type installed.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years documented experience.

1.06 FIELD CONDITIONS

A. Protect liquid materials from freezing.

B. Do not apply water repellent when ambient temperature is lower than 50 degrees F or higher than 100 degrees F.

1.07 WARRANTY

A. See Section 01-78-00 - Closeout Submittals for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

C. Provide five year manufacturer warranty.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Silane, Siloxane, Silane-Siloxane Blend, and Siliconate Water Repellents: Basis of design: Subject to comnpliance with requirements, provide Prosoco Inc.; Sure Klean Weather Seal; Blok-Guard & Graffiti Control II, or comparable product by the following:
   1. BASF Construction Chemicals; www.buildingsystems.basf.com/#sle.
   2. Concrete Sealers USA; www.concretesealersusa.com/#sle.
   3. Evonik Corporation; Protectosil CHEM-TRETE BSM 400: www.evonik.com/#sle.
   4. Nox-Crete Inc; Natraseal: www.nox-crete.com/#sle.
   5. Rust-Oleum Corporation; OKON S-20 Penetrating Silane-Siloxane Water Repellent Sealer: www.rustoleum.com/#sle.
   6. Sherwin-Williams Company; www.sherwin-williams.com/#sle.
   7. Tex-Cote LLC; TEX-COTE RAINSTOPPER 120: www.texcote.com/#sle.
   8. United Gilsonite Laboratories; www.ugl.com/#sle.

2.02 MATERIALS

A. Water Repellent: Non-glossy, colorless, penetrating, water-vapor-permeable, non-yellowing sealer, that dries invisibly leaving appearance of substrate unchanged.
   1. Applications: Vertical surfaces and non-traffic horizontal surfaces.
   2. Number of Coats: Two.
   3. VOC Content: Less than 600 g/L, when tested in accordance with ASTM D3960 or ASTM D5095.
   4. Moisture Absorption When Applied to Masonry: Five percent, maximum, when tested in accordance with ASTM C140/C140M using masonry sample completely coated with water repellent.
   5. Maintains dry appearance when wetted.
   6. Active Content: 9 percent
   7. Flash Point: 100 deg. F ASM D 3278
   8. Freeze Point: Less than munus 22 deg F
   9. Silane, siloxane, silane-siloxane blend, or siliconate that reacts chemically with concrete and masonry.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify joint sealants are installed and cured.

C. Verify surfaces to be coated are dry, clean, and free of efflorescence, oil, or other matter detrimental to application of water repellent.

3.02 PREPARATION

A. Protection of Adjacent Work:
   1. Protect adjacent landscaping, property, and vehicles from drips and overspray.
   2. Protect adjacent surfaces not intended to receive water repellent.

B. Prepare surfaces to be coated as recommended by water repellent manufacturer for best results.

C. Do not start work until masonry mortar substrate is fully cured

D. Remove loose particles and foreign matter.

E. Remove oil and foreign substances with a chemical solvent that will not affect water repellent.

F. Scrub and rinse surfaces with water and let dry.

G. Coordination with Sealant Joint: Assure treatment compatibility with each type of joint sealer within or adjacent to surfaces receiving water-repellent treatment.
   1. Mask surfaces indicated to receive joint sealers which would be adversely affected by clear water repellent treatment.

3.03 APPLICATION

A. Apply water repellent in accordance with manufacturer's instructions, using procedures and application methods recommended as producing the best results.

B. Apply at rate recommended by manufacturer, continuously over entire surface.

C. Apply two coats, minimum.

D. Remove water repellent from unintended surfaces immediately by a method instructed by water repellent manufacturer.

END OF SECTION

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SECTION 07-19-00 WATER REPELLENT COATINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The General and Special Conditions of the contract apply to the work of this section the same as though written herein.

1.02 SCOPE OF WORK

A. Furnish labor, materials, equipment, facilities, transportation and services to complete water repellent coating and related work as described herein and as shown on the Drawings.

1.03 RELATED SECTIONS

A. Section 016116 Volatile Organic Compound (VOC) Content Restrictions

B. Section 033001 Site Cast-in-Place Concrete

C. Section 321413 Precast Concrete Unit Paving

D. Section 321313 Concrete Paving

E. Section 321373 Site Joint Sealants

F. Section 099623 Graffiti Resistant Coatings

1.04 REFERENCES

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference:

1. American Society for Testing and Materials (ASTM)
2. ASTM C140/C140M - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units; 2023a.
3. ASTM C642 - Standard Test Method for Density, Absorption, and Voids in Hardened Concrete; 2021.
4. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings; 2005 (Reapproved 2018).
5. ASTM D5095 - Standard Test Method for Determination of the Nonvolatile Content in Silanes, Siloxanes and Silane-Siloxane Blends Used in Masonry Water Repellent Treatments; 1991 (Reapproved 2022).
6. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

1.05 SUBMITTALS

A. Submit product data under provisions of Section 013300 - Submittals. Partial or incomplete submittals are not acceptable and will be returned without a review.

B. Product data, and specifications for the following:

1. Include details of product description, tests performed, limitations to coating, cautionary procedures required during application, and chemical properties, including percentage of solids.

C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention; cautionary procedures required during application.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Manufacturer's Qualification Statement.

F. Installer's Qualification Statement.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. See Section 01-60-00 - Product Requirements for additional provisions.
2. Extra Water Repellent Material: Two gallons of type installed.

H. Substitutions: For materials that differ from a specified brand or product, submit samples, product specifications, and product literature. Follow procedures as prescribed under Section 01610 Substitutions.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years documented experience.

1.07 QUALIFICATIONS AND EXPERIENCE

A. Coating Systems Manufacturer: Company specializing in VOC approved water repellent systems with three years minimum experience.

B. Applicator: Technician specializing in application of specified water repellent coating, with 3 years minimum documented experience and approved by manufacturer.

1.08 RESPONSIBILITY

A. The Contractor shall be responsible for the protection of the improvements and public and private property adjacent to the work, and shall exercise due caution to avoid damage to such property. The work shall be protected and maintained throughout the contract period, including during suspension or work, and until final acceptance of the work. Contractor shall repair or replace damage improvements including damage from acts of vandalism, theft, and graffiti removal. Repairs or replacements shall be at least equal to original condition of existing improvement and match in finish and dimension.

B. Prior to work of this section, verify that previously installed work is complete to the point where this installation may properly commence. Verify that concrete pavement may be installed in accordance with the design, pertinent codes, regulations, and portions of the referenced standards.

C. In the event of discrepancy, immediately notify the Landscape Architect and/or owner’s representative.

D. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Do not apply coating when ambient air and surface temperature is lower than 45 degrees F or higher than 100 degrees F.

B. Protect liquid materials from freezing.

1.10 WARRANTY

A. See Section 01-78-00 - Closeout Submittals for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

C. Provide five year manufacturer warranty under provisions of Section 017800.

D. Warranty: Include coverage of materials and installation and resultant damage from failure of installation to resist penetration of moisture.

PART 2 - PRODUCTS

2.01 PENETRATING SEALER for Colored and Natural Gray Concrete Paving and Site Cast in Place Concrete.

A. Manufacturer: Prosoco Inc, Lawrence, KS 66046, phone (800) 255-4255.

B. Product: Saltguard Concrete Sealer

2.02 SILANE, SILOXANE, SILANE-SILOXANE BLEND, AND SILICONATE WATER REPELLENTS:

A. Basis of design: Subject to compliance with requirements, provide Prosoco Inc.; Sure Klean Weather Seal; Blok-Guard & Graffiti Control II, or comparable product by the following:

1. BASF Construction Chemicals; ____: www.buildingsystems.basf.com/#sle.
2. Concrete Sealers USA; ____: www.concretesealersusa.com/#sle.
3. Evonik Corporation; Protectosil CHEM-TRETE BSM 400: www.evonik.com/#sle.
4. Nox-Crete Inc; Natraseal: www.nox-crete.com/#sle.
5. Rust-Oleum Corporation; OKON S-20 Penetrating Silane-Siloxane Water Repellent Sealer: www.rustoleum.com/#sle.
6. Sherwin-Williams Company; ____: www.sherwin-williams.com/#sle.
7. Tex-Cote LLC; TEX-COTE RAINSTOPPER 120: www.texcote.com/#sle.
8. United Gilsonite Laboratories; _____: www.ugl.com/#sle.

2.03 MATERIALS

Water Repellent: Non-glossy, colorless, penetrating, water-vapor-permeable, non-yellowing sealer, that dries invisibly leaving appearance of substrate unchanged.

1. Applications: Vertical surfaces and non-traffic horizontal surfaces.
2. Number of Coats: Two.
3. VOC Content: Less than 600 g/L, when tested in accordance with ASTM D3960 or ASTM D5095.
4. Moisture Absorption When Applied to Masonry: Five percent, maximum, when tested in accordance with ASTM C140/C140M using masonry sample completely coated with water repellent.
5. Maintains dry appearance when wetted.
6. Active Content: 9 percent

7. Flash Point: 100 deg. F ASM D 3278
8. Freeze Point: Less than munus 22 deg F
9. Silane, siloxane, silane-siloxane blend, or siliconate that reacts chemically with concrete and masonry.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify existing conditions before starting work.

B. Verify joint sealants are installed and cured.

C. Verify surfaces to be coated are dry, clean, and free of efflorescence, oil, or other matter detrimental to application of coating. Apply neutralizing solution if required by manufacturer.

D. Beginning of installation means acceptance of substrate.

3.02 PREPARATION

A. Protection of Adjacent Work:
   1. Protect adjacent landscaping, property, and vehicles from drips and overspray.
   2. Protect adjacent surfaces not intended to receive water repellent.

B. Prepare surfaces to be coated as recommended by water repellent manufacturer for best results.

C. Clean surfaces thoroughly with appropriate Standoff Cleaner.

D. Do not start work until masonry mortar substrate is fully cured.

E. Install all caulking, patching and joint sealants before applying.

F. Remove loose particles and foreign matter.

G. Remove oil or foreign substance with a chemical solvent which will not affect coating.

H. Scrub and rinse surfaces with water and let dry.

I. Coordination with Sealant Joint: Assure treatment compatibility with each type of joint sealer within or adjacent to surfaces receiving water-repellent treatment. If applied on unscheduled surfaces, remove immediately, by approved method.
   1. Mask surfaces indicated to receive joint sealers which would be adversely affected by clear water repellent treatment.

3.03 APPLICATION OF SEALER

A. Apply full-strength per manufacture’s instructions, continuously over entire surface.

B. Protect adjacent concrete surfaces during application.

C. Apply two coats, minimum.

D. Clean up spillage or splattering on adjacent surfaces immediately with approved solvents.

END OF SECTION

SECTION 07-62-00 SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings, counterflashings, gutters, downspouts, and exterior penetrations.

B. Sealants for joints within sheet metal fabrications.

1.02 RELATED REQUIREMENTS

A. Section 07-71-23 - Manufactured Gutters and Downspouts.

1.03 REFERENCE STANDARDS

A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

B. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

D. CDA A4050 - Copper in Architecture - Handbook; Current Edition.

E. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.

1.05 SUBMITTALS

A. See Section 01-30-00 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate material profile, color, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

C. Samples: Submit two samples, 3 by 5 inches in size, illustrating metal finish color.

1.06 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

B. Maintain one copy of each document on site.

C. Fabricator and Installer Qualifications: Company specializing in sheet metal work with 3 years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Sheet Metal Flashing and Trim:
   1. ALUCOBOND by 3A Composites USA; ALUCOBOND AXCENT: www.alucobondusa.com/#sle.
   2. Petersen Aluminum Corporation; www.pac-clad.com/#sle.
   3. Taylor Metal Products; www.taylormetal.com/#sle.
   4. Substitutions: See Section 01-60-00 - Product Requirements.

2.02 SHEET MATERIALS

A. Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24-gauge, 0.0239-inch thick base metal.

B. Pre-Finished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24-gauge, 0.0239-inch thick base metal, shop pre-coated with PVDF coating.
   1. Fluoropolymer Coating: High performance organic powder coating, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system.
   2. Polyvinylidene Fluoride (PVDF) Coating: Superior performing organic powder coating, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
   3. Color: As selected by Architect from manufacturer's standard colors.

2.03 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Form pieces in longest possible lengths.

C. Hem exposed edges on underside 1/2 inch; miter and seam corners.

D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

E. Fabricate corners from one piece with minimum 18-inch long legs; seam for rigidity, seal with sealant.

F. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

G. Fabricate flashings to allow toe to extend 2 inches over roofing gravel. Return and brake edges.

2.04 GUTTERS AND DOWNSPOUTS

A. Gutters: SMACNA (ASMM) Rectangular profile.

B. Downspouts: Rectangular profile.

C. Gutters and Downspouts: Size indicated.

D. Accessories: Profiled to suit gutters and downspouts.
   1. Anchorage Devices: In accordance with SMACNA (ASMM) requirements.
   2. Gutter Supports: Brackets.
   3. Downspout Supports: Brackets.

E. Downspout Boots: Steel.

F. Downspout Extenders: Same material and finish as downspouts.

G. Seal metal joints.

END OF SECTION

SECTION 07-72-00 ROOF ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Snow guards.

1.02 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

1.03 SUBMITTALS

A. See Section 01-30-00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used.
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
   4. Maintenance requirements.

C. Shop Drawings: Submit detailed layout developed for this project and provide dimensioned location and number for each type of roof accessory.
   1. Snow Guards: Submit design calculations for loadings and spacings based on manufacturer testing.

D. Warranty Documentation:
   1. Submit manufacturer warranty.
   2. Ensure that forms have been completed in Owner's name and registered with manufacturer.
   3. Submit documentation that roof accessories are acceptable to roofing manufacturer, and do not limit the roofing warranty.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store products under cover and elevated above grade.

1.05 WARRANTY

A. See Section 01-78-00 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 2-year manufacturer warranty for. Complete forms in Owner's name and register with manufacturer.

C. Extended Correction Period: Correct defective work within 5-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 SNOW GUARDS

A. Unit Snow Guards: Individual projecting metal shapes, attached to standing seams of roof panel, and mechanically fastened to roof deck. Attachment design and layout per snowload and manufacturer requirements
   1. Projecting Metal Shapes: Galvanized steel, triangular spike design.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using methods recommended by manufacturer for achieving acceptable results for applicable substrate under project conditions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.

3.04 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 07-92-00 JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior joints in the following vertical surfaces and horizontal nontraffic surfaces:
   1. Construction joints in cast-in-place concrete.
   2. Control and expansion joints in unit masonry.
   3. Joints between metal panels.
   4. Joints between different materials listed above.
   5. Perimeter joints between materials listed above and frames of doors, windows, and louvers.
   6. Control and expansion joints in ceilings, and other overhead surfaces.
   7. Other joints as indicated.

B. Exterior joints in the following horizontal traffic surfaces:
   1. Isolation and contraction joints in cast-in-place concrete slabs.
   2. Joints between plant-precast architectural concrete paving units.
   3. Joints between different materials listed above.
   4. Other joints as indicated.

C. Interior joints in the following vertical surfaces and horizontal nontraffic surfaces:
   1. Control and expansion joints on exposed interior surfaces of exterior walls.
   2. Perimeter joints of exterior openings where indicated.
   3. Vertical joints on exposed surfaces of interior unit masonry walls and partitions.
   4. Perimeter joints between interior wall surfaces and frames of interior doors, windows and elevator entrances.
   5. Joints between plumbing fixtures and adjoining walls, floors, and counters.
   6. Other joints as indicated.

D. Interior joints in the following horizontal traffic surfaces:
   1. Isolation joints in cast-in-place concrete slabs.
   2. Other joints as indicated.
   3. Repair joints in concrete slab by sealant application at random cracks, isolation joints and penetrations.

E. Self-leveling pourable joint sealants.

F. Joint backings and accessories.

1.02 RELATED REQUIREMENTS

A. Section 01-61-16 - Volatile Organic Compound (VOC) Content Restrictions: Additional requirements for sealants and primers.

B. Section 09-21-16 - Gypsum Board Assemblies: Sealing acoustical and sound-rated walls and ceilings.

C. Section 09-30-00 - Tiling: Sealant between tile and plumbing fixtures and at junctions with other materials and changes in plane.

1.03 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015 (Reapproved 2022).

B. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants; 2018 (Reapproved 2022).

C. ASTM C834 - Standard Specification for Latex Sealants; 2017 (Reapproved 2023).

D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

E. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2023.

F. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).

G. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2022.

H. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints; 2019 (Reapproved 2020).

I. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).

J. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

1.04 SUBMITTALS

A. See Section 01-30-00 - Administrative Requirements for submittal procedures.

B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.
   3. Backing material recommended by sealant manufacturer.
   4. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
   5. Substrates the product should not be used on.

C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.

D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

E. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.

F. Preinstallation Field Adhesion Test Plan: Submit at least two weeks prior to start of installation.

G. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.

H. Manufacturer's qualification statement.

I. Installer's qualification statement.

J. Executed warranty.

1.05 QUALITY ASSURANCE

A. Maintain one copy of each referenced document covering installation requirements on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. TProduct Test report

D. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
   1. Adhesion Testing: In accordance with ASTM C794.
   2. Compatibility Testing: In accordance with ASTM C1087.
   3. Allow sufficient time for testing to avoid delaying the work.
   4. Deliver sufficient samples to manufacturer for testing.

5. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.

E. Preinstallation Field Adhesion Test Plan: Include destructive field adhesion testing of one sample of each combination of sealant type and substrate, except interior acrylic latex sealants, and include the following for each tested sample.
   1. Identification of testing agency.
   2. Preinstallation Field Adhesion Test Log Form: Include the following data fields, with known information filled out.
      a. Substrate; if more than one type of substrate is involved in a single joint, provide two entries on form, for testing each sealant substrate side separately.
      b. Test date.
      c. Location on project.
      d. Sealant used.
      e. Test method used.
      f. Copy of test method documents.
      g. Age of sealant upon date of testing.
      h. Test results, modeled after the sample form in the test method document.
      i. Indicate use of photographic record of test.

F. Field Adhesion Test Procedures:
   1. Allow sealants to fully cure as recommended by manufacturer before testing.
   2. Have a copy of the test method document available during tests.
   3. Take photographs or make video records of each test, with joint identification provided in the photos/videos; for example, provide small erasable whiteboard positioned next to joint.
   4. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.
   5. When performing destructive tests, also inspect the opened joint for proper installation characteristics recommended by manufacturer, and report any deficiencies.
   6. Deliver the samples removed during destructive tests in separate sealed plastic bags, identified with project, location, test date, and test results, to Owner.
   7. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Architect.

G. Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Destructive Tail Procedure.
   1. Sample: At least 18 inches long.
   2. Minimum Elongation Without Adhesive Failure: Consider the tail at rest, not under any elongation stress; multiply the stated movement capability of the sealant in percent by two; then multiply 1 inch by that percentage; if adhesion failure occurs before the 1-inch mark is that distance from the substrate, the test has failed.
   3. If either adhesive or cohesive failure occurs before minimum elongation, take necessary measures to correct conditions and retest; record each modification to products or installation procedures.

H. Field Adhesion Tests of Joints: Test for adhesion using most appropriate method in accordance with ASTM C1521, or another applicable method as recommended by manufacturer.

1.06 WARRANTY

A. See Section 01-78-00 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 2-year manufacturer warranty for installed sealants and accessories that fail to achieve a watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete forms in Owner's name and register with manufacturer.

C. Extended Correction Period: Correct defective work within 2-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 JOINT SEALANT APPLICATIONS

A. Scope:
   1. Exterior Joints:
      a. Do not seal exterior joints unless indicated on drawings as sealed.
      b. Seal the following joints:
         1) Wall expansion and control joints.
         2) Joints between doors, windows, and other frames or adjacent construction.
         3) Joints between different exposed materials.
   2. Interior Joints:
      a. Do not seal interior joints indicated on drawings as not sealed.
      b. Seal open joints except specific open joints indicated on drawings as not sealed.

B. Exterior Joints: Use nonsag nonstaining silicone sealant, unless otherwise indicated.
   1. Lap Joints in Sheet Metal Fabrications: Butyl rubber, noncuring.
   2. Lap Joints between Manufactured Metal Panels: Butyl rubber, noncuring.
   3. Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane traffic-grade sealant.

C. Interior Joints: Use nonsag polyurethane sealant, unless otherwise indicated.
   1. Wall and Ceiling Joints in Nonwet Areas: Acrylic emulsion latex sealant.
   2. Wall and Ceiling Joints in Wet Areas: Nonsag polyurethane sealant for continuous liquid immersion.
   3. Floor Joints in Wet Areas: Nonsag polyurethane non-traffic-grade sealant suitable for continuous liquid immersion.
   4. Wall, Ceiling, and Floor Joints Where Tamper-Resistance is Required: Non-sag tamper-resistant silyl-terminated polyurethane sealant.
   5. Joints between Tile in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.
      a. See Section 09-30-00 for sealing between tile and plumbing fixtures.
   6. Narrow Control Joints in Interior Concrete Slabs: Self-leveling epoxy sealant.
   7. Other Floor Joints: Self-leveling polyurethane traffic-grade sealant.

D. Interior Wet Areas: restrooms; fixtures in wet areas include plumbing fixtures, food service equipment, countertops, cabinets, and other similar items.

E. Areas Where Tamper-Resistance is Required: As indicated on drawings.

2.02 JOINT SEALANTS - GENERAL

A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

B. Colors: To match adjacent surface or as indicated in drawings

2.03 NONSAG JOINT SEALANTS

A. Nonstaining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus ____ percent, minimum.
   2. Nonstaining to Porous Stone: Nonstaining to light-colored natural stone when tested in accordance with ASTM C1248.
   3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
   4. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.

5. Color: Match adjacent finished surfaces.

B. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
   1. Color: White.
   2. Products:
      a. Adfast USA Inc; ADSEAL KB 4800 Series: www.adfastcorp.com/#sle.
      b. Everkem Diversified Products, Inc; TruSil 100: www.everkemproducts.com/#sle.
      c. Pecora Corporation; Pecora 898 NST (Non-Staining Technology): www.pecora.com/#sle.
      d. Sika Corporation; Sikasil GP: www.usa.sika.com/#sle.

C. Polymer Sealant: ASTM C920; single component, cured sealant is paintable and mold/mildew resistant, low odor and VOC, and ultraviolet (UV) resistant.
   1. Color: White.

D. Hybrid Elastomeric Sealant: ASTM C920, Grade NS, Uses M and A; single component; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus 50 percent, minimum.
   2. Hardness Range: 15 to 25, Shore A, when tested in accordance with ASTM C661.
   3. Color: Match adjacent finished surfaces.
   4. Service Temperature Range: Minus 75 to 300 degrees F.
   5. Products:
      a. Dow; DOWSIL Contractors Paintable Sealant - CPS: www.dow.com/#sle.
      b. Franklin International Inc; Titebond TiteShield Sealant: www.titebond.com/#sle.
      c. Franklin International Inc; Titebond WeatherMaster Metal Roof Sealant: www.titebond.com/#sle.
      d. Tremco Commercial Sealants and Waterproofing; Dymonic FC: www.tremcosealants.com/#sle.

E. Type ___ - Tamper-Resistant, Silyl-Terminated Polyurethane (STPU) Sealant: ASTM C920, Grade NS, Uses M and A; single component; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus ___ percent, minimum
   2. Hardness Range: 25 to 30, Shore A, when tested in accordance with ASTM C661.

F. Type ___ - Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus ____ percent, minimum.

G. Polyurethane Sealant for Continuous Water Immersion: ASTM C920, Grade NS, Uses M and A; single or multicomponent; explicitly approved by manufacturer for continuous water immersion; suitable for traffic exposure when recessed below traffic surface.
   1. Movement Capability: Plus and minus 35 percent, minimum.
   2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
   3. Color: Match adjacent finished surfaces.

H. Type ___ - Nonsag Traffic-Grade Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; explicitly approved by manufacturer for continuous water immersion and traffic without the necessity to recess sealant below traffic surface.
   1. Movement Capability: Plus and minus 25 percent, minimum.
   2. Hardness Range: 20 to 30, Shore A, when tested in accordance with ASTM C661.
   3. Color: Match adjacent finished surfaces.

I. Type ___ - Acrylic Emulsion Latex: Water-based; ASTM C834, single component, nonstaining, nonbleeding, nonsagging; not intended for exterior use.
   1. Color: Standard colors matching finished surfaces, Type OP (opaque).
   2. Grade: ASTM C834; Grade 0 Degrees F (Minus 18 Degrees C).

J. Acrylic Latex Sealant, Water-Based: ASTM C834 Type OP - Opaque and Grade Minus 18 degrees C (0 degrees F); ASTM C920 Class 100/50 for white and colors, and Class 25/25 for clear.
   1. Color: Standard colors matching finished surfaces.
   2. Application Temperature: Within range of 40 to 120 degrees F
   3. Service Temperature Range: From 0 to 160 degrees F.

K. Type ___ - Noncuring Butyl Sealant: Solvent-based, single component, nonsag, nonskinning, nonhardening, nonbleeding; nonvapor permeable; intended for fully concealed applications.

2.04 SELF-LEVELING JOINT SEALANTS

A. Type ___ - Self-Leveling Polyurethane Sealant for Continuous Water Immersion: Polyurethane; ASTM C920, Grade P, Uses M and A; single component; explicitly approved by manufacturer for traffic exposure and continuous water immersion.
   1. Movement Capability: Plus and minus 25 percent, minimum.

B. Rigid Self-Leveling Polyurethane Joint Filler: Two part, low viscosity, fast setting; intended for cracks and control joints not subject to significant movement.
   1. Hardness Range: Greater than 100, Shore A, and 50 to 80, Shore D, when tested in accordance with ASTM C661.

C. Type ___ - Semi-Rigid Self-Leveling Epoxy Joint Filler: Epoxy or epoxy/polyurethane copolymer; intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
   1. Composition: Multicomponent, 100 percent solids by weight.
   2. Durometer Hardness: Minimum of 85 for Type A or 35 for Type D, after seven days when tested in accordance with ASTM D2240.
   3. Joint Width, Minimum: 1/8 inch.

D. Semi-Rigid Self-Leveling Polyurea Joint Filler: Two-component, 100 percent solids; intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
   1. Durometer Hardness, Type A: 75, minimum, after seven days when tested in accordance with ASTM D2240.
   2. Color: Concrete gray.

2.05 ACCESSORIES

A. Sealant Backing Materials, General: Materials placed in joint before applying sealants; assists sealant performance and service life by developing optimum sealant profile and preventing three-sided adhesion; type and size recommended by sealant manufacturer for compatibility with sealant, substrate, and application.

B. Preformed Extruded Polyurethane Joint Seal: Medium-modulus, preformed polyurethane extrusion used to bridge joints under elastomeric wall coatings, in sizes to fit applications indicated on drawings, combined with polyurethane sealant for bonding joint seal to substrates.
   1. Size: 1-1/2 inch wide, in rolls 100 feet long.
   2. Thickness: 0.051 inch, with ridges along outside bottom edges for bonding area.

C. Masking Tape: Self-adhesive, nonabsorbent, nonstaining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

D. Primers: Type recommended by sealant manufacturer to suit application; nonstaining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Preinstallation Adhesion Testing: Install a sample for each test location indicated in the test plan.
   1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
   2. Notify Architect of date and time that tests will be performed, at least seven days in advance.
   3. Record each test on Preinstallation Adhesion Test Log as indicated.
   4. If any sample fails, review products and installation procedures, consult manufacturer, or take other measures that are necessary to ensure adhesion; retest in a different location; if unable to obtain satisfactory adhesion, report to Architect.
   5. After completion of tests, remove remaining sample material and prepare joints for new sealant installation.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in an inconspicuous area to verify that it does not stain or discolor slab.

3.03 INSTALLATION

A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Provide joint sealant installations complying with ASTM C1193.

C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

D. Install bond breaker backing tape where backer rod cannot be used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

H. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

3.04 FIELD QUALITY CONTROL

A. See Section 01-40-00 - Quality Requirements for additional requirements.

B. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.

C. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

END OF SECTION

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SECTION 08-11-13 HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated hollow metal doors and frames.

B. Thermally insulated hollow metal doors with frames.

1.02 RELATED REQUIREMENTS

A. Section 08-71-00 - Door Hardware.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2022.

C. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2023.

D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

E. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2023.

F. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.

G. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:
   1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
   2. Accessibility: Comply with ICC A117.1 and ADA Standards.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.02 HOLLOW METAL DOORS

A. Exterior Doors: Thermally insulated.
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level 2 - Heavy-duty.
      b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
      c. Model 1 - Full Flush.
      d. Door Face Metal Thickness: 18 gauge, 0.042 inch, minimum.
   2. Door Thickness: 1-3/4 inches, nominal.
   3. Top Closures for Outswinging Doors: Flush with top of faces and edges.

4. Door Finish: Factory primed and field finished.

2.03 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Exterior Door Frames: Face welded type.
   1. Frame Metal Thickness: 18 gauge, 0.042 inch, minimum.
   2. Frame Finish: Factory primed and field finished.
   3. Weatherstripping: Separate, see Section 08-71-00.

2.04 ACCESSORIES

PART 3 NOT USED

END OF SECTION

SECTION 08-71-00 DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for hollow metal doors.

B. Lock cylinders for doors that hardware is specified in other sections.

C. Thresholds.

D. Weatherstripping and gasketing.

E. Gate locks.

1.02 RELATED REQUIREMENTS

A. Section 08-11-13 - Hollow Metal Doors and Frames.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide door hardware as noted on the drawings, and as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Provide door hardware products that comply with the following requirements:
   1. Applicable provisions of federal, state, and local codes.

2.02 FINISHES

A. Provide MFRs standard finishes.

END OF SECTION

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SECTION 09-91-13 EXTERIOR PAINTING

PART 1 NOT USED

PART 2 PRODUCTS

2.01 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless required to be a field-catalyzed paint.
   1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Supply each paint material in quantity required to complete entire project's work from a single production run.
   3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is described explicitly in manufacturer's product instructions.

PART 3 EXECUTION

3.01 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

3.02 APPLICATION

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

C. Apply each coat to uniform appearance.

D. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

E. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

END OF SECTION

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SECTION 09-93-00 STAINING AND TRANSPARENT FINISHING

PART 1 NOT USED

PART 2 PRODUCTS

2.01 STAINS AND TRANSPARENT FINISHES - GENERAL

A. Finishes:
   1. Provide finishes capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Provide materials compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
   3. Supply each finish material in quantity required to complete entire project's work from a single production run.
   4. Do not reduce, thin, or dilute finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

PART 3 NOT USED

END OF SECTION

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SECTION 09-96-23 – GRAFFITI RESISTANT COATINGS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Permanent anti-graffiti coating system.

1.02 RELATED SECTIONS

A. Section 07 1900 – Water Repellent Coatings

B. Section 09 9000 – Exterior Painting

1.03 QUALITY ASSURANCE

A. Contractor Qualifications: Installer shall be a firm with not less than three years of successful experience in application of coatings of type required on substrates similar to those of this project. The firm shall be approved by the manufacturer of the coating for installation of their product.

B. Manufacturer's representative shall inspect substrate conditions including alkalinity and moisture content. Obtain written approval from representative before proceeding with work.

C. Meets ASTM-D7089 with Cleanability at least Level 2.

D. Meets ASTM-D6578 with Cleanability at least Level 9.

1.04 SUBMITTALS

A. Submit product data under provisions of Section 013300 - Submittals. Partial or incomplete submittals are not acceptable and will be returned without a review.

B. Instructions: Provide instructions bearing manufacturer's name, coating type, and recommended installation procedures. Provide methods and material instruction for graffiti removal. Include adhesive-backed graffiti removal instruction label suitable for application to interior surface.

C. Submit proof of purchase (Invoice of materials purchased) and proof of delivery of coating materials.

D. Manufacturer’s Warranty: Submit one copy of manufacturer's warranty for specified materials.

E. Field Sample: Apply graffiti resistant coating to field mock-up sample representing exterior wall surface to be coated. Apply coating system over a minimum 3 ft x 3 ft test area and test removal of applied spray paint in presence of Construction Manager for approval using removal methods recommended by the manufacturer.

1.05 EXTRA MATERIALS

A. Furnish the following to building owner upon completion of the Project:

1. Provide four containers of removal products as recommended by the manufacturer accompanied by removal instructions.

1.06 DELIVERY, STORAGE AND HANDLING

A. Section 01 60 00 - Product Requirements: Transport, handle, store, and protect products.

B. Paint orders to the manufacturer or supplier shall identify the store number, location, and address of project. Contractor shall require a record keeping account be established and maintained by the paint supplier which records graffiti resistant paint type, brand, and quantity purchased, for the specific project.

C. Deliver coating materials in sealed original labeled containers, bearing manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and/or reducing.

D. Store materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F in ventilated area and as required by manufacturer's instructions.

E. Prevent fire hazards and spontaneous combustion.

1.07 WARRANTY

A. Provide manufacturers written warranty guaranteeing effective graffiti removal for not less than 10 years and warrant that treated surfaces can be effectively and repeatedly cleaned of graffiti without damage or loss of effectiveness of the graffiti resistant coating. Manufacturer shall, for the duration of the warranty period, guarantee replacement of product where graffiti removal has shown to be ineffective.

1.08 PROJECT CONDITIONS

A. Environmental Requirements: Follow manufacturer's recommendations for temperature range in which coating may be applied.

PART 2 - PRODUCTS

2.01 GRAFFITI RESISTANT COATING

A. Graffiti resistant coating shall be a clear, non-sacrificial graffiti resistant coating which provides protection for exterior vertical surfaces from permanent graffiti staining and damage caused by spray paint and marking pens. Coating shall be suitable for application to painted and unpainted surfaces including masonry, concrete, metals, and EIFS. Product shall be of type such that recoating with the underlying paint is possible without removal of the graffiti resistant coating. Product shall be a coating that dries clear, non-yellowing, with a low luster.

1. Manufacturer:

a. VandlGuard Non-Sacrificial Graffiti Coating (Three Coats) by Rainguard International, Newport Beach, CA 888-765-7070.

B. Micro-Seal Water Repellant (One Coat) by Rainguard International, Newport Beach, CA 888-765-7070. (For first coat on unpainted concrete and masonry surfaces): As specified in Section 07 19 00.

C. Graffiti Remover: VandlClean Super graffiti remover by Rainguard International, Newport Beach, CA 888-765-7070.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify all surfaces are ready to receive coating in accordance with manufacturer’s printed requirements. Beginning of installation indicates acceptance of substrate.

B. Unpainted Concrete and Masonry: Verify water repellant has been applied in accordance with Section 07 19 00 to new or non-painted concrete and masonry surfaces prior to the application of the anti-graffiti coating.

3.02 PREPARATION

A. Surface shall be free of dirt, dust, contaminants such as curing compounds, hardeners, bond breakers, and form release. Allow painted surfaces to cure properly. Do not water blast painted surfaces. Assure surfaces are clean and dry.

B. Mask or otherwise protect adjacent surfaces not scheduled to receive coating. If applied on unscheduled surfaces such as glass, remove immediately, by approved method.

C. Protect landscaping, property, and vehicles from over spray and drift.

3.03 APPLICATION

A. Apply coating in accordance with manufacturer's published instructions.

B. Application Rate: Apply each coat at the manufacturers published application rate.

3.04 SURFACES TO BE COATED

A. Apply graffiti resistant coating to all vertical exterior exposed surfaces including concrete walls, masonry, metal frames, sheet metal items, stucco, wood, painted metal bollards, pand metal railing. Apply coating to painted and unpainted surfaces. Exclude horizontal surfaces subject to wheel or foot traffic.

3.05 MAINTENANCE

A. Deliver cleaning products to Store Manager for storage and subsequent use for graffiti removal. Apply cleaning instructions label to interior wall location as directed by the Construction Manager.

3.06 FIELD QUALITY CONTROL:

A. Verify application rate by periodic on-site inspection and calculation of area covered compared to consumption of coating material used. Document inspections showing total area covered and number and volume of coating containers used.

END OF SECTION

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SECTION 10-44-00 FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers.

1.02 REFERENCE STANDARDS

A. NFPA 10 - Standard for Portable Fire Extinguishers; 2022.

PART 2 PRODUCTS

2.01 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.

PART 3 NOT USED

END OF SECTION

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SECTION 11-68-33 ATHLETIC FIELD EQUIPMENT

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Provide all equipment and materials. Do all work necessary to furnish and install the athletic equipment, as indicated on the drawings, and as specified herein.

1.02 RELATED WORK

A. Examine Contract Documents for requirements that affect work of this section. Other specification sections that directly relate to work of this Section include, but are not limited to:

1. Section 03 3001 – Cast-in-Place Concrete
2. Section 31 2000 – Earth Moving
3. Section 32 1313 – Concrete Paving
4. Section 32 1813 – Synthetic Grass Surfacing

1.03 REFERENCES

A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. National Federation of State High School Associations (NFHS)
2. National Collegiate Athletic Association (NCAA)
3. International Association of Athletics Federations (IAAF)
4. ASTM International
5. American Sports Builders Association (ASBA)
6. Manufacturers Data and Recommended Installation Requirements.

1.04 SUBMITTALS

A. Submit product data under provisions of Section 013300 - Submittals. Partial or incomplete submittals are not acceptable and will be returned without a review.

B. Shop Drawings & Regulatory Requirements

1. Provide drawings of manufacturers recommended installation and foundation requirements prior to actual field installation work for Architect or Owner's Representative review and approval.
2. Retractable hitter's backdrop shall meet the requirements of the jurisdictional code authorities. Furnish all calculations, engineer's stamps (per State registration), drawings, and other items required by code authorities to obtain approval of installation

1.05 QUALITY ASSURANCE

A. The contractor shall only accept bids from those vendors or manufacturers that have been pre-approved or identified as approved equal.

B. Manufacturers warranties shall pass to the Owner and certification made that the product materials meet all applicable grade trademarks or conform to industry standards and inspection requirements. The Manufacturer shall have a current American Sports Builders Association (ASBA) Supplier Certificate of Distinction designation.

1.06 WARRANTY

A. The retractable hitter's backdrop manufacturer shall provide a warranty to the owner that covers defects in materials and workmanship of the netting for a period of 1 year from the date of substantial completion.

1.07 DELIVERY, STORAGE AND HANDLING

A. Materials delivered to the site shall be examined for concealed damage or defects in shipping. Any defects shall be noted and reported to the Owner's Representative.

B. Replacements, if necessary, shall be immediately re-ordered, so as to minimize any conflict with the construction schedule.

C. Sound materials shall be stored above the ground under protective cover or indoors so as to provide proper protection.

PART 2 PART 2 - PRODUCTS

2.01 BASIS OF DESIGN MANUFACTURERS

A. Manufacturers and product selections named are provided to establish the minimum standard.

1. Beacon Athletics (Attn: Bidding Dept – National Sales)
   901 Deming Way, Ste 101
   Madison, WI 53719
   Phone: (800) 747-5985
   Fax: (608) 836-0724
   Email: bids@beaconathletics.com
   Website: www.beaconathletics.com
2. Sportsfield Specialties, Inc.
   P.O. Box 231
   41155 State Highway 10
   Delhi, NY 13753
   Phone: (888) 975-3343
   Fax: (607) 746-8481
   Website: www.sportsfield.com

2.02 PRODUCTS

A. INFIELD BASES

1. Basis of Design: Champro Pro-Style Base Set by Beacon Athletics
   a. Model: 301-905-120, Champro Pro-Style Base Set
   b. Anchors and Plugs: Rubber base plugs and ground anchors as supplied by manufacturer for each specified base.
   c. Quantity: As per plan
   d. Contact: Bids Department | bids@beaconathletics.com | 608-824-1573
   e. Beacon Athletics LLC, 901 Deming Way Ste 101, Madison, WI 53719

B. HOME PLATE

1. Basis of Design: Champro Pro Style Home Plate with Anchor & Stanchion by Beacon Athletics
   a. Model: 301-675-880, Home Plate with Anchor and Stanchion

b. Anchors and Plugs: Rubber base plugs and ground anchors as supplied by manufacturer for each specified base.
c. Quantity: As per plan
d. Contact: Bids Department | bids@beaconathletics.com | 608-824-1573
e. Beacon Athletics LLC, 901 Deming Way Ste 101, Madison, WI 53719

C. PITCHING RUBBER

1. Basis of Design: Bulldog Pitching Rubber by Beacon Athletics
   a. Model: 335-210-100, Bulldog Pitching Rubber
   b. Size: Adult – 6" x 6" x 24"
   c. Material: Rubber with 2" Core
   d. Quantity: As per plan
   e. Contact: Bids Department | bids@beaconathletics.com | 608-824-1573
   f. Beacon Athletics LLC, 901 Deming Way Ste 101, Madison, WI 53719

D. FENCE TOPPER

1. Basis of Design: Plasticap Fence Topper by Beacon Athletics
   a. Model: 125-107-249-Y
   b. Corrugated plastic pre-slit poly tubing 4 ½" DIA
   c. UV Protected
   d. Color: Yellow
   e. Quantity: As per plan
   f. Contact: Bids Department | bids@beaconathletics.com | 608-824-1573
   g. Beacon Athletics LLC, 901 Deming Way Ste 101, Madison, WI 53719

E. DUGOUT RAIL PADDING

1. Basis of Design: Rail Padding Kit by Beacon Athletics
   a. Model: 145-100-050
   b. 18 oz colored vinyl cover with grommets every 6"
   c. (7) 4' sections of 1" padding with 2" inside diameter
   d. Polyethylene foam to be 2.0 pcf nominal wall thickness .875-1.125 thick
   e. 50 cable ties
   f. Color: Black

F. WINDSCREEN

1. Basis of Design: Polypropylene Windscreen by Beacon Athletics
   a. Size: Available in 6′ and 9′ sizes only, cut to length as needed.
   b. Fabric Weight: 6.1oz./sq. yd. Shading: 90% Shading.
   c. Tensile Strength: 420 x 225 lbs.
   d. Sewn Hems: Three-Ply hem with ends and corners sewn and finished with two rows of lock stitched thread.
   e. Thread: High heat bonded polyester with UV inhibitors built into yarn.
   f. Grommets: #2 brass Grommets every 18″.
   g. Color: Black
   h. Contact: Bids Department | bids@beaconathletics.com | 608-824-1573

i. Beacon Athletics LLC, 901 Deming Way Ste 101, Madison, WI 53719

G. FOUL POLES
1. Basis of Design: Beacon Athletics Collegiate Foul Ball Pole
a. Model: 130-380-214
b. Size: as per plan.
c. Mount: Embedded post
d. Quantity: As per plan
e. Color: Yellow
f. Contact: Bids Department | bids@beaconathletics.com | 608-824-1573
g. Beacon Athletics LLC, 901 Deming Way Ste 101, Madison, WI 53719

H. BASEZONE® FIELD WALL PADDING AND ACCESSORIES
1. Basis of Design: Sportsfield Specialties BaseZone® Field Wall Padding
a. Outdoor Vinyl Encasement:
i) High UV Resistance
ii) Total Weight: 18 oz./yd2 (ASTM D3776)
iii) Construction: 84% Vinyl Coating, 16% Polyester Fabric (ASTM D751)
iv) Tongue Tear: Warp 93 lbs., Fill 68 lbs. (ASTM D751)
v) Grab Tensile: Warp 232 lbs., Fill 213 lbs. (ASTM D751)
vi) Adhesion: Warp 28 lbs/in, Fill 40 lbs/in (ASTM D751)
vii) Abrasion: > 1000 Cycles (ASTM D3389-94)
viii) Cold Crack: -49° F (ASTM D2136)
ix) Rot, Mildew and Fungus Resistant: Yes
x) Flame Resistance: None
xi) Color: Custom blue to match EOU Standards guide: Pantone 295 C
b. 3” Thick High Impact 1580 Polyurethane Foam
i) Density: 1.45 – 1.55 pcf (ASTM D3574)
ii) Impression Load Deflection (4” x 25” x 25” Sample)
1. 25%: 75 – 85 (ASTM D3574)
2. 65%: 128 – 145 (ASTM D3574)
3. Support Factor 65/25: 1.7 min (ASTM D3574)
iii) Resilience (% Rebound): 40 – 48 (ASTM D3574)
iv) Tear Resistance: 1.5 – 2.5 lbs/in (ASTM D3574)
v) Static Fatigue:
1. % Loss @ 25% ILD: Less than 35 (ASTM D3574)
2. % Loss in Thickness: Less than 10 (ASTM D3574)
vi) Flammability: Passes with Class 1 Fabric (California TB 117-2013)
c. 3/4” Square Edge AdvanTech® Water Resistant Sheathing Panel; All Sides Stained and Sealed with Exterior Grade Finish
d. Stainless Steel Staples and Applicable Hardware
e. Wall Mounting Hardware:
i) Aluminum Z-Clip Wall Mounting Hardware
f. Impact Testing; Independently Certified:
i) ASTM F2440; 10 lb. x 6.3” Dia. Hemisphere Head Form, 4’ Drop Height (Impact Velocity: 10.9 MPH):
1. G-max: 47
2. Head Injury Criterion (HIC): 103
ii) Head Injury Criterion (HIC) Impact Test: 10 lb. x 6.3” Dia. Hemisphere Head Form, 5’ Drop Height (Impact Velocity: 12.2 MPH):
1. G-max: 92
2. Head Injury Criterion (HIC): 208

iii) Head Injury Criterion (HIC) Impact Test: 10 lb. x 6.3" Dia. Hemisphere Head Form, 5'-6" Drop Height (Impact Velocity: 12.8 MPH):
1. G-max: 244 (Failure)
2. Head Injury Criterion (HIC): 905

g. 1-Year Manufacturer's Limited Product Warranty
h. Optional:
i) Custom High-Resolution Digitally Printed Graphics: EOU logo per drawings

I. TNTBUC TIE-BACK TENSION BALL SAFETY NETTING SYSTEM WITH ULTRA CROSS NETTING AND ACCESSORIES
1. Basis of Design: Sportsfield Specialties Tie-Back Tension Ball Safety Netting System with Ultra Cross Netting and Accessories
a. COMPONENTS:
i) Tie-Back Tension Ball Safety Netting System Upright Support Posts and Tie Back Structures – Fabricated, Sized and Configured as Required:
ii) Height Above Finish Grade as Required
iii) Super Durable Powder Coated Custom Blue Finish (to match EOU standards guide: Pantone 295 C) with Enhanced Resistance to UV and Fade
iv) Permanent Embedment Mount
v) Hot Dipped Galvanized Assembly Hardware - Quantities, Sizes and Configurations as Required
b. Tie-Back Tension Ball Safety Netting System Wire Rope Support Structure:
i) Length, Height and Configuration as Required
ii) 6 x 25 IWRC Galvanized Wire Rope - 5/8" Diameter Main Horizontal Support, 37,000 lb. Minimum Breaking Strength, 12,333 lb. Minimum Working Load Limit
iii) 7 x 19 GAC Galvanized Aircraft Cable - 3/8" Diameter Tie-Back Support, 14,400 lb. Minimum Breaking Strength, 4,800 lb. Minimum Working Load Limit
iv) 7 x 19 GAC Galvanized Aircraft Cable - 1/4" Diameter Vertical and Strength, 2,333 lb. Minimum Working Load Limit
v) Hot Dipped Galvanized Attachment and Assembly Hardware Quantities, Sizes and Configurations as Required
c. Tie-Back Tension Ball Safety Netting System Net and Rope Bound Border:
i) Length, Height and Configuration as Required
ii) Ultra Cross Knotless Netting
iii) Dyneema® Ultra-High Molecular Weight Polyethylene (UHMWPE) SK-75 Black Fiber Construction
iv) 4 Ply, 1.2 mm (0.0472") Diameter Twine
v) 95% Open Mesh Area (See-Through Visibility)
vi) 58,445 psi Minimum Breaking Strength
vii) 30% Maximum Elongation at Break
viii) 1-3/4" (44 mm) Square Mesh Size, 0.009 lbs. per Square Foot
ix) 4-Strand, Braided, Continuous Monofilament Dyneema® Fiber
x) Black Multi-Filament Polypropylene Solid Braid Derby Rope Sewn Binding on Perimeter Edges - 1/4" Diameter, 530 lb. Minimum Breaking Strength
xi) Urethane Black Bonded Finish
xii) Strong Resistance to Ultraviolet (UV) Light Degradation Excellent Resistance to Chemicals and Water Absorption
d. Included Accessories:
i) Hot Dipped Galvanized Attachment and Assembly Hardware - Quantities, Sizes and Configurations as Required

ii) Black Rope for Net Binding Attachment to Wire Rope Support Structure – Quantities and Configurations as Required
iii) Stamped and Sealed Drawings and Calculations by a Licensed Professional Engineer of Record in the State of Project Location
Model Specific Hardware Kit and Installation Instructions
One (1) Year Limited Manufacturer's Product Warranty

PART 3 PART 3 – EXECUTION

3.01 INSPECTION

A. Examine the areas and conditions where equipment and systems are to be installed and notify the contractor of conditions detrimental to the proper and timely installation and completion of the work.

B. Do not proceed with the work until unsatisfactory conditions have been corrected by the contractor in a manner acceptable and to the satisfaction of the Architect/Engineer or Owner's Representative.

3.02 INSTALLATION

A. All athletic equipment shall be installed as recommended by manufacturer and as indicated on the drawings.

B. All retractable hitter's backdrop equipment shall be installed as indicated on approved submittals as recommended and in strict accordance with manufacturer's drawings.

C. All concrete footings for backstop netting system shall be installed as indicated on the drawings.

D. All poles and/or sleeves required for retractable hitter's backdrop system installation shall be set plumb and true to line and grade in concrete as indicated on the drawings and per manufacturer's recommendation.

E. All BaseZone® Field Wall Padding and Accessories shall be installed as recommended per manufacturer's written instructions and as indicated on the drawings. Installer should have a minimum of five (5) protective padding installations or similar experience in the previous three (3) years.

F. All TNTBUC Tie-Back Tension Ball Safety Netting Systems with Ultra Cross Netting and Accessories shall be installed as recommended per manufacturer's written instructions and as indicated on the drawings. Concrete anchoring foundations to be determined by others based on local soil conditions and building codes. Installer should have a minimum of five (5) ball safety netting system installations or similar experience in the previous three (3) years.

END OF SECTION

TABLE OF CONTENTS

FOR DOCUMENTS THAT ARE DIGITALLY SIGNED: IF PRINTED, THE PRINTED COPY NO LONGER MEETS REQUIREMENTS OF OAR 820-025-0010 AND PRINTED DOCUMENTS DO NOT BEAR THE SIGNATURE OF THE ENGINEER. UNSIGNED DOCUMENTS ARE PRELIMINARY, AND NOT FOR CONSTRUCTION.

THIS STAMP, ON THIS PROJECT APPLIES ONLY TO THE FOLLOWING SECTIONS AUTHORED BY:

MATTHEW J. CASH, PE
FLUENT ENGINEERING, INC.
2110 STATE STREET
SALEM, OR 97301

26 00 01 General Electrical Provisions- Bid Packages A, B, & C

26 00 20 Electrical Demolition- Bid Packages A, B, & C

26 00 26 Submittals and Shop Drawings- Bid Packages A, B, & C

26 05 13 Medium Voltage Cable- Bid Package A

26 05 19 Building Wire and Cables- Bid Packages A, B, & C

26 05 26 Grounding- Bid Packages A, B, & C

26 05 29 Supporting Devices- Bid Packages A, B, & C

26 05 33 Raceways and Fittings- Bid Packages A, B, & C

26 05 33.16 Outlet, Junction, and Pull Boxes- Bid Packages A, B, & C

26 05 53 Electrical Identification- Bid Packages A, B, & C

26 05 60 Overcurrent Protective Devices- Bid Packages A, B, & C

26 05 83 Wire Connections- Bid Packages A, B, & C

26 12 00 Oil Filled Transformer- Bid Package A

26 24 17 Panelboards- Bid Packages A, B, & C

26 24 18 SPD (Surge Protection) Equipment- Bid Packages A, B, & C

26 27 26 Wiring Devices- Bid Packages A, B, & C

26 51 13.10 Lamps- Bid Packages A, B, & C

26 51 13.20 Lighting Fixtures- Bid Packages A, B, & C

27 05 00 Voice Data System- Bid Packages B, & C



EXPIRES: 12/31/2027

SECTION 26-00-01 GENERAL ELECTRICAL PROVISIONS

PART 1 - GENERAL

Products under this contract must meet minimum specifications requirements in detail without exception unless specifically noted and approved as provided in these Specifications. Equipment submitted for review must clearly state on cover sheet any differences from specified product. Equipment substitution or submittal review does not relieve Contractor from meeting all requirements of specified item.

1.01 DEFINITIONS

A. Definitions herein are intended as advisory and shall not limit requirements within the Contract Documents. Where a conflict of definitions exists, the more stringent standard shall be used. Where a term is defined on a Drawing the Drawing definition shall be used for that drawing. Not all definitions are included. Trade standard terms are not defined.

1.02 CONTRACT DOCUMENTS

A. The Contract Documents are inclusive. All requirements of all Contract Documents shall be binding as if repeated herein and within this Division as required by any other Division or Contract Document.

B. This Division does not express or imply separation of the Contract Documents and shall not be considered as separation of the Work.

C. See Advertisement For Bids, Instructions to Bidders, Supplemental Instructions to Bidders, General Conditions, Supplemental General Conditions, Drawings and Specifications, and modifications incorporated in the documents before execution of the Agreement.

D. Conflicts: If any conflicts exist the more stringent is required.

1.03 SCOPE OF WORK

A. General: Provide complete and functional electrical systems as specified, as shown on Drawings, as required, and as intended. Work generally includes, inspections, electrical distribution, lighting, devices, wiring systems, Voice/Data cabling, raceways, and control systems.

B. Omissions: Contractor shall be responsible for additional labor, or additional material necessary for the proper execution of the Work. Omissions of expressed reference to any item shall not relieve the responsibly to conform to the Contract Documents

C. Scope of Electrical Work
   1. All materials and workmanship shall be furnished for complete, tested, and operating electrical systems as shown on the drawings and specified herein.
   2. Electrical work is to include the service. Complete to the point of connection with the serving utility. Any changes of or work required by the serving utility, are part of this work and shall be fully included in the bid price.
   3. Work is also to include main distribution panel, feeder system and branch circuit panels. Complete branch circuit wiring. Light fixtures, wall switches, receptacles and similar items, exterior lighting and wiring, and wiring and connection to all mechanical equipment, all fire alarm, phone system, unit phone wires, and kitchen equipment as required.
   4. Provide Power Connections to Equipment provided by other subcontractors, specified not shown, and/or part of a complete and operable system. This equipment may, or may not be shown, may, or may not be on this project, and generally includes, and is not limited to:
      a. Fire Alarm Control Panel (FACP), Fire Alarm Equipment Power Supplies, etc.

b. Lighting Control Panels, Lighting Controller Equipment, Lighting Controls.
c. Building Management Control System, Direct Digital Controls, HVAC Controls, and the like.
d. Window Treatments, Automatic Shades, Automatic Curtains, and the like.
e. Automatic Door Operators, ADA Doors, Sliding Automatic Doors, and the like.
f. Unitary, generally self-contained access controls.
g. Doorbells, door cameras, door locks, door strobes/flashers, etc.
h. Sump Pumps, freeze protection, and similar site equipment (including equipment located within the building footprint).
i. Domestic Water circulation pump(s).
j. Plumbing fixtures with automatic sink/flush valves, and the like.
k. Automatic plumbing electronic trap primers.

5. Control Connections to unitary Equipment provided by other subcontractors, specified, not shown, and/or part of a complete and operable system. This equipment may, or may not be shown, may, or may not be included in the project, and generally includes, and is not limited to, control wiring for:
   a. Window Treatments, Automatic Shades, Automatic Curtains, and the like.
   b. Automatic Door Operators, ADA Doors, Sliding Automatic Doors, and the like.
   c. Unitary, generally self-contained access controls
   d. Doorbells, door cameras, door locks, door strobes/flashers, etc.
   e. Sump Pump Controls, alarms, and the like.
   f. Water Level/Monitoring alarms, controls, etc.
   g. Automatic plumbing fixtures, and trap primer systems.
6. The lists above are intended to indicate equipment that is generally shown/specified elsewhere. Where specified, and/or shown otherwise, and/or specified by electrical follow additional power, and control requirements as indicated.

D. Contractor shall obtain, maintain (keep current), any required permits including any permits obtained (prior, during, or after bidding/quoting) by any other party, including the Owner, for the proper and lawful execution of the work. Pay for such required permitting unless otherwise arranged by the Owner. Contractor shall hire (sub-contract) as required for proper permitting such as permits that require electrical/mechanical/plumbing/low voltage/medium voltage/etc. licenses required to obtain permit(s).

E. Provide Equipment per Manufacture's Operation, Installation, and Programming requirements. Follow manufacture's Guidelines, Installation manuals. Provide additional equipment and as required for a complete, and satisfactory Installation.

1.04 CONFORMANCE WITH REQUIREMENTS

A. General: All Work shall conform to the reasonable requirements of the project within the scope of the project and authorizations. All work shall conform to the methods and requirements of Code at the location of the Work.
   1. Access and inspection: All portions of the Work shall be accessible to inspections and review at all reasonable times during construction. Contractor is responsible for providing access for review and inspection of the Work. Contractor shall secure written inspection reports prior to concealing Work. Contractor is responsible for damages to properly review the Work due to lack of at least 7 Days advance written notification to the Architect, and Engineer that Work is ready for inspection.
   2. Plenums: Provide raceway where conductors, and/or cables are routed through plenums. If specifically noted, or specified raceway is not required, plenum routes may

utilize conductors/cables rated for use in plenums, and shall be marked as such per NEC. Supporting devices utilized shall also be rated for use in plenums.

3. Fire Stop Seal (firestopping) as required.

B. Accounting: Provide general accounting information as to labor and equipment costs to assist in determination of modifications to the Contract. Provide accounting breakdown when required for securing Owner financing, or for analysis of equipment costs or equipment payback periods, as well as information for Owner incentives.

1.05 COORDINATION OF TRADES

A. Check all other trade drawings to avert potential installation conflicts. Should major changes from the Drawings be required to resolve potential conflicts, notify the Architect and secure written approval and agreement on necessary adjustments prior to start of installation.

B. Check all equipment locations and connections on the site for coordination with other Divisions equipment and connections and structure and the like.

C. Contractor is responsible for scheduling trades to properly execute all the Work as intended.

1.06 STANDARD OF CARE AND QUALIFICATIONS

A. General: Contractor shall be experienced and knowledgeable to Provide Work. Owner is not responsible for improper operation, incompliance, or installation due to Contractor's lack of knowledge or experience. Upon request, and where requested herein the Contractor shall supply qualifications and experience. Drawings are presented with industry terms, statements, and trade practices and it is the responsibility of the Contractor to be familiar. Provide written notification prior to Bid to the Architect if any representation is not understood, or outside standard practice.

B. Like Materials and Quality Control: Unless otherwise modified by Alternate(s)- Systems provided shall be new (See Alternates), and of like materials provided through manufacturer authorized distributors. Provide equipment of same system and type by same manufacturer. Items of the same by different manufacturers will be rejected. Equipment shall conform to all applicable Code and applicable listing criteria as of the date of the Contract Documents. Equipment determined to be manufactured under any other listing or Code prior to the date of the Contract is not acceptable, even if the equipment is new or has not been used. All equipment provided to project shall be listed by an approved listing organization.

1.07 EXAMINATION OF SITE

A. Examine Site of Work prior to making Bid. Ascertain all related physical conditions.

B. Verify at the Site of Work prior to Bid scale dimensions shown due to exact locations, distances, and levels will be governed by actual field conditions.

C. Owner will not be responsible for any loss or costs that may be incurred due to a Bidder's failure to fully inform themselves prior to Bid in regard to conditions pertaining to the Work and nature of the Work.

1.08 SPARE RACEWAY

A. In addition to spare raceways required herein, provide spare raceways emanating from equipment pads where pads prevent access to equipment mounted on pads. Examples include transformers, MCC's, switchboards, generators, and the like. Route spares to landscaped areas at exterior locations or to equipment room interior accessible walls at interior locations.

B. Provide not less than (2) 4" and (4) 2" spare raceway. Coordinate termination and route locations/direction with Owner. See Raceway Specifications. Additional Spare Raceway may be shown on Drawings, or required elsewhere herein.

1.09 MINOR DEVIATIONS

A. Make minor changes in equipment locations and equipment connections as directed or required without extra cost.

1.10 RECORD DRAWINGS

A. Maintain a marked set of prints at job site at all times. Show all changes from the original drawing set whether visible or concealed. Include all addendums, field orders, change orders, clarifications, request for information drawn responses, and deviations. Dimension accurately from building lines, floor, or curb elevations. Show exact location, elevation, and size of conduit/raceway, access panels and doors, equipment, and all other information pertinent to the Work.

B. At project completion, submit marked set to Architect for review.

1.11 TRAINING

A. See individual specifications sections for additional requirements.

B. Provide training of Owner's selected staff for all electrical systems specified herein.

C. Notify and Coordinate with Owner for training and attendance not later than 15 Days prior to training.

D. Provide 2.0 hours of general system training in addition to training indicated herein.

E. Training shall be conducted by qualified individuals familiar with the Work, and with the equipment.

F. Instructor shall be familiar with programming and operation of equipment and shall provide instruction to do such.

G. Provide contact information to Owner for an additional 1 hours support for all electrical systems.

H. Training shall not occur prior to systems being fully inspected, operational, and complete.

I. Utilize necessary training materials, conduct training at project location including walk-through of equipment on-site.

J. Provide Owner with all required Operation, Maintenance, and Programming manuals provided by equipment manufacturer.

K. Owner shall determine attendee's at training, not the contractor. Contractor shall re-train if attendee's were not selected by the Owner.

1.12 WARRANTY

A. Warrant Work, materials, and equipment for not less than one year.

B. Provide additional warranty as required herein.

1.13 PRODUCTS
THIS PART NOT USED

1.14 EXECUTION
THIS PART NOT USED

END OF SECTION

SECTION 26-00-20 ELECTRICAL DEMOLITION

PART 1 - GENERAL

1.01 INTENT

A. The electrical system shall be adjusted to accommodate installation of the new work and is required to meet Code. Necessary adjustments are shown on Drawings and indicated herein.

1.02 EXISTING CONDITIONS

A. The locations of existing utilities and equipment are shown in an approximate way only and have not been independently verified by the Owner or Owner's Representative. Contractor shall determine the exact location of every existing utility before commencing work, and agrees to be fully responsible for any and all damages which might be occasioned by the Contractor's failure to exactly locate and preserve utilities and equipment. Replace damaged items with new material to match existing. Promptly notify Owner if utilities are found which are not shown.

B. Existing equipment to be removed contains PCB's, Mercury, and other hazardous materials.

1.03 PRODUCTS

THIS PART NOT USED

PART 2 - EXECUTIONS

2.01 DEMOLITION

A. Verify exact location of existing light fixtures in the field. Only partial (or no) existing electrical shown. Locations of items shown on the Drawings as existing are partially based on field inspection of unconcealed equipment and record drawings that may contain errors. The contractor shall verify the accuracy of the information shown prior to bidding and provide such labor and material as is necessary to accomplish the intent of the Contract Documents.

B. Remove existing fixtures, and associated electrical equipment from areas scheduled for remodeling, relocation, or demolition unless indicated as retained, or noted on the Drawings.

C. Maintain continuity of existing systems that remain. Remove or relocate electrical boxes, conduit, wiring, equipment, fixtures, etc. as may be encountered in removed or remodeled areas in the existing affected by this work. Wiring which serves usable existing equipment shall be removed and restored clear of the construction or demolition. If existing junction boxes will be made inaccessible, or if abandoned outlets serve as feed through boxes for other existing electrical equipment which is being retained, new conduit and wire shall be provided to bypass the abandoned equipment. If existing conduits pass through areas being removed or remodeled, new conduit and wire shall be provided to reroute clear of the construction or demolition and maintain service to the existing load.

D. Remove abandoned wiring, and leave site clean.

E. Do not disconnect service without approval from the Owner and Utility. Coordinate demolition work with the utility.

F. Verify with the General Contractor a location for storage of materials, supplies, tools, rubbish, etc. prior to start of Work.

G. Include disposal costs in bid unless item is specifically noted as salvage to Owner, or retained. Include removal, retainment, and salvage to Owner costs in bid; including relocating equipment to another location on the Owner's site. Owner has first right of refusal for any other equipment

scheduled for demolition not already noted as salvaged to Owner. Owner may elect to salvage any equipment scheduled for disposal.

H. Protect equipment salvaged to Owner. For equipment with disposal/recycle/salvage value, such proceeds shall be passed to Owner through inclusion in total bid.

I. Equipment being retained shall be protected from damage, stored, labeled and reused. Contractor is responsible for damage to retained equipment. Contractor is responsible for labeling retained equipment with non-damaging labels. Should Contractor not label retained equipment, labels become separated, and/or labeling is inaccurate, Contractor shall be responsible for costs to determine equipment type, labeling, as part of a survey to re-install retained equipment in a specific condition, location, with specific required function. Equipment varies and labeling/function type of retained equipment is essential to protect success, schedule, and budget. Contractor is responsible for schedule delays, and equipment costs, as a result of equipment damage, replacement equipment procurement, (due to Contractor's damage or not labeling properly), and/or labeling errors, omission, adherent.

J. (E) Ballasts with PCB's and (E) Lamps: Contractor shall properly handle, prepare for disposal (such as box, barrel, etc.), and dispose of equipment as required. Recycling is to be used to the extent feasible where costs to recycle properly do not exceed cost to dispose of properly. (E) ballasts contain PCB's unless marked by the manufacturer on the ballast "No PCB's"

1. Barrel leaking PCB ballasts per disposal requirements in approved barrels, not exceeding barreling volume/quantity allowances. Dispose of PCB's ballasts in a facility regulated under the Federal Toxic Substances Control Act.
2. Non-leaking PCB ballasts not recycled shall be disposed at a PCB disposal facility in approved leak-proof containers.

END OF SECTION

SECTION 26-00-26 SUBMITTALS AND SHOP DRAWINGS

PART 1 - GENERAL

1.01 REQUIREMENTS

A. Refer to Division 1

B. Organization

1. Order submittals in logical form with tab dividers indicating specification section, and specification title.
2. Equipment shown on schedules shall be in logical order as the equipment appears on the schedule (i.e. light fixture type A precedes light fixture type Z), and be submitted with IDs matching schedule(s).
3. Submit for review.
4. Clearly readable electronic submittals are per Division 1.
    a. Contractor is responsible to verify receipt of electronic submittals by Engineer.
    b. Electronic Submittals shall include the project title in the subject line with unique submittal number, and description of submittal.
    c. Submit to Email address: submittals@fluentengineering.com
        1) Fluent Engineering has Microsoft 365 limits on E-mail sizes; however, from time to time our email service provider may restrict incoming e-mails beyond our control.
        2) Contractor is responsible for any damage as a result of viruses or other malicious software or links to such contained with submittal
        3) Fluent Engineering will accept only PDF electronic files. ZIP files, links, images files, images within an email message, and Dropbox type services, etc. will not be opened/accepted.
        4) Open file sharing programs such as Dropbox are not permitted and are considered a compromise of project security / non-disclosure agreements.
        5) Coordinate with Architect if PDF E-mail is too large to be sent.
        6) Engineer may elect on a case by case basis to utilize the/a Contractor's online submittal system with Owner's approval.

C. Allow no less than 20 Days for review by Engineer for every submittal/resubmittal.

D. Contractor is responsible to submit and verify receipt of comments for all submittals.

E. Resubmittals shall clearly indicate changes. Only revised items not marked as accepted will be reviewed. Items previously accepted will not be reviewed again, and may continue to indicate accepted on review forms unless Contractor submits a separate RFI, or letter requesting another review of that specific item and describes what changes from the previously accepted item. The Engineer's review may or may not indicate if an items status has changed. For the purposes of this paragraph submittals marked as "make corrections noted", 'D' letter codes, or similar are considered accepted. "Revise and Resubmit", "Rejected", or similar are not accepted.

F. Contractor is responsible for Engineer's fees after three submittal reviews of equipment of the same specification section.

G. Substitutions shall be separately submitted. Submit substitution request form as outlined by Division 01, and/or Division 00, if no form specified, provide CSI Substitution After Bidding Form, complete, signed, and filled out as to reason(s) for substitution request.

H. Submittals do not satisfy requirement(s) to "coordinate", "verify", "make sure", or other direction to the Contractor to actively determine. For example, if "verify finish" with another party direction is given, the EOR is not providing that verification with an accepted review. Submit RFI, or other specified action (such as discussed meeting minutes) to satisfy such direction.

I. No item requiring review shall be delivered to the site or otherwise provided to the Project until submittals have been reviewed by the Engineer.

1.02 DEFINITIONS

A. Manufacturing Data: Information regarding the product(s) and equipment issued by the manufacturer as described below.

B. Manufacturer's Label: Manufacturer's label shall include a typewritten list of manufacturer's name, sizes and model or catalog numbers.

C. Manufacturer's Catalog Data: Manufacturer's catalog data shall include standard catalog information (Cut Sheets) marked to indicate specific equipment and options for complete and functional system. All components of the system shall be included. Include listing information. Include installation instructions.

D. Manufacturer's Technical and Engineering Data: Manufacturer's technical and engineering data shall include materials, dimensions, details, installation instructions, weights, capacities, illustrations, wiring diagrams, control diagrams, control schematics, piping diagrams, connection diagrams, performance data, trip curves, listings, mix design, test results, and any other information required for a complete evaluation of the equipment specified, and to verify compliance with the Contract Documents. All available details shall be included with any modifications to the equipment indicated. All manufacturers and associated model numbers used for complete system shall be indicated.

E. Programming Data: Provide complete technician-level programming and configuration information necessary to install, adjust, restore, and maintain the Controls. Include as applicable:
   1. Sequence of Operation / Programming Matrix – Tabular or narrative description of control logic and cause–effect relationships, coordinated with Contract Documents.
   2. Protection and Safety Settings – All adjustable trip points, setpoints, delays, interlocks, and safety limits required for safe and compliant operation.
   3. Programming Tools / Interfaces – Identification of software, interface hardware, cables/adapters, and communication protocols necessary to access and modify system programming in the field.
   4. Programming Interface Software – Name, version, and licensing status (temporary or permanent) number of users, user level (admin, operator, maintenance, etc.) of all software required for reprogramming and diagnostics; include access credentials and remote/onsite accessibility.
   5. Future Replacement / Reprogramming Data – Instructions and data sets enabling replacement components to be programmed or reprogrammed to match as-left conditions without additional engineering.

F. Shop Drawings: Shop drawings are Construction drawings of items manufactured specifically for this project. Shop drawings shall include dimensions, construction details, weights, and additional information to identify the physical features of the system or piece of equipment. Drawings shall be adequately sized and scaled for a complete review.

G. Samples: Samples include actual example of the equipment to be installed. Include actual color, finish, and functioning replica of equipment to be installed. Samples will be returned to the Contractor when submitted with pre-paid postage.

H. Certifications and Qualifications: Submit list of past projects with same systems. Submit information listing references, copies of certificates issued by manufacturer, school, and standards organizations. Submit information mandated in specific specification section.

1.03 SUBMITTALS REQUIRED

A. Product Evaluation Data. 5 copies of product literature. The submittal schedule for product evaluation data is as indicated below. Each item requiring a submittal is given the following code:

L	Manufacturer's Label
C	Manufacturer's catalog data (Cuts)
E	Manufacturer's technical and engineering data
P	Programming Data
S	Shop drawings
SA	Samples
CR	Certifications
Q	Qualifications

1.04 SUBMITTAL SCHEDULE
Division 26 - Electrical

Section 26 05 13- MEDIUM VOLTAGE CABLE	C, E
Section 26 05 19- BUILDING WIRE AND CABLES	C
Section 26 05 26- GROUNDING	C
Section 26 05 29- SUPPORTING DEVICES	L
Section 26 05 33- RACEWAYS & FITTINGS	L
Section 26 05 33.16- OUTLET, JUNCTION, AND PULL BOXES	C
Section 26 05 53- ELECTRICAL IDENTIFICATION	L,SA
Section 26 05 60- OVERCURRENT PROTECTIVE DEVICES	C,E,S
Section 26 05 83- WIRE CONNECTIONS	L
Section 26 16 00- OIL FILLED TRANSFORMER	C,E,S, Test Data per Section
Section 26 24 17- PANELBOARDS	C,E,S
Section 26 24 18- SPD (SURGE PROTECTION) EQUIPMENT	E,S
Section 26 27 26- WIRING DEVICES	C,E,S
Section 26 51 13.10- LAMPS	C
Section 26 51 13.20- LIGHTING FIXTURES	C,S
Section 27 05 00-VOICE DATA SYSTEM	C, S

PART 2 - PRODUCTS
THIS PART NOT USED

PART 3 - EXECUTION
THIS PART NOT USED

END OF SECTION

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SECTION 26-05-13 MEDIUM VOLTAGE CABLE

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Provide, terminate, and connect medium voltage cables.

1.02 CONTRACT CONDITIONS

A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings

1.03 APPLICABLE STANDARDS

A. National Fire Protection Association (NFPA)
   1. NFPA 70 National Electrical Code

B. Insulated Power Cable Engineers Association (IPCEA)
   1. S-93-969 5-46kV Shielded Power Cable for Use in Transmission and Distribution of Electrical Energy (NMEA WC-74)

C. Underwriters Laboratories (UL)
   1. UL 1072-2006 Medium Voltage Power Cable

1.04 SUBMITTALS

A. Submit WC -74 manufacturers certified reports to Engineer. Certified copies shall show conformance with the referenced standards and shall be reviewed prior to delivery of cable.

B. Submit test results indicated herein when requested, and at Contract Closeout.

PART 2 - PRODUCTS

2.01 MATERIAL, MEDIUM VOLTAGE CABLE:

A. Medium voltage cable shall be in accordance with the NEC, IPEA, and as shown on the Drawings.

B. Shall be single conductor stranded copper type as shown on the Drawings.

C. Insulation:
   1. Insulation level shall be 133 percent.
      a. Types:
         1) Ethylene propylene rubber insulation shall be thermosetting, light and heat stabilized. Cable type abbreviation, EPR.
         2) Polyethylene insulation shall be thermosetting, light and heat stabilized, chemically crosslinked. Cable type abbreviation, CCLP.
         3) Within vaults, switchgear rooms and equipment assemblies where the incoming feeder cables are not suitable for connections between the protective equipment, disconnects and transformers, install suitable, approved cables.

D. Conductors and insulation shall be wrapped separately with semi-conducting tape.

E. Insulation shall be wrapped with non-magnetic, metallic shielding.

F. Heavy duty, overall protective jackets of chlorosulphonated polyethylene, neoprene, polyvinyl chloride or equal shall enclose cable.

G. Cable temperature ratings for continuous operation, emergency overload operation and short circuit operation shall be not less than the IPCEA Standard for the respective cable.

H. Manufacturer's name, size, insulation type, and other pertinent information shall be marked or molded clearly on the overall jacket's outside surface or incorporated on marker tapes within the cables at reasonable intervals.

2.02 MATERIAL, TERMINATIONS

A. The materials shall be compatible with the conductors, insulations and protective jackets on the cables and wires.

B. The terminations shall insulate and protect the conductors not less than the insulation and protective jackets on the cables and wires which protect the conductors.

C. Terminating Fittings:
   1. Shall be heavy duty, pressure type fittings which will assure satisfactory performance of the connections under conditions of temperature cycling and magnetic forces from available short circuit currents.
   2. The fittings shall be suitable designed and the proper size for the cables and wires being spliced and terminated.

D. Terminating Kits:
   1. General
      a. Shall be assembled by the manufacturer or supplier of the material and shall be packaged for individual splices and terminations or for groups of splices and terminations.
      b. Shall consist of materials designed for the cables being spliced and terminated and shall be suitable for the prevailing environmental conditions.
      c. Shall include detail drawings and printed instructions for each type of splice and termination being installed, as prepared by the manufacturers of the materials in the kits.
      d. Detail drawings and printed instructions shall indicate the cable type, voltage rating, manufacturer's name and catalog numbers for the materials indicated.
      e. Voltage ratings for the splices and terminations shall be not less than the voltage ratings for the cables on which they are being installed.
      f. Reduce stress and absorb shock/expansion as required by termination equipment manufacturer and cable manufacturer. Include stress-cone for live front and/or bolt connections. Include breaks (dead/load) for bushing/dead front connections.
      g. Deadbreak for dead-front equipment rated above 200A. 600A Rated.
      h. Loadbreak for dead-front equipment rated 200A or below. 200A Rated.
      i. See Drawings for additional requirements.

2.03 MATERIAL, FIREPROOFING TAPE

A. The tape shall consist of a flexible, conformable fabric of organic composition coated one side with flame-retardant elastomer.

B. The tape shall consist of a flexible, conformable fabric of organic composition coated one side with flame-retardant elastomer.

C. The tape shall not deteriorate when subjected to water, gases, salt water, sewage, or fungus. It shall be resistant to sunlight and ultraviolet light.

D. The finished application shall withstand a 200 ampere arc for not less than 30 seconds.

E. Securing Tape: Shall be glass cloth electrical tape not less than 7 mils thick, and 3/4-inch wide.

PART 3 - EXECUTION

3.01 INSTALLATION, MEDIUM VOLTAGE CABLE

A. Installation shall be in accordance with the NEC, and as shown on the Drawings.

B. Follow sequencing as indicated on Drawings

C. Use suitable lubricating compounds on the cables and wires to prevent damage to them during pull. Provide compounds that are not injurious to the cable and wire jackets, and do not harden or become adhesive.

D. Splices are not permitted.

E. In manholes, underground raceways and other outdoor locations:
   1. Seal the cable ends prior to pulling them in to prevent the entry of moisture.
   2. For ethylene propylene rubber and polyethylene insulated cables, use bags of epoxy resin which are not less than 1/4-inch larger in diameter than the overall diameter of the cable. Clean each end of each cable before installing the epoxy resin over it.

F. Provide ground shield and connect to termination equipment/feed as required. Include ground conductor where required per NEC.

3.02 INSTALLATION AND TERMINATIONS

A. Install the materials as recommended by their manufacturer including special precautions pertaining to air temperature during installations.

B. Installation shall be accomplished by qualified personnel trained to accomplish high voltage equipment installations. All instructions of the manufacturer shall be followed in detail.

3.03 INSTALLATION, FIREPROOFING

A. Cover all power cables located in manholes, handholes and junction boxes with arcproof and fireproof tape.

B. Apply the tape in single layer, one-half lapped or as recommended by the manufacturer. Install the tape with the coated side towards the cable and extend it not less than 1-inch into each duct

C. Secure the tape in place by a random wrap of glass cloth tape.

3.04 FEEDER IDENTIFICATION

A. In each manhole, pullbox, and termination point install permanent tags on cables and wires of each circuit to clearly designate their identification and voltage. The tags shall be the embossed brass type and shall also show the cable type and voltage rating. Position the tags so they will be easy to read after the fireproofing is installed.

3.05 FIELD TESTS FOR MEDIUM VOLTAGE CABLE

A. New Cable
   1. Acceptance tests shall be performed on new cable only.

2. Provide High Potential Tests and Dielectric Absorption Tests. Verify conformance with manufacturer's specifications and herein.
3. Test and verify ringing and document ringing procedure and verification results to assure cables are properly phased. Match existing (replaced line) cable phase-to-phase configuration.
4. Test new cable after installation, and terminations have been made, but before connection to service equipment. See Sequence on Drawings.

B. High Potential Test:
1. Leakage current test shall be by high potential D.C. step voltage method.
2. Prior to high potential test, test the cable and shields for continuity, shorts, and grounds.
3. High potential test shall measure the leakage current from each conductor to the insulation shield. Use corona shields, guard rings, taping, mason jars, or plastic gabs to prevent corona current from influencing the readings. Unprepared cable shield ends shall be trimmed back 1-inch or more for each 10 kV of test voltage.
4. Safety Precautions:
    a. Exercise suitable and adequate safety measures prior to, during, and after the high potential tests, including placing warning signs and preventing people and equipment from being exposed to the test voltage, including within tunnels. Coordinate testing time and date with Owner.

C. Test Voltages:
1. New shielded EPR and CCLP cable D.C. test voltages shall be as follows:

Rated-Voltage Phase-to-Phase (kV)	**Conductor Size**	**Nominal Insulation Thickness (Insulation Level)**		**Maximum dc Field Test Voltage (kV)**	
	AWG/kcmil	**100%**	**133%**	**100%**	**133%**
		mils	**mils**		
5	8 - 1000	900	115	28	36
ICEA dc Field Test Voltages (ICEA S-97-682 Utility Shielded Power Cables Rated 5,000-46,000 Volts					

D. High Potential Test Method:
1. Apply voltage in approximately 8 to 10 equal steps.
2. Raise the voltage slowly between steps.
3. At the end of each step, allow the charging current to decay, and time of the interval of decay.
4. Read the leakage current and plot a curve of leakage current versus test voltage on graph paper as the test progresses. Read the leakage current at the same time interval for each voltage step.
5. Stop the test if leakage currents increase excessively or a "knee" appears in the curve before maximum test voltage is reached.
    a. For new cable, replace the cable and repeat the test.
6. Upon reaching maximum test voltage, hold the voltage for five (5) minutes. Read the leakage current at 30 second intervals and plot a curve of leakage current versus time on the same graph paper as the step voltage curve.
    a. Stop the test if leakage current starts to rise or decreases and, again, starts to rise. Leakage current should decrease and stabilize for good cable.
7. Terminate test and allow sufficient discharge time before testing the next conductor.
8. Include test documentation at shut-down coordination meeting. Submit test documentation when requested by Owner or Engineer and Submit test documentation with Contract Closeout documentation.

E. Dielectric Absorption Test:

1. Completely isolate extraneous electrical connections to new cable at terminations and joints.
2. Safety precautions shall be observed. Each cable shall be given a full dielectric absorption test with a 5000V insulation resistance test set.
3. Test shall be applied for a long enough time to charge the cable.
4. Readings shall be recorded every 15 seconds during the first 3 minutes, and 1 minute intervals thereafter.
5. Test shall continue until three equal readings 1 minute apart are obtained. Readings shall not be less than 200 megohms at an ambient temperature of 68 degrees F. Readings taken at other temperatures shall be corrected accordingly.
6. Verify test results per manufacturer requirements, Reference Standards, and herein.
7. Include test documentation at shut-down coordination meeting. Submit test documentation when requested by Owner or Engineer and Submit test documentation with Contract Closeout documentation.

END OF SECTION

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SECTTION 26-05-19 BUILDING WIRE & CABLES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Wires and Cables

1.02 REFERENCE STANDARDS

A. National Fire Protection Association (NFPA).
   1. NFPA 70 National Electrical Code.

1.03 DELIVERY, STORAGE AND HANDLING

A. Deliver new wire and new cable to site in new packaging with standard cable coils/reels. Packaging shall clearly show length, wire size, wire/cable type, and manufacturer.

B. Protect products from weather, moisture, and damage.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Building Wiring & Insulation: Copper, 98 percent conductivity, stranded. Solid may be used at contractor's option for wire smaller than #8 AWG. 600 Volt insulation, Type THHN for dry interior and damp interior locations. Type THW, THWN or XHHW for wet locations, and exterior locations.

B. Conductor cable with conductors smaller than #12 AWG for branch circuits not permitted.

C. Exterior cables exposed to sunlight shall be listed "sunlight resistant."

D. Control panel wiring no smaller than #14 AWG stranded switchboard Type MTW unless otherwise specified on the Drawings or required by system manufacturer.

E. Motor control wires shall be no smaller than #14 AWG.

F. Wire for other areas as shown on the Drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Parallel feeders shall have identical conductor length.

B. Use UL listed pulling lubricant for greater than equivalent #4 AWG wire diameter.

C. Use UL listed pulling lubricant for pulls greater than 75 feet.

D. Remove moisture from raceway prior to wire pull.

E. Provide copper grounding conductors. Provide a ground wire through conduits. Utilize the ground wire as the equipment grounding conductor no smaller than #12 AWG otherwise sized as shown and per NEC.

F. Do not splice feeders, or services. Splices only permitted in accessible junction or outlet boxes where circuit routes deviate. Do not splice or tap branch circuits terminating in a single outlet.

G. Color code conductors per NEC to designate neutral, phase, and ground as follows:

CONDUCTOR	120/208
Phase A	Black, or per (E) facility standard
Phase B	Red, or per (E) facility standard
Phase C	Blue, or per (E) facility standard
Neutral	White
Ground	Green
Travelers	Pink, or per (E) facility standard

CONDUCTOR	480/277
Phase A	Brown, or per (E) facility standard
Phase B	Purple, or per (E) facility standard
Phase C	Yellow, or per (E) facility standard
Neutral	White
Ground	Green
Travelers	Pink, or per (E) facility standard

H. If (E) facility standards do not differentiate phase by color, or offer suitable marking, and/or differentiate voltage, provide unique identification marketing, coloring on new.

I. Wires shall be factory color coded. Coloring shall be integral to the insulation. Plastic tape permitted on #6 AWG and larger where insulation coloring is not available or practical. Apply tape in spiral half-lap over exposed portions of cable at all locations that cable is accessible.

J. Maintain feeder/branch circuit coloring throughout entire circuit run (do not change colors of the same circuit phase).

K. Conductors shall be identified with circuit number where conductors are accessible such as at terminals, outlets, switches, circuit breakers, motor control centers, etc. Identify the ends of a given conductor circuit the same.

L. Do not install wires of different voltage systems in same raceway, box, or other enclosure. Control voltage is permitted in same enclosure only where specific equipment is listed for multiple voltage use, and a listed voltage barrier is provided.

M. Radius of cable bends shall not be less than 10 times the outer diameter of the cable unless specifically noted difference such as on a cable/VFD cable schedule.

N. Do not install cable within conduit per NEC.

O. Follow standards of practice for storage, handling, and termination of aluminum conductors. Provide anti-oxidation gel, and remove any oxidation by approved means when terminating conductors.

P. Route parallel or perpendicular to building lines.

Q. No Cable (power, low voltage, etc.) shall be unconcealed in any finished area.

END OF SECTION

SECTION 26-05-26 GROUNDING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Electrical systems grounding.

B. Signal systems grounding.

1.02 APPLICABLE STANDARDS

A. Underwriters Laboratories (UL)
   1. UL 467 Standard for Grounding and Bonding Equipment

B. Institute of Electrical and Electronic Engineers (IEEE)
   1. IEEE 81 Guide for Measuring Earth Resistively, Ground Impedance, and Earth Surface Potentials of a Ground System Part 1: Normal Measurements
   2. IEEE 142 Recommended Practice for Grounding of Industrial and Commercial Power Systems

1.03 APPLICABLE REGULATIONS

A. National Fire Protection Association (NFPA)
   1. NFPA 70 National Electrical Code (NEC)

B. NEC references below are based on the 2023 edition. Contractor shall meet current NEC requirements.

1.04 TESTS

A. Measure ground grid resistance with earth test megger and provide additional listed and approved earth grounding devices and conductors as required until resistance is 25 ohms or less. Inform engineer in writing, if resistance is greater than 5 ohms.

PART 2 - PRODUCTS

2.01 GROUNDING ELECTRODES

A. Encased Electrode: NEC 250.52(A). One, no smaller than #4 bare solid copper conductor. Install in concrete foundation or footing near contact with earth. Connect to steel reinforcing bars, where available, not less than two times.

B. Ground Rods: 3/4" diameter, 8' long, copper, with approved clamp near surface. Listed as ground rod for direct contact with earth.

C. Grounding Electrode: NEC 250.52(A).

2.02 GROUNDING CONDUCTORS, AND JUMPERS

A. Size: Per NEC 250.

B. Material: Copper.

C. Protection: Conductors not in raceway or concealed shall be insulated. Provide raceway where shown or required for physical protection.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Regardless of TESTS results above, Provide not less than the following:
   1. Underground Metal Cold Water Pipe electrode; If underground Metal Cold Water Pipe is not present Provide Ground Ring.
   2. Encased Electrode.
   3. Two (2) Ground Rods or Ground Rods as shown.
   4. Connection to building steel when present.
   5. Per NEC 250.104

B. Grounding Electrodes: Bond all electrodes together. Do not provide other type of electrode than shown without written approval. Provide additional quantity of electrodes as required by TESTS above.

C. Provide access to all grounding electrode conductor connections.

D. Electrically bypass water meters when required by utility with use of full-size bonding jumper rated for location installed and with pipe clamps routed around and clear of meter.

3.02 POWER AND SIGNAL SYSTEM GROUNDING

A. All equipment grounding conductors shall be routed through same equipment conductor raceway from beginning to end (distribution source to load).

B. Every metallic raceway (including Liquidtight Flexible Metal Conduit) circuit/feeder is intended to have dual ground paths from the raceway/sheath itself, and the separate equipment grounding conductor within the raceway/cable.

C. Metallic raceways are not approved as equipment grounds.

D. Circuit Grounding: Install grounding bushings, studs, and jumpers at distribution centers, pullboxes, motor control centers, panelboards, and junction boxes.

E. Ground Connections: Clean surfaces thoroughly before applying ground lugs or clamps. If surface is coated, the coating must be removed down to the conductive material. After the coating has been removed, apply a listed and approved noncorrosive compound to cleaned surface and connections. Where galvanizing is removed from metal, it shall be re-applied or painted.

F. Bonding Jumpers: Provide with green insulation and size not smaller than per NEC and larger where shown. Connection to neutral only at service neutral bar. Bonding jumpers shall be contiguous without break, joint, or splice.

G. Service Panel:
   1. Connect the various feeder green grounding conductors to the ground bus in the enclosure with suitable pressure connectors.
   2. Connect the grounding electrode conductor to the ground bus.
   3. Connect the neutral to the ground bus as the main bonding jumper unless shown differently on Drawings. Provide neutral to ground bond where otherwise indicated on Drawings.
   4. Connect metallic conduits, which terminate without mechanical conductive connection to the enclosure, by grounding bushings and ground wire to the ground bus.

H. Feeders and Branch Circuits: Install green grounding conductors with feeders and branch circuits. Additional locations and systems as shown.

I. Raceway Systems:
   1. Ground all metallic enclosed raceway systems.

2. All enclosed raceway connecting to equipment shall contain a grounding conductor.
3. Conduit systems shall contain a grounding conductor.
4. Bond grounding conductor at beginning and end of raceway provided for mechanical protection containing only a grounding conductor.

J. Boxes, Cabinets, Enclosures, and Panelboards:
1. Bond the grounding wires to each pullbox, junction box, outlet box, cabinets, and other enclosures through which the ground conductors pass.
2. Provide lugs in each box and enclosure for ground wire termination.
3. Provide ground bars in panelboards, bolted to the housing, with sufficient lugs for terminating the ground wires.

K. Receptacles - Refer to Section 26 27 26.

L. Ground lighting fixtures to the equipment grounding conductor of the wiring system.

M. Fixed electrical equipment shall have a ground lug installed for termination of the equipment ground conductor.

N. Motors: Install a separate insulated equipment grounding conductor from the equipment ground connection in the motor controller through the raceway and flexible conduit to the ground terminal on the motor housing. Ground motor controller through feeder raceway. No reductions.

O. Variable Frequency (Speed) Drives (VFD/VSD): Additional grounding requirements as shown on Drawings, and with not less than 3 concentric Ground conductor cable between VFD and motor.

P. Control and Signaling Equipment: Ground metallic enclosures and raceways, terminate shields and drain wires to building ground system. Provide additional grounding as required by equipment manufacturer.

3.03 TESTING

A. Test per IEEE 81.

B. Grounding Electrode Conductor:
1. Measure resistance between switchboard ground bus and each grounding electrode, using a Megger and a single length of additional wire.
2. Measure resistance between both ends of the additional wire used.
3. Grounding Electrode Conductor resistance is the difference between 1 and 2.
4. Correct any inadequate connections as indicated.

END OF SECTION

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SECTION 26-05-29 SUPPORTING DEVICES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Raceway Supports.

B. Cable supports.

C. Provide all hardware and materials to support, as required, a complete and congruent raceway system.

1.02 APPLICABLE STANDARDS

A. National Fire Protection Association (NFPA)
   1. NFPA 70 National Electrical Code

B. Underwriters Laboratories (UL)
   1. UL 2239 Hardware for the Support of Conduit, Tubing, and Cable

C. National Electrical Contractors Association (NECA)
   1. ECA 101 Standard for Installing Steel Conduit

PART 2 - PRODUCTS

2.01 RACEWAY SUPPORTS

A. Single Runs: Steel rod hangers, galvanized single hole conduit straps, or ring bolt type hangers with spring clips. Adhesives, tape, staples, clamps (including beam clamps), zip/wire ties, or "J-nails" not acceptable.

B. Multiple Runs: Rack with 25 percent spare capacity. Maximum width per manufacturer's recommendations.

C. Vertical Runs: U-channel support with conduit fittings.

D. All hardware such as inserts, straps, bolts, nuts, screws and washers shall be galvanized or plated steel.

E. PVC coated galvanized steel in exterior and wet locations.

F. Channel manufacturers: Kindorf, Unistrut, or approved.

2.02 CABLE SUPPORTS

A. Approved plastic coated wire-ties.

B. Approved PVC coated hangers.

C. Building studs as permitted by Code and specifications.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Supporting devices shall be listed for the location installed. Supports shall be of like material of raceway and be rated for location installed.

B. Layout to maintain headroom, neat mechanical appearance, and to support equipment loads required.

C. Exact location and spacing between supports per manufacturer's recommendations and NEC requirements.

D. Provide adequate spacing to prevent moisture build-up. All runs of conduit shall be arranged so as to be devoid of traps wherever possible.

E. Cable “Sag” greater than 3-Inches from valley to peak of run, not acceptable.

END OF SECTION

SECTION 26-05-33 RACEWAY & FITTINGS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Conduit, Fittings, and Tubing.

B. Flexible Conduit.

1.02 REFERENCE STANDARDS

A. National Fire Protection Association (NFPA).
   1. NFPA 70 National Electrical Code--Chapter 3.
   2. Underwriters Laboratories (UL) 6,
   3. UL797
   4. UL1990

PART 2 - PRODUCTS

2.01 MATERIALS AND COMPONENTS

A. General: No smaller than ¾-inch unless otherwise shown or indicated herein.

B. Conduit and Tubing: Electrical metallic tubing, galvanized rigid steel threaded conduit, Schedule 40 PVC.

C. Flexible Conduit: Flexible plastic jacketed type with liquidtight connectors and steel wrap armor (liquidtight flexible metallic conduit).

D. Fittings:
   1. General: Listed and approved for purpose. Water, gas, concrete tight where required.
   2. Electrical Metallic Tubing (EMT): Connectors to be steel. All connectors shall have factory insulated throats. Couplers and connectors shall be compression, setscrew type.
   3. Galvanized Rigid Steel Conduit (GRC): Threaded. Do not use pressure type. Provide factory insulated throats on bushings.
   4. PV Coated Galvanized Rigid Steel Conduit (PGRC): Same as GRC, with PVC coating meeting UL White Book Guidance, Steel Tube Institute.
   5. Liquidtight Flexible Metallic Conduit: Continuous copper ground in core; approved watertight.

E. Concrete Encasement: Required for Medium Voltage (over 1000V) at exterior locations, and Interior locations where not in dedicated rated electrical room. Required where indicated. Thermal type. Dyed red (iron-oxide pigment ok) with labeling. See Drawings for additional requirements. Mix design to achieve:
   1. Exterior: Trench formed, crowned for water drainage, normal weight. High-density siliceous aggregate; No lightweight aggregate. Provide maximum thermal resistivity p ≤75°C•CM/W (goal of 60) verified by ASTM D5334 (or ASTM G57 / IEEE 442)
   2. Exterior Freeze-Thaw Locations: Air content 5% ± 1%. Use water-reducing admixture; No jobsite water added. Consolidate by vibration; cure per ACI.
   3. Interior: Neatly formed in coordination with Structural Engineer. Provide PE Stamped design including support hardware / structures. Same maximum thermal resistivity as Exterior.
   4. Labeling Exterior: Weatherproof Exterior Underground Marketing Type (See herein).

5. Labeling Interior: Exposed “Danger High Voltage” permanently adhered or mechanically mounted or placard not less than every 4 feet. Submit samples for acceptance. Label in all accessible locations.

F. Expansion Joints: Offset or sliding type with bending straps and clamps. Listed for purpose.

G. Entrance Seal: Shall be modular, mechanical type, consisting of inter-locking synthetic rubber links shaped to continuously fill the annular space between the pipe and the wall opening. The elastomeric element shall be sized and selected per manufacturer’s recommendations. Garlock Link-Seal or approved.

H. Exterior Underground: Marking Tape: 6-inches wide, yellow, low-density polyethylene 4 mil thickness. Imprinted: "CAUTION: STOP DIGGING - BURIED ELECTRIC LINE BELOW" and current date. Tape for telephone line similar, except green.

2.02 TYPE

A. Utilize GRC in concrete with concrete-tight connectors. PVC permitted for exterior Medium Voltage encased in concrete. GRC for Medium Voltage interior/under buildings/slabs in concrete.

B. Utilize GRC for exterior with watertight connectors.

C. Utilize electrical metallic tubing concealed in finished interior spaces.

D. Utilize electrical metallic tubing exposed in unfinished spaces, where not subject to physical damage.

E. For underground conduit, utilize Schedule 40 PVC or PGRC. Provide PGRC elbows and PGRC risers through penetrations where PVC is used.

F. Utilize surface metal raceways for exposed runs in finished areas. Paint to match wall finish. Use only where shown on Drawings, or where approved.

G. Connections to motors, vibrating equipment, and movable equipment shall be with flexible metallic conduit listed for use as ground or liquidtight flexible metallic conduit (with ground conductor core). Use liquidtight type in damp locations. No smaller than 1/2-inch for motor connections. Use 3/8-inch only for light fixture wiring where provided by light fixture manufacturer. Provide sufficient length of flexible conduit to stop vibration into connecting support. Sizes not noted on the Drawings shall be as required by the NEC and no smaller than upstream connection conduit size. Flex shall not be sole means of ground path, include conductor within flex for dual ground pathways (raceway and conductor).

H. Flexible metallic conduit not to exceed 6-feet at any one location unless request is affected by Engineer in writing.

I. Concreted Encased: Medium Voltage.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install raceway concealed in all areas where required concealment not required in mechanical and electrical rooms, connections to motors, above suspended ceilings, and underfloor spaces.

B. Coordinate installation of conduit in masonry, cabinetry, and building slab work.

C. Underground Raceways: Watertight, including fittings, slope 3 inches per 100 feet downward from building. Install underground marking tape. Bury 6 inches to 8 inches below grade directly above raceway. Seal exterior junction boxes or provide with drainage.

D. Galvanized rigid steel conduit installed in contact with earth shall be wrapped with 2-half laps of 10 mil, all weather, corrosion protection tape. Underground Galvanized rigid steel shall be PVC coated type.

E. Provide GRC (use PGRC) per 2023 NEC 344.10 (including 344.10(B)(1))

F. Route all conduits parallel or perpendicular to building lines.

G. Vertical Runs: Straight and plumb.

H. Raceways Running in Groups: Run at same elevation, properly spaced and supported.

I. Install conduit in concrete slab with minimum 2-inch cover. Do not install conduit larger than one inch maximum in concrete slabs unless approved.

J. Do not interfere with placement of concrete re-bar. Place raceway between re-bar layers. Space at least 8-inches on center. Space as far as possible where terminating at same area. Secure raceway, boxes, inserts, etc. by mechanical means prior to pour.

K. Install conduit free with no dents or bruises. Cap ends to prevent entry of foreign materials and moisture.

L. Clean raceway before installation of conductor.

M. Alter conduit routing to avoid obstructions, minimizing crossovers. Avoid use of bends and offsets where possible. Only bend raceway with an approved conduit bending machine or approved hand (hickey) bender.

N. Provide listed expansion complete fittings with grounding jumpers where conduits intersect building expansion joints and for longer runs where conduit expansion may be excessive.

O. Allow minimum of 6 inches clearance at flues, steam pipes, and heat sources.

P. Dissimilar Metals: Avoid contact with pipe or duct runs of other systems.

Q. Lengths and Bends: Maximum number of bends in any run shall be the equivalent of four quarter bends (360 degrees total). Maximum length of any run shall be 300 feet, less 50 feet for each equivalent quarter bend. Provide Junction and pull boxes to meet these limits.

R. Provide entrance seal for all exterior wall, underground, and exterior slab raceway penetrations.

S. All empty raceways shall be provided with pull string or #12 conductor. Provide #12 conductor for exterior empty PVC raceways.

END OF SECTION

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SECTION 26-05-33.16 OUTLET, JUNCTION, AND PULLBOXES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide electrical boxes and fittings as required for a complete, protected, and operable system.

B. Comply with local Codes and NEC as required for Providing electrical boxes and fittings.

1.02 REFERENCE STANDARDS

A. American National Standards Institute (ANSI).
   1. C73 Series Dimensions of Attachment Plugs and Receptacles

B. National Electrical Manufacturers Association (NEMA)
   1. OS 1 Sheet-Steel Outlets Boxes, Device Boxes, Covers, and Box Supports
   2. FB 1 Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable

1.03 APPLICABLE REGULATIONS

A. American National Standards Institute (ANSI).
   1. C2 National Electrical Safety Code (ANSI/IEEE C2)

B. National Fire Protection Association (NFPA).
   1. NFPA 70 National Electrical Code.

C. Underwriters' Laboratories (UL).
   1. UL50 Cabinets and Boxes (ANSI/UL50).
   2. UL514 Outlet Boxes and Fittings (ANSI/UL514).

PART 2 - PRODUCTS

2.01 OUTLET BOXES:

A. No smaller than 4-inch, 1-1/2-inches deep box. Provide raised covers where required for surface mounted outlets, plaster rings on flush outlets. Provide tile rings where flush outlets installed in tile. Concrete type where installed in concrete.

B. Receptacle Outlets and Flush Switch: 4-inch square box, 1-1/2-inches deep, with single or two-gang plaster ring.

C. Match one piece gang boxes to number of devices, install one device per gang. Devices requiring more than one-gang shall be installed in individual boxes matched to device size. Do not exceed 5-gang configuration per row of devices at same location.

D. Provide galvanized steel interior dry location outlet wiring boxes for emt raceway shaped and sized, to conform to each individual location and installation. Provide with factory knockouts in back and sides, and with threaded holes with screws for securing box covers or devices.

E. Provide outlet box accessories as required. Accessories include mounting brackets, wallboard hangers, extension rings, fixture studs, cable clamps and metal straps for supporting outlet boxes. Choice of accessories is Contractor’s option.

F. Outlet Box Covers:

1. Flush Mounting: Bevelled, 302 stainless steel, match device installed or full cover where no device installed.
2. Surface Mounting: Bevelled, steel, pressure formed, match device installed or full cover where no device installed.

2.02 WEATHERPROOF / WET LOCATION OUTLET BOXES:

A. Provide corrosion-resistant cast metal weatherproof outlet wiring boxes, shaped and sized, to conform to each individual location and installation. Provide with threaded conduit ends, suitably configured for each application, including face plate gasket and corrosion proof fasteners.

B. Weatherproof boxes shall have smooth sides, gray finish.

C. Boxes used in contact with earth shall be cast iron alloy with gasketed screw cover and water-tight hubs.

D. Weatherproof Plates: Cast metal, gasketed for switches provide spring loaded sealed door(s).

E. Weatherproof Receptacle Outlet Cover: Cast metal, NEMA 3R, In-Use type, with locking tab. Match device configuration. 3 ¼ -inches internal depth. T&B CK series, or approved

2.03 WEATHERPROOF JUNCTION AND PULL BOXES:

A. Provide galvanized sheet steel junction and pull boxes, with screw-on covers; of the type, shape and size, to suit each respective location and installation; with welded seams and equipped with stainless steel nuts, bolts, screws and washers.

2.04 KNOCKOUT CLOSURES:

A. Provide punched-steel knockout closures for steel boxes.

2.05 PULLBOXES

A. Provide sheet metal in interior dry locations for EMT raceway. Provide cast metal in exterior, or damp locations. Type and material shall conform to National Electrical Code, with screw-on cover.

B. Flush Mounted Pullboxes: Provide overlapping covers with flush head screws, finished in light gray enamel.

C. Box volumes shall meet NEC for size and number of entering conduits and cables.

2.06 UNDERGROUND PULLBOXES

A. Underground Pull Boxes: Cast concrete with suitable concrete cover to withhold loads in location installed. Provide heavy-duty traffic cover where installed with vehicle traffic. Cover and box shall not deform and be rated for location installed. Provide drainage and no less than 4 feet compacted gravel below installation. Size, and configuration to match installation. Provide where required, and shown on Drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Match one piece gang boxes to number of devices, install one device per gang. Do not exceed 4-gang configurations per row of devices at same location.

B. Locate outlet boxes flush other than in mechanical rooms, electrical rooms, and above suspended ceilings. Provide insulation behind box to prevent condensation for boxes mounted in exterior walls.

C. Provide insulation behind box for walls with insulation for sound reduction.

D. Coordinate location and mounting heights with built-in units and cabinetry. Outlet mounting height shall be at same level required for equipment served.

E. When mounting receptacle, or voice/voice outlet boxes above bench or counter, mount box to the side (horizontally) for finished receptacle grounding pole at left.

F. Locate pullboxes and junction boxes concealed above suspended ceilings or in electrical rooms, mechanical rooms, or unfinished areas.

G. Support: Provide adequate support of all outlet boxes. Secure boxes independent raceway, by attaching directly to building structure by approved means.

H. Identify each junction and pullbox with system description including branch circuit numbers of enclosed circuits, and voltage.

I. Secure all raceway to entering boxes with approved bushings, and locknuts.

J. Do not mount boxes back-to-back. Boxes on opposite sides of wall shall be separated by at least 3 inches.

K. Maintain sound transmission and fire properties of surface installed. Provide appropriate fire stop and sound stop materials as required to maintain these properties.

L. Provide separate boxes where two voltage systems have equipment at same location. Provide separate boxes for equipment on emergency power system.

END OF SECTION

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SECTION 26-05-53 ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Permanent Identification of system components.

1.02 APPLICABLE REGULATIONS

A. National Fire Protection Association (NFPA)
   1. NFPA 70: National Electrical Code.

1.03 SUBMITTAL

A. Provide sample of each label type upon request.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Phenolic Nameplate:
   1. Three -layer, white front and back with black core.
   2. Neatly engraved through outer layer to show white characters on black background.
   3. Beveled edges, print lettering.
   4. Other colors as specified or shown. Use red for fire alarm, or fire sprinkler only.

B. Stenciling and Silk Screening: Printed lettering with enamel or lacquer paints. Legends contrasting with the background on which applied

C. Panelboard Directory Card: Fiberboard typed. Laminate or place in protective cover.

D. Concealed Box Labels: Permanent black ink such as “Sharpie” pen with neat and legible writing. Red permanent ink for fire alarm.

E. Concealed Conductor Labels: Listed white tape wrapped around individual conductor or cable, with permanent black ink with printed lettering

F. Permanent Self-Adhesive Labels: Temperature, moisture and UV resistant. Metallic and reflective background with printed contrasting lettering.

G. Exterior Weather-proof Adhesive Label. Temperature, moisture and UV resistant with printed contrasting lettering.

H. Outlet / Device covers: Clear / transparent tape with matching printed black ink letter / numbering.

I. Power Conductor Labels: Flame resistant UL224 Listed, 600V rated, wrap around label shrinkable sleeve type. White label with black lettering. Impact, Inc AWMS series or approved label system.

J. Medium Voltage: Brass as indicated in Respective Section.

PART 3 - EXECUTION

3.01 EQUIPMENT TO BE IDENTIFIED

A. Motor starters, panels, lighting panels and the disconnecting devices contained therein.

B. Egress/Emergency Lighting

C. Power Conductors (at Panel/Lighting Control Panel/Line Terminal Blocks)

D. Remote Emergency Inverters

E. Disconnects.

F. Control panels, starters, pushbutton stations, pilot lights and other control devices.

G. Transformers.

H. Remote control devices.

I. Conductors at both device and terminal strip terminations for control and instrumentation cables and conductors.

J. Other items as specified, required by NEC, or noted on Drawings
   1. Including and not limited to Arc-Flash Hazard (2023 NEC 110.16), Available Fault current (2023 NEC 110.24), protection ratings, etc. Code required markings shall be adhered/affixed/integrated into to equipment from factory with factory labeling/nameplates.

K. Devices in lighting panels and power panels shall be identified on the panelboard directory card.

L. Receptacles and Switches (clear transparent on device cover)

M. Junction Boxes.

3.02 PHENOLIC NAMEPLATES

A. Power panels shall be labeled on the door of the interior with a nameplate. Letters for panels shall be printed and no less than 1/2 inch high.

B. Provide nameplate on switchboard

C. Provide nameplates where specified and as shown.

3.03 POWER CONDUCTOR LABELS

A. Label at emanating location (source)- i.e. home run termination.

B. Applicable to every power source over 70V, under 601V.

C. Label ~ 1-inch from breaker lug, Relay Lug, Terminal Block. Orient for view toward open readily viewable side.

D. Label each Hot Conductor, Label Neutral Conductor(s) as indicated. Circuit Ground Labeling is not required.
   1. Every new conductor home-run at emanating power panel.
      a. Load name shall be used, not circuit number. Refer to description in panel schedule.
      b. Associate/same label Neutral on same circuits
      c. Lighting Control Panel Loads shall indicate which relay(s) are served from Panel. Separate label after Lighting Control Panel indicating specific Zone name- See Below.
   2. Every lighting control panel relay landing
      a. Label load served- i.e. Zone Name of Lighting
   3. Other Source, or Terminal Block power source labeling associated with power conductor home-runs in power distribution system. N/A to unit equipment unless unit equipment remotely serves other equipment. Example Equipment may include

a. Lighting Inverter Sources (Panels)
b. Remote Battery Packs
c. Sound System Amplifiers

4. Circuit numbers shall not be indicated, numbers only are not acceptable, load name required for future re-configuration of panel.

3.04 APPLYING IDENTIFICATION

A. Stenciled letters shall be applied by brush or by spraying.

B. Nameplates shall be attached with either adhesive or screws. If adhesive is used, it shall adequately adhere to the surface installed.

3.05 IDENTIFICATION REQUIREMENTS

A. Indicate Voltage for all concealed labels, and for Disconnects, panelboard and switchboard identification.

B. Identification for disconnecting devices contained in panels and motor control centers shall show the equipment name and location by floor, area, and direction to adequately indicate location of load. Do not include Voltage when the Voltage is the same as for the panel or motor control center.

C. Nameplates on disconnect devices located in the area but not part of a panel or motor control center shall have the equipment name, power source identification, and voltage designation. Nameplates for disconnect devices located remotely from the equipment shall also show the equipment location by floor, area, and direction to adequately indicate location of load.

D. All indicators and controls for control panels, starters, and the like shall be labeled, such as (Start, Stop, On, Off, Reset, Fault, etc.).

E. Panelboard directory cards shall list the circuit numbers and show the equipment name and location supplied by the circuits. Equipment locations shall be shown by floor, area and direction, or by room numbers.

F. Device covers to include serving circuit and panelboard name, include at receptacles, switches, outlets, system furniture connections, floor boxes, etc. Apply clear/ translucent adhesive tape with typed black lettering not more than 1/4” in height via use of label maker

END OF SECTION

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SECTION 26-05-60 OVERCCURRENT PROTECTIVE DEVICES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Circuit Breakers.

B. Fuses.

1.02 REFERENCE STANDARDS

A. American National Standards Institute (ANSI).
   1. C37.16 Preferred Ratings, Related Requirements, and Application Recommendations for Low Voltage Power Circuit Breakers and AC Power Circuit Protectors.
   2. C37.17 Trip Devices for AC and General-Purpose DC Low-Voltage Power Circuit Breakers.
   3. C37.50 Test Procedure for Low-Voltage AC Power Circuit Breakers Used in Enclosures - Test Procedures.
   4. C97.1 Low Voltage Cartridge Fuses 600 Volts or Less.

B. Institute of Electrical and Electronic Engineers, Inc. (IEEE).
   1. 20-73 Low Voltage AC Power Circuit Breakers Used in Enclosures: ANSI C37.13.

C. National Electrical Manufacturer's Association (NEMA).
   1. FU-1 Low Voltage Cartridge Fuses.

1.03 APPLICABLE REGULATIONS

A. Underwriters' Laboratories (UL).
   1. UL 489-72 Molded Case Circuit Breakers and Circuit Breaker Enclosures.
   2. UL 198 E Class R Fuses.
   3. UL 869 Service Disconnects
   4. UL 1066 Standard for Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures

B. National Fire Protection Association (NFPA).
   1. NFPA 70 National Electrical Code.

1.04 QUALITY CONTROL

A. Breakers shall be inherently coordinated with feeder breakers by manufacture.

B. Breakers shall be of the same manufacturer.

PART 2 - PRODUCTS

2.01 CIRCUIT BREAKERS

A. Construction
   1. Bolt-on connection to bus.
   2. Thermal-magnetic, molded case, with inverse time current overload and instantaneous magnetic tripping.
   3. Quick-make, quick-break, with tripped indication clearly shown by breaker handle taking a position between ON and OFF.
   4. Multiple phase breakers shall have a common internal trip. Do not use handle ties between single pole breakers.
   5. Breaker shall be switch (T) rated.

6. Include locking handle for each breaker provided it does not impede GFI/AFCI or other testing requirements. Utilize for maintenance lock-out tag-out.
7. Where used as service disconnects, breakers shall be listed for use as service entrance equipment and shall include locking handle.
8. Building normal power service main breaker shall include power monitoring with LCD display on breaker.
    a. Voltage- each phase L-L, L-N
    b. Amps- each phase
    c. kW/KVA
9. Integrated customer meter in service panel, or service switchboard is acceptable in lieu of main breaker power monitoring.
10. Breakers, 400 amps and larger, shall include externally operable mechanical means to trip the circuit breaker, enabling maintenance personnel to verify the ability of the breaker trip mechanism to operate as well as exercising the breaker latch and operating mechanisms.
11. Fully rated at fault current of panel or switchboard.
12. Inherently coordinated by manufacturer with upstream protection device.

B. Breakers, 70 amps and larger:
1. Shall include externally operable mechanical means to trip the circuit breaker, enabling maintenance personnel to verify the ability of the breaker trip mechanism to operate as well as exercising the breaker latch and operating mechanisms.
2. Long Delay Protection (Long Delay Pickup, Long Delay Time) setting
3. Short Delay Protection (Short Delay Pickup, Short Delay Time) setting
4. Instantaneous setting
5. Ground Fault Protection (Ground Fault Pickup, Ground Fault Delay) for 400A main.
6. Locking cover
7. Fully rated at fault current of panel or switchboard.

2.02 GFI BRANCH CIRCUIT BREAKERS

A. Meet construction requirements herein.

B. Ground fault protection with integral push-to-test button.

C. Class 1.

D. Adjustable setting pickup from 0.03 to 30 Amps.

E. Adjustable time delay from instantaneous to 2.0 seconds.

2.03 TESTING

A. By Manufacturer at factory. Timed thermal trip test and timed magnetic trip test.

B. As required by local authority.

C. Submit test results to Engineer upon request.

2.04 FUSES

A. Feeder, Branch Circuit and Service Entrance Fuses: 600 amperes and below, UL Class J or RK1 current limiting type, 600 volt 200,000 ampere interrupting capacity.

B. Motor and Inductive Circuit Fuses: UL class RK5 time delay current limiting type, 600 volt, 200,000 ampere interrupting capacity.

C. Control Circuit Fuses: UL Class J or R current, limiting type, 600V.

D. Manufacturer: Bussmann, or approved

PART 3 - EXECUTION

3.01 CIRCUIT BREAKER INSTALLATION

A. Label each breaker located in switchboard or separate enclosure to indicate load served.

B. Adjust settings on breakers to operate properly under actual field conditions and to provide selective system coordination.

C. Post breaker settings in electrical rooms, alongside one-line.

D. Torque breakers to bus per manufacturer's requirements and installationprocedures.

3.02 FUSE INSTALLATION

A. Label each switch to indicate type and rating of fuse installed.

B. All fuses shall be selected to provide selective system coordination.

C. Provide the greater of 10%, or not less than 3 spare fuses of each size, and rating used.

END OF SECTION

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SECTION 26-05-83 WIRE CONNECTIONS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Wires Connectors

1.02 REFERENCE STANDARDS

A. National Fire Protection Association (NFPA).
   1. NFPA 70 National Electrical Code.

B. Underwriters' Laboratories, Inc (UL
   1. UL 486A through UL 486E

C. American National Standards Institute (ANSI)
   1. ANSI/UL 467

PART 2 - PRODUCTS

2.01 TWIST-ON CONNECTOR

A. Pressure-type wound spring twist on connector.

B. Solderless pressure connectors.

C. Shell rating of 105 degrees C.

D. "Push-On" or "punch" type connectors not permitted.

E. Use for up to #8 AWG sizes.

2.02 MULTI-TAP CONNECTOR

A. 600V Fully insulated, chemical resistant insulation coating.

B. 90 °C Rated

C. Fully rated for SCA in locations installed.

D. Torque wrench lug tightening

E. Clear insulation (Vision Tap) transparent design for conductor placement verification.

F. Removable plugs, pre-filled oxide inhibitor

G. AL/CU Rated Terminals

H. For J-Box use only, new feeder extensions not permitted

I. Not for submersible use.

J. NSI (Polaris) ITD Vision Tap Series, Burndy Clear Series, or approved.

2.03 COMPRESSION ADAPTER

A. Dual rated for use with both aluminum and copper cable conductors.

B. Diameter and ampacity as current carrying equivalent copper wire.

C. Pre-filled with approved joint compound

D. Connectors shall be clearly marked with Catalog Number, wire size and color-coded die index number.

E. Burndy “Hyplug” type AYP or equal by T&B, or approved.

2.04 TERMINAL, CRIMP TYPE

A. Flat; fork tongue, or flat circular matched to terminal size.

B. Color coded to wire size.

C. T&B “Sta-Kon”, or approved.

2.05 WP COATING

A. Liquid

B. For use as an outer seal on vinyl tape splice, fast- drying, suitable for use for direct burial and moisture protection.

C. 3M Scotchkote Electrical Coating FD, or approved

PART 3 - EXECUTION

3.01 INSTALLATION

A. Provide Twist-On Connectors at taps and splices for conductors no larger than #10 AWG. Provide only in approved junction and outlet boxes.

B. Provide Compression Adapters for terminating a single conductor into mechanical connectors such as a circuit breaker or set screw lugs. Provide only where required for AL/CU transitions or where lugs require adapters.

C. Provide Crimp terminal at all Control voltage terminal blocks, unless otherwise recommended by manufacturer.

D. Do not nick conductor when stripping insulation. No “ringing”

E. Conductor and cable shall not be reduced at the terminal for connections.

F. Connectors shall be approved and listed for the purpose used.

G. Wrap all twist-on connectors with listed tape to maintain equivalent insulation of wire.
   1. Exterior, Underground, and WP connections shall include 2-coats of WP Coating.

H. Remove any obstructions on connection to maintain continuity prior to installation of connectors, such as paint, dirt, and construction materials.

I. Copper conductors can be terminated in approved compression or mechanical connector, including set screws.

J. Provide slack at equipment to allow for a neat termination, access to conductors, and ability to repair or replace equipment.

K. Connections shall not be made where in-contact with moisture. Utilize fully unbroken conductor through entire run.

END OF SECTION

SECTION 26-12-00 OIL FILLED TRANSFORMERS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Provide transformers, including mounts, hardware, grounding, connections, and other accessories for a complete and operational installation.

B. Time is of the essence.

C. See Alternates.

1.02 REFERENCE STANDARDS

A. American National Standards Institute (ANSI)

B. Institute of Electrical and Electronics Engineers (IEEE)

C. National Fire Protection Association (NFPA)
   1. NFPA 70 National Electrical Code

D. Underwriters Laboratory (UL)

E. National Electrical Manufacturers Association (NEMA)

F. National Electrical Contractors Association (NECA)

G. American Society for Testing and Materials (ASTM)

1.03 QUALIFICATIONS

A. The manufacturer of the assembly shall be the manufacturer of the major components within the assembly.

B. The manufacturer shall be ISO 9001 or 9002 certified.

C. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of ten (10) years. When requested by the Engineer, an acceptable list of installations, city locations, with similar equipment shall be provided demonstrating compliance with this and other requirements herein.

D. Base Bid: The manufacturer shall have a maintenance service network, or factory service with response time not less than 12 hours including travel.

E. Base Bid: The manufacturer shall have not less than 50 installations, operating for 5 years or more, within 250 mile radius of La Grande, OR.

F. Provide Seismic tested equipment as follows:
   1. The manufacturer shall certify the equipment based upon a dynamic and/or static structural computer analysis of the entire assembly structure and its components, provided it is based upon actual seismic testing from similar equipment. The analysis shall be based upon all applicable seismic requirements of the current Oregon Building Code (IBC) per Site Classification. The forces in the vertical direction shall be at least 66% of those in the horizontal direction. The analysis shall cover a frequency range from 1 to 100Hz. Guidelines for the installation consistent with these requirements shall be provided by the equipment manufacture and based upon testing of representative equipment. Equipment certification acceptance criteria shall be based upon the ability for

the equipment to be returned to service immediately after a seismic event within the above requirements without the need for repairs.

2. The following minimum mounting and installation guidelines shall be met, unless specifically modified by the above referenced standards.
    a. The equipment manufacturer shall certify that the equipment can withstand, that is, function following the seismic event, including both vertical and lateral required response spectra as specified in above codes.
    b. The equipment manufacturer shall document the requirements necessary for proper seismic mounting of the equipment. Seismic qualification shall be considered achieved when the capability of the equipment, meets or exceeds the specified response spectra.

1.04 DELIVERY, STORAGE AND HANDLING

A. Equipment shall be handled and stored in accordance with manufacturer's instructions. One (1) copy of these instructions shall be included with the equipment at time of shipment.

1.05 FIELD MEASUREMENTS

A. Measure primary and secondary voltages and make appropriate tap adjustments.

1.06 QUALITY ASSURANCE

A. Base Bid Acceptable Manufacturers, Refurbishment Suppliers, and Suppliers (of used equipment):
    1. Eaton, Square D, Hitachi, Hammond, Maddox, SunBelt Solomon, SunBelt Transformers, SunBelt Rentals (purchase), SDMyers, Pacific Transformer, or approved
        a. These requirements are not restricted to specific transformer manufacturers such that a certain manufacturer is required, rather the transformer has to meet requirements herein including additional testing, reports, etc. than new. Manufactures not listed, are subject to rejection based on the requirements herein. Those manufacturers that are listed, are acceptable provided the product meets requirements herein.
        b. Refer to other requirements that may apply such as (but not limited to) Buy-American or similar funding criteria that may eliminate listed acceptable company.

B. Alternate Bid Acceptable Manufacturers (new equipment):
    1. Eaton, Square D, Hitachi, or approved.

PART 2 - PRODUCTS

2.01 RATINGS

A. The ratings of the transformer shall be as shown on the drawings. Not more than 7% Impedance.

2.02 CONSTRUCTION

A. Base Bid: The unit shall be Mineral Oil, Natural Ester (RF3), Synthetic Ester, or Silicone Oil fully filled. No PCB's. Submit complete test report for used (un-refurbished) Transformer. Upon Request, submit complete test report for refurbished Transformer. Test reports to show Oil Performance, and as otherwise required herein.
    1. It is not acceptable to replace used oil with new and testing of new oil without transformer operation. Testing of used and/or refurbished transformer oil must occur after not less than 48 hours of operation or greater as required by herein (including referenced

standards) such that any insulation or other degradation shows up in testing. See Warranty Requirements.

B. Base Bid: Used Oil Performance / Testing Requirements

Parameter	Acceptable Limit	Test Standard
Breakdown Voltage (BDV)	≥ 40 kV	IEC 60156
Moisture Content	≤ 30 ppm	IEC 60814
Acidity (Neutralization No.)	≤ 0.10 mg KOH/g	IEC 62021
Interfacial Tension (IFT)	≥ 22 mN/m	ASTM D971
Dissipation Factor (Tan δ @90°C)	≤ 0.5%	IEC 60247
Resistivity @90°C	≥ 1 × 10^9 Ω·m	IEC 60247
Flash Point	≥ 145°C	ASTM D92
Dielectric Dissipation Factor @25°C	≤ 0.2%	IEC 60247
Specific Gravity @20°C	0.86 – 0.89	ASTM D1298
Color (ASTM)	≤ 3.0	ASTM D1500
Furan (2-FAL)	< 0.1 mg/L	IEC 61198
Total Combustible Gas (TCG)	< 720 ppm	IEEE C57.104
PCB Content	<1 PPM	IEC 61619

C. Alternate: The unit shall be RF3 filled (new) and shall be in accordance with the latest edition of the NEC. High fire point fluids shall be Factory Mutual and UL listed.

D. The transformer shall carry its continuous rating with average winding or temperature rise by resistance that shall not exceed 65 degrees C rise, based on an average ambient of 30 degrees C over 24 hours with a maximum of 40 degrees C.

E. The transformer shall be designed to meet the sound level standards for liquid transformers as defined in NEMA and ANSI. Base Bid: Used & Refurbished- Submit sound test data.

F. High-voltage and low-voltage windings shall be aluminum, or copper. Insulation between layers of the windings shall be by thermally set insulating paper or equal.

G. The main transformer tank and attached components shall be designed to withstand pressures greater than the required operating design value without permanent deformation. Construction shall consist of carbon steel reinforced with external, internal or sidewall braces. All seams and joints shall be continuously welded.

H. The assembly shall be individually welded and receive a quality control pressurized check for leaks. The entire tank assembly shall receive a similar leak test before tanking. A final six-hour leak test shall be performed.

I. The transformer(s) shall be compartmental-type, self-cooled and tamper-resistant for mounting on a pad. The unit shall restrict the entry of water into the compartments so as not to impair its operation. There shall be no exposed screws, bolts or other fastening devices which are externally removable.

J. The transformer(s) shall consist of a transformer tank and full-height, bolt-on high- and low-voltage cable terminating compartments located side-by-side separated by a rigid metal barrier. Each compartment shall have separate doors, designed to provide access to the high-voltage compartment only after the low-voltage has been opened. There shall be at least one additional fastening device accessible only after the low-voltage door has been opened, which must be removed to open the high-voltage door. The low-voltage door shall have a handle-operated, latching mechanism designed to be secured with a padlock. A hex-head or penta-head bolt shall be incorporated into the low-voltage door latching mechanism. Both high and low-voltage doors

shall be incorporated into the low-voltage door latching mechanism. Both high and low-voltage doors shall be equipped with hinges and door stops to secure them in the open position.

K. Compartment sills, doors and covers shall be removable to facilitate cable pulling and installation. The high-voltage door shall be on the left with the low-voltage door on the right. Compartments shall be designed for cable entry from below.

L. Transformer(s) shall be supplied with a welded or bolted main tank cover and be of a sealed-tank construction designed to withstand a pressure of 7 psig without permanent distortion. The tank cover shall be designed to shed water and be supplied with a tamper-resistant access handhole sized to allow access to internal bushing and switch connections. Transformers supplied with "less flammable" fluids shall be manufactured to withstand 12 psig without rupture. The transformer shall remain effectively sealed for a top-oil temperature of -5 degrees C to 105 degrees C. When necessary to meet the temperature rise rating specified, cooling panels shall be provided.

M. The transformer manufacturer (supplier for used/refurbishment) shall certify that the transformer is non-PCB containing less than 1 part per million detectable PCBs. Nonflammable transformer liquids including askarel and insulating liquids containing tetrachloroethylene, perchloroethylene, chlorine compounds, or halogenated compounds are not acceptable and shall not be provided.

N. Full-capacity taps shall be provided with a tap changing mechanism designed for de-energized operation. The tap changer operator shall be located within one of the compartments.

O. The coil windings shall be designed to reduce losses and manufactured with the conductor material as specified above. All insulating materials shall be rated for 120 degrees C class.

P. For grounded wye to grounded wye application, the core assembly shall be a 5-legged, distributed-gap, wound core, designed to meet NEMA TR-1 sound levels measured per ANSI standards.

Q. The core material shall be high-grade, grain-oriented, non-aging silicon core steel with high magnetic permeability, low hysteresis and eddy current losses. Magnetic flux densities are to be kept well below saturation to allow for a minimum of 10 percent overvoltage excitation. The cores shall be properly annealed to reduce stresses induced during the manufacturing processes and reduce core losses.

R. The core frame shall be designed to provide maximum support of the core and coil assembly. The core frame shall be welded or bolted to ensure maximum short-circuit strength.

S. The core and coil assembly shall be designed and manufactured to meet the short-circuit requirements of ANSI C57.12.90. The core and coil assembly shall be baked in an oven prior to tanking to "set" the epoxy coating on the insulating paper and remove moisture from the insulation prior to vacuum filling.

T. Transformer shall be vacuum-filled with the appropriate fluid as indicated above. The process shall be of sufficient vacuum and duration to ensure that the core and coil assembly is free of moisture prior to filling the tank.

2.03 ACCESSORIES

A. Transformer features and accessories shall include:

1. Dial-type thermometer
2. Liquid level gauge
3. Pressure-vacuum gauge
4. Drain valve with sample valve
5. Pressure relief valve

6. Non-PCB label
7. Upper fill/filter press connection or valve

2.04 PRIMARY CONNECTIONS

A. Transformer primary connections shall be 200 A deadfront load break wells and inserts for cable sizes shown on the drawings.

B. Loop Feed type (unfused) with Loop dead front 200A bus/bushings.
   1. Provide Bushing covers.

2.05 PRIMARY FUSING

A. Provide the following fuses:
   1. Provide oil-immersed, loadbreak dual bay-o-net overload sensing fuses in series with under oil partial range current limiting fuses.

2.06 FINISH

A. Base Bid- Transformer units shall include suitable outdoor paint finish. Finish color / type to be acceptable to Owner.

B. Alternate Bid- Transformer units shall include suitable outdoor paint finish. The paint shall be applied using an electrostatically deposited dry powder system to a minimum of three (3) mils average thickness. Units shall be painted padmount green, Munsell No.7GY3.29/1.5, or color per Owner.

PART 3 - EXECUTION

3.01 ALTERNATE BID- FACTORY TESTING

A. The following standard factory tests shall be performed on the equipment provided under this section. Tests shall be in accordance with the latest applicable ANSI and NEMA standards.
   1. Resistance measurements of all windings on the rated voltage connection
   2. Ratio tests on the rated voltage connection and on all tap connections
   3. Polarity and phase-relation tests on the rated voltage connections
   4. No-load loss at rated voltage on the rated voltage connection
   5. Exciting current at rated voltage on the rated voltage connection
   6. Impedance and load loss at rated current on the rated voltage connection
   7. Applied potential test
   8. Induced potential tests

B. The manufacturer shall provide certified copies of factory test reports to the Engineer upon request.

3.02 BASE BID- TESTING

A. See above for oil testing requirements.
   1. Oil Testing must be done with transformer under load for not less than 48 hours or greater as required by testing standard.

B. The following tests shall be performed on the equipment provided under this section. Tests shall be in accordance with the latest applicable ANSI and NEMA standards.
   1. Resistance measurements of all windings on the rated voltage connection
   2. Ratio tests on the rated voltage connection and on all tap connections
   3. Polarity and phase-relation tests on the rated voltage connections
   4. No-load loss at rated voltage on the rated voltage connection

5. Applied potential test
6. Induced potential tests

C. Used Transformers- Provide certified copies of test reports to the Engineer.

D. Refurbished Transformers- Provide certification specified, and any additional tests were performed. Provide certified copies of test reports to the Engineer upon Request.

3.03 INSTALLATION

A. Install equipment according to manufacturer's installation recommendations and installation requirements in addition to requirements herein and as shown.

B. Install on concrete pad where shown on drawings. Transformer shall be installed level and plumb with the building construction.

3.04 FIELD ADJUSTMENTS

A. The taps of the transformer shall be adjusted to produce the full rated voltage of the transformer at the service switchboard which is connected to the transformer secondary.

3.05 FIELD TESTING

A. Measure primary and secondary voltages for proper tap settings.

B. Megger primary and secondary windings.

END OF SECTION

SECTION 26-24-17 PANELBOARDS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Provide panelboards incorporating equipment of the number, rating and type specified herein and shown in Panel Schedules.

1.02 REFERENCE STANDARDS

A. American National Standards Institute (ANSI).
   1. ANSI C37 Standard for Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear

B. Institute of Electrical and Electronics Engineers (IEEE).
   1. Std. 241-74 Electric Systems for Commercial Buildings.

C. National Fire Protection Association (NFPA).
   1. NFPA 70 National Electrical Code.

D. Underwriters' Laboratory (UL).
   1. UL 67 Standard for Panelboards.
   2. UL 869A Reference Standard for Service Equipment

E. National Electrical Contractors Associations (NECA)
   1. NECA 407 Standard for Maintaining and Installing Panelboards

F. National Electrical Manufacturer's Association (NEMA)
   1. NEMA PB 1.1 General Instructions for Proper Installation, Operation, and Maintenance of Panelboards Rated 600 Volts or Less.

1.03 QUALITY ASSURANCE

A. Panelboard breakers shall be inherently coordinated with feeder breakers.
   1. Inherently coordinated by manufacture- i.e., manufacturer shall provide faster trip on smaller breakers such that a smaller rated breaker trips before a larger rated breaker.
   2. Study not required, unless otherwise indicated, or unless AHJ and/or Code required study (such as medical, emergency, etc.)

B. Acceptable Manufacturers: Eaton, Square D, or approved.

PART 2 - PRODUCTS

2.01 CONSTRUCTION

A. General:
   1. Mounting hardware shall be captive type, and shall not pose a danger of dropping onto exposed parts if trim is opened, or removed.
   2. Provide Arc-Flash Protection label per NEC.
   3. WP where exterior.

B. Box:
   1. Galvanized code gauge steel.
   2. 20-inch minimum width; 4-inch minimum gutter space on all sides. Larger as required by manufacturer and NEC.
   3. Minimum 4 interior mounting studs.

4. Individual knockouts by manufacturer or field-cut per manufacturer requirements. Concentric knockouts are not permitted.
5. All exterior and interior steel surfaces of panelboard door and trim shall be cleaned and finished with industry standard gray baked enamel paint over a rust-inhibiting phosphatized primer coating approved by the paint manufacturer. Panelboards exposed in finished spaces shall have factory finish to match adjacent surfaces.

C. Bussing:
1. Copper- All phases, ground, and neutral.
2. Fully Rated. No reductions.
3. Bolt-on breaker Lugs
4. Tap Arrangement shall be phase sequence type, permitting any breaker configuration mounted at any location.
5. Short Circuit Bracing: Fully rated.
6. Neutral Bussing:
    a. Full size, unless otherwise noted.
    b. Properly sized lug for each outgoing neutral connection.
7. All bolts used to connect current-carrying parts together shall be accessible for tightening from the front of the panel.
8. Wiring terminals: Compression or setscrew type for copper conductors; bolted to bus.
9. Secured not less than at 6 separate locations to the enclosure. Bus movement in any direction in excess of 1/8-inch. is not acceptable.
10. Through (THRU) Lugs- Where indicated on the one-line, and/or schedules. Provide as follows:
    a. Dual lugs at top or bottom of panel only does not satisfy requirement for Through lugs.
    b. Provide lugs at top and bottom of board, connected to bussing
    c. If panel includes main breaker, through lugs are permitted to be on load side of main such that they de-energize with breaker OFF or TRIP.
        1) Additionally, provide dual lugs on panels with main breakers on the line side of the main (incoming feeder). These dual lugs (extra lugs) are not switched by the main in-panel breaker, and are in addition to the lugs at the other end of the bus which are switched with the main in-panel breaker.

D. Trim:
1. Code gauge steel.
2. Flush panels shall include trim overlap around box not more than 1.5-inchs.
3. Surface Panels: Same width and height as box.
4. Mountable by screwdriver, no special tools.
5. Tamper-proof: Trim shall not be removable with door closed.
6. Exterior lock type. Vandel resistant.
7. Doors:
    a. Shall conceal all breakers unless otherwise noted.
    b. Provide internal concealed access door hinges. Exterior door hinge is not required to be concealed, but shall be painted to match exterior color of panel.
    c. Over 48-inches in Height: Shall have auxiliary fasteners at top and bottom of door in addition to flush latch (3-point).
    d. Latches:
        1) Spring-Type, flush, number as required by manufacturer

e. Where more than one latch is installed, access door shall be operable by only one person. Three simultaneously operated latches is not acceptable.

f. Equip latches with flush locks keyed alike. All panelboards shall be keyed alike.

E. Not less than NEMA 1 unless otherwise noted or otherwise required for location installed.

2.02 CIRCUIT BREAKERS

A. Main Breaker:

1. Provide where required and noted. Mount separate from branch breakers.
2. Covered by a metal plate, except for the operating handle, trip flag (if applicable), and trip button (if applicable).
3. Connection to breaker load side shall be contiguous bus bar. Connection by separate conductors is not acceptable.
4. Panel and breaker shall be listed as service disconnect where used in such applications, including alternate power service such as from an emergency generator.

B. Branch Breakers:

1. Bolt-on connection to bus. Securely mounted; Deflection of breaker with force applied in any direction greater than ¼-inch is not acceptable.
2. Additional requirements are noted elsewhere in these Specifications, shown on Drawings, and as per Code.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Provide mounting brackets, busbar drillings, and fillers for unused spaces.

B. Maintain fire properties of surface installed. Provide appropriate fire stop materials to maintain these properties.

C. Prepare and affix typed directory to inside cover of panelboard indicating loads and location of loads controlled by each circuit.

D. Provide panelboards flush in all finished areas. Unfinished areas include mechanical rooms and electrical rooms.

E. Securely mount raceway to panelboards with appropriate bushings. Bushings shall be insulated, and threaded through panelboard with locknut securing to box. Coordinate raceway size and locations entering box for neat a professional installation, as well as for appropriate routing.

F. For flush panels, provide (1) 2-inch spare, (2) 1-inch spares, and (2) ¾-inch spares raceways stubbed to accessible ceiling space.

G. Combine all keys on one key ring and furnish to Owner at time of substantial completion.

END OF SECTION

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SECTION 26-24-18 SURGE PROTECTION DEVICE (SPD) EQUIPMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. Provide surge suppression device (SPD) (previously known as TVSS- Transient Voltage Surge Suppression) equipment for the electrical distribution system.

1.02 REFERENCE STANDARDS

A. Underwriters Laboratories (UL)
   1. UL 1449 Standard for Transient Voltage Surge Suppressers
   2. UL 1283 Standard for Safety for Electromagnetic Interference Filters

B. American National Standards Institute (ANSI)
   1. C62.41 IEEE Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits

PART 2 - PRODUCTS

2.01 INTEGRAL PANELBOARD SURGE SUPPRESSOR

A. Provide in every Panelboard.

B. Unit shall be rated for Category B location per ANSI/IEEE C62.41-1991.

C. Unit shall be factory integrated into panelboard.

D. Each unit module shall be fused with a surge rated fuse and incorporate a thermal cutout device.

E. Minimum surge current capability shall be 80,000 amperes per phase, measured between L-N & L-G.

F. Unit diagnostics, mounted in door of distribution equipment, shall include the following:
   1. Operational LEDs to indicate loss of protection and circuit fully operational for each protection status.

G. The internal design of the unit shall have a minimum EMI/RFI filtering of –50 dB from 100kHz to 100MHz

H. The UL 1449 Listed and Recognized Component Suppression Voltage ratings shall not exceed:
   1. 330 Volts for 120/208 or 240 voltage configurations.
   2. 700 Volts for 480 voltage configurations.

I. All required “burn-in” tests shall be conducted at factory, prior to shipment.

J. Rated for not less than 200,000 AIC.

K. Installation shall not decrease available over-current protection device spaces including main breaker.

L. Acceptable manufacturer: Advanced Protection Technologies, by panelboard manufacturer, or approved.

PART 3 - EXECUTION

3.01 INSTALLATION

A. System shall be complete.

B. Comply with applicable Sections of this Division.

3.02 WARRANTY

A. Full five year warranty by manufacturer and includes unlimited replacement of all components.

END OF SECTION

SECTION 26-27-26 WIRING DEVICES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Wall Switches.

B. Receptacles.

C. Ground Fault Receptacles.

1.02 REFERENCE STANDARDS

A. American National Standards Institute (ANSI).
   1. C73 Series Dimensions of Attachment Plugs and Receptacles.

B. National Electrical Manufacturer's Association (NEMA).
   1. WD 6 Wiring Devices- Dimensional Requirements
   2. WD 1 General Color Requirements for Wiring Devices.

C. National Fire Protection Association (NFPA).
   1. NFPA 70 National Electrical Code.

D. Underwriters' Laboratory (UL).
   1. UL-20 Standard for Snap Switches.
   2. UL 498 Attachment Plugs and Receptacles
   3. UL 467 Grounding and Bonding Equipment
   4. UL 514D Cover Plates for Flush-Mounted Wiring Devices
   5. 2006 UL 943 Safety for Ground-Fault Circuit-Interrupters

1.03 QUALITY ASSURANCE

A. Provide type 5362 receptacles.

B. Acceptable Manufacturers: Hubbell, Pass and Seymour, Arrow-Hart, Leviton, or approved

PART 2 - PRODUCTS

2.01 MATERIALS

A. Switches: 120/277 Volt. AC Quiet, slow make, slow break design, toggle style handle, with totally enclosed case, 20 Ampere, specification grade. Provide matching two-pole, three-way and four-way switches.

B. Receptacles: 20 Ampere (unless otherwise indicated), 125 Volts (unless otherwise shown), duplex, polarized, full gang size, specification grade, separate ground terminal, 20 Amp. break-off tab for split circuit wiring.

C. Ground Fault (GFI) Receptacles: 20 Ampere, specification grade duplex receptacle with integral ground fault circuit interrupter. LED operation indicator. Test and reset buttons. End of life protection- GFI component failure results in no power delivered to equipment (2006 UL 943).

D. Tamper Proof Type: Same as Receptacles, or Ground Fault (GFI) when GFI required. Provide Tamper Proof type where children may be present. Provide in common areas open to the public, and areas open to the public. Provide in areas where children may visit. Provide also in areas per NEC.

E. USB Receptacles: Same as Receptacles, with (2) Standard USB charge combination ports.

F. Wall Plates: 302 Stainless Steel, Match device configuration.

G. Colors: Verify colors with Architect.
   1. Gray Receptacles, Gray Switches: In finished areas that are not dark brown in color.
   2. Brown Receptacles, Brown Switches & Brown Nylon Wall Plate: In finished areas with dark brown or dark wood finish.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Do not use back wiring wells, terminate conductors on mechanical screw terminals.

B. Do not use GFI-Feed through function, GFI receptacles with test, reset, etc. required at each location where GFI is required (unless GFIB).

C. Provide Tamper Proof type receptables where children may be present. Provide in common areas open to the public including bathrooms, and any other area open to the public. Provide in areas where children may visit. Provide also in areas per NEC. Generally, Tamper Proof is not required: on Roofs, on Ceilings, in Mechanical/Electrical Rooms.

D. Provide wiring devices as shown.

E. Install devices plumb and consistent with building lines. Wall Plates shall make contact on four corners and shall fit flush with device.

F. Devices to include same configuration outlet box, cover, wall plate and other necessary installation materials for a complete operating circuit.

G. Mount switches 42 inches (to center line of faceplate) above floor except as otherwise noted on the Drawings.

H. Coordinate mounting locations with architectural details.

I. Mount receptacles vertically at 15 inches (to bottom of faceplate) above finished floor, with grounding pole at bottom.

J. Coordinate receptacle height with benches and counters.

K. When mounting receptacle above bench or counter, mount receptacle to the side with grounding pole at left.

L. Grounding: Install a separate bare conductor between the receptacle strap grounding (green) screw and a screw into the outlet box. Self-grounding strap not approved as grounding means.

END OF SECTION

SECTION 26-51-13.10 LAMPS – LED MODULES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Provide and install lamps in all light fixtures as required in this Division and shown.

PART 2 - PRODUCTS

2.01 GENERAL

A. Lamps shall be certified, and approved per CEE- Consortium for Energy Efficiency.

2.02 TYPE AND COLOR

A. Refer to Lighting Fixture Schedule.

B. All lamps of each type and color shall be by the same manufacturer.

2.03 LED MODULES

A. 80 to 90+ CRI, 4000K color temperature unless otherwise indicated on lighting schedule.

B. Full compatibility with provided driver. Driver to be dimmable where specified and compatible with specified emergency power solution.

C. LED drivers to be fully protected, last not less than 7 years, and include integral surge protection.

D. 0-10V DC Dimming where indicated with dimming.

E. 0-10V DC Dimming when included as standard no additional costs.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install lamps in accordance with manufacturer's instructions.

3.02 WARRANTY

A. Provide not less than 5 year warranty for LEDs. Provide greater as included by manufacturer. Provide replacement labor allowance.

END OF SECTION

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SECTION 26-51-13.20 LIGHTING FIXTURES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Provide complete, supported, trimmed and finished lighting system operational for the use intended.

1.02 REFERENCE STANDARDS

A. National Electrical Manufacturer's Association (NEMA).

B. American National Standards Association (ANSI)
   1. ANSI C62.41 IEEE Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits

C. Underwriters Laboratories (UL)
   1. UL 1598 Luminaires
   2. UL 1029 Standard for High-Intensity-Discharge Lamp Ballasts
   3. UL 8750 Safety Standard for Light Emitting Diode Equipment for Use in Lighting Products

D. National Fire Protection Association (NFPA)
   1. NFPA 70 National Electrical Code

E. Oregon Energy Code

1.03 COORDINATION

A. Verify compatibility and coordination of other materials with luminaire and ceiling system, and mounting system. Inform discrepancies to the Architect, and do not order until clarified.

B. Coordinate with Division 23 to avoid conflicts with mechanical equipment.

1.04 QUALITY CONTROL

A. Acceptable Manufacturers- Refer to Fixture Schedule, or Drawings.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide support and trim hardware required for adequate support and approved appearance of mounted equipment.

B. Factory balanced. Provide concealed weighted material to offset ballast and other component weight. Fixtures that do not hang or mount level are not acceptable.

C. Provide A12 lens, semi-diffuse, not less than 0.125 thick acrylic or per lighting fixture schedule.

D. Fixtures installed in insulated cavities shall be IC rated.

E. Provide fire rated enclosures for all fixtures installed in fire rated structures and fire rated ceilings. Enclosure shall be of the same rating as to not compromise the full rating of the structure where installed. Fixtures used in fire rated enclosures shall be UL listed for such installation and shall have 3-inches clear from enclosure on all sides.

F. Equipment shall be certified, and approved per Oregon Energy Code.

2.02 LED LUMINAIRES

A. Painted finish, no exposed materials with potential to oxidize. Additional or other requirements per Lighting Fixture Schedule.

B. Not less than 20-guage steel housing and reflectors unless otherwise indicated and per light fixture schedule.

C. Provide Hinged Frames with Catches; removable for cleaning without tools. Support lay-in lenses on four sides with flip ends on short dimension. Include captive removable and reusable hardware to secure lens to frame.

D. Design Luminaire to adequately dissipate heat from LEDs/lamp, driver/ballast, and battery pack.

E. Provide formed endplates and trim.

F. Suitable for mounting where shown.

2.03 RECESSED LUMINAIRES

A. Conductors rated for area and for conductor connections.

B. Flush and plumb with exposed surface, no gaps, include required trim rings and materials of adequate type for flush appearance.

2.04 PENDANTS/CABLE HANGERS

A. Pendant: Shall be contiguous, and color matched to fixture. Pendant type shall include swivel sockets permitting normal fixture motion and self-adjustment. Include color matched canopy at structural attachment. Provide safety cables secured to structure, wrapped around or through pendant where recommended by fixture manufacturer to independently support fixture. Route conductors through pendant as per manufacturer requirements.

B. Visible Cable: Field adjustable length, with extra coiled and concealed. Equal lengths, with 18-inches. Additional cable and for future adjustments. Locking ring to adequately hold fixture at desired mounting height. Cable stop to prevent fixture from sliding off end of cable.

C. J-Box at Ceiling (may be in addition to J-box at structure), separately supported, per NEC.

2.05 CABLE HUNG FIXTURE CORDS

A. Visible Cords: Straight (not pigtail type) along length of cable, black, by fixture manufacturer. Shall not provide supporting function.

PART 3 - EXECUTION

3.01 GENERAL

A. Replace any damage to fixture, lamps, lens, or other lighting components with new fixture. Damage includes paint spray, and other construction materials adhering to fixtures. Damage or altering fixture as a result of mounting or placing fixture into applicable space is not acceptable.

B. Install per requirements of Oregon Energy Code.

C. Provide 0-10V dimming if included as standard, or as specified, and/or shown. The lighting fixture schedule and fixture dimming indication, and/or fixture includes dimming as standard has been developed with this requirement, and intents to include dimming in areas where fixtures are provided with dimming, even when fixtures include dimming without a specific indication on the lighting plans/schedule that dimming is required.

3.02 COORDINATION

A. See Reflected Ceiling plan for exact location of equipment and ceiling construction.

B. See Finish Schedule for additional finish requirements.

C. Coordinate fixture mounting system prior to ordering fixtures.

D. Provide price breakdown accounting as required and requested by Oregon Energy Trust, or Engineer.

3.03 ACCESS

A. All fixtures shall have Code accessible supplies. Use reach-through type where recessed in non-accessible spaces.

3.04 SUPPORT

A. Suspended ceiling:
   1. Attach light fixtures to the suspended ceiling system where installed. Attachment shall have capacity of 5 times fixture weight in all directions.
   2. Support fixtures with not smaller than number 12 AWG hangers attached to the grid members within 3 inches of the corner of each fixture, attached to building structure.
   3. Attach two not smaller than number 12 AWG hangers from the fixture housing to the building structure.
   4. Support pendent-hung lighting fixtures directly from the structure above with not smaller than number 9 AWG wire or approved alternate support.
   5. J-box at every fixture mounted to structure.

B. Support all fixtures from structure rated at least five times support weight.

C. J-box for every suspended or recessed in suspended ceiling fixtures.

3.05 SURFACE MOUNTING

A. Attach with mechanical means to secure fixture flush with structure. Attach at each corner of fixture not less than four places to building structure. Round fixtures shall be attached by forming a tripod configuration. Single center connection is not acceptable.

B. Seal around fixture so no light trespass can be observed.

3.06 ACCEPTANCE

A. Remove all debris, bugs, and other foreign materials from lamps and fixture housings. Clean all lamps, shades, reflectors, and lens removing all temporary labels, debris, dirt, and dust per manufacturer guidelines.

END OF SECTION

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SECTION 27-05-00 VOICE DATA SYSTEM

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Provide Voice/Data system infrastructure including: cables, distribution boxes, support, hardware, and terminations for complete functional audio visual (A/V), and voice and data (V/D) communications as shown on Drawings and specified herein.

B. In general, the Project work includes installation of new horizontal station cable, terminations, boxes, enclosures, labeling, grounding and bonding, and conformance testing of the installation in addition to other requirements specified herein.

1.02 SUBMITTALS

A. See Execution herein. Provide Shop Drawing showing detailed riser diagram of system infrastructure. Include cabling plan submitted on floor plans.

1.03 APPLICABLE STANDARDS

A. Work shall be provided per Code. Provide per manufacturers requirements and recommendations. Materials shall be UL approved or listed by accredited and approved listing agency. Equipment shall be labeled where a UL standard and/or test exists.

B. The latest edition of referenced standards from the latest available draft in the case of proposed standards; shall be utilized.

1. Underwriters Laboratories (UL)
    a. UL 444 Communications Cables
    b. UL 1863 Standard for Communications-Circuit Accessories
    c. UL 2269 Optical Fiber/Communications/Signaling/Coaxial Cable Outlet Boxes
2. Underwriters' Laboratories of Canada
    a. ULC-S139 Fire Test for Evaluation of Integrity of Electrical Cables
3. American National Standards Institute (ANSI), Telecommunications Industry Association (TIA), Electronic Industries Alliance (EIA)
    a. ANSI/TIA/EIA-492 AAA Multi Mode Optical Fiber
    b. ANSI/TIA/EIA-568-A Commercial Building Wiring Standard
    c. ANSI/TIA/EIA-568-B Commercial Building Telecommunications Cabling Standard
    d. ANSI/TIA/EIA-854 A Full Duplex Ethernet Specification for 1000Mbis/s (1000BASE-TX) Operation Over Category 6 Balanced Twisted-Pair Cabling.
    e. ANSI/TIA/EIA 607 Commercial Building Grounding and Bonding Requirements for Telecommunications.
4. International Standards Organization (ISO), International Electrotechnical Commission (IEC)
    a. ISO/IEC 11801 Generic Cabling for Customer Premises
    b. ISO/IEC 60603-7 RJ45 Connector (8-Pin)
    c. ISO/IEC 60793-2 Optical Fibers
5. Electrical Code
6. National Electrical Manufacturers Association (NEMA)

a. NEMA WC-63 Performance Standards for Twisted Pair Premise Voice and Data Communications Cable

b. NEMA WC- 66 Performance Standard for Category 6 and Category 7 100 Ohm Shielded and Unshielded Twisted Pair Cables

7. ANSI, Insulated Cable Engineers Association (ICEA)

a. ANSI/ICEA S-90-661 Category 3, 5, & 5e Individually Unshielded Twisted Pair Indoor Cable for Use In General Purpose and LAN Communication Wiring Systems.

C. Applicable Testing Standards: Testing of individual components and channel shall be conducted in accordance with the following standards:

1. ASTM D 4566-94, Standard Test Methods for Electrical Performance Properties of Insulation and Jackets for Telecommunications Wire and Cable
2. ANSI/TIA/EIA-492 AAA, Multi Mode Optical Fiber
3. ANSI/TIA/EIA-568-A, Commercial Building Telecommunications Standard
4. ANSI/TIA/EIA-568-A-1, Propagation Delay and Delay Skew Specifications for 100 W 4-pair cable
5. ANSI/TIA/EIA-568-A-2, Corrections and Additions to TIA/EIA-568-A
6. ANSI/TIA/EIA-568-A-4, Production Modular NEXT Loss Test Method and Requirements for Unshielded Twisted Pair Cabling
7. ANSI/TIA/EIA-568-A-5, Transmission Performance Specifications for 4-pair 100 W Category 5e Cabling
8. ANSI/TIA/EIA-TSB 67, Transmission Performance Specifications for Field Testing of Unshielded Twisted Pair Cabling Systems
9. ISO/IEC 11801

PART 2 - PRODUCTS

2.01 FIBER OPTIC CABLE

A. General purpose single mode, dual window type. 50 micron diameter, 125 micron cladding. Type LC Connectors.

B. OS2 performance.

C. 12 Strand

D. Meets ULC-S139

E. Bandwidth shall meet or exceed 160mHz. at 850nM and 500mHz at 1,300nM.

F. Fiber Cable: Corning ALTOS, or approved

2.02 FIBER LC CONNECTORS

A. Corning duplex LC connectorized pre-polished, or approved. Pigtail assemblies shall be fusion spliced onto all singlemode fiber optic cable.

B. Terminate not less than 6-strands with LC connectors, same strands at each termination point. Maintain labeling of strands for known end points. Optionally, all 12 strands can be terminated with LC connectors; labeling of end-pairs required. Provide dust/wp covers for terminations.

C. See Drawings for additional requirements.

PART 3 - EXECUTION

3.01 GENERAL

A. See Drawings for additional requirements.

B. It is the intent of the Drawings and Specifications that systems be complete, fully tested and ready for operation.

C. Voice/Data systems are shown and presented as a performance specification. Submit Shop Drawings, including connection points, Risers, and the like for review. Additional specific area requirements have been indicated on drawings, Contractor shall provide detailed drawings showing cabling and riser information.

D. Contractor shall provide cable support hardware in locations to vertical secondary pathway at outlet location.

E. Bundle cable groups utilizing equipment specified. Provide re-usable straps and locate to the extent possible near accesses. Do not use Nylon or other Cable Ties. Do not staple cables.

F. Provide raceway throughout.

G. The Structured Cabling System (SCS) shall follow ANSI/TIA/EIA and BICSI guidelines and shall consist of cable and connecting hardware manufactured by Ortronics & CommScope or approved. For direct assistance in interpreting telecommunications standards, utilize the services of a Registered Communications Distribution Designer (RCDD) certified by the Building Industry Consulting Service International (BICSI).

H. Coordinate with the Owner for Owner preferences and requirements. Notify Landscape in writing of additional Owner requirements.

I. Coordinate with the Owner for labeling. Refer to Owner's Labeling Standards (Voice-Data Communications). Re-apply labeling that has not been coordinated or that is not permanent.

J. Coordinate locations, and equipment mounting heights.

K. Route cables in a neat, professional manor.

L. Secure cable, loose or "sagging" cable across large spans is not acceptable.

M. Do not pinch or staple cables in any locations. Pinched or stapled cables are not acceptable.

N. Route cables and maintain bending radius of cables, raceway as required by cable manufacturer and applicable standards.

O. Do not splice cables.

3.02 IDENTIFICATION

A. Label equipment as required by Specifications and as shown on drawings.

B. Coordinate with owner and verify labeling method used to identify areas within building. Regardless of Owner requirements, include labeling indicators as shown on Drawings.

3.03 GROUNDING

A. Ground equipment racks utilizing ground bus bars and grounding conductor not less than as required by Code and standards.

B. Utilize compression lugs at ground bus locations.

C. Bond to the following:
   1. As shown on Drawings
   2. Telecommunications Panelboards

3. Telecommunications Racks
4. Distribution grounding system

3.04 TESTING

A. Fiber Cables

1. Visually inspect fiber, fiber reels, and shipping cartons to detect cable damage incurred during shipping and transport. Replace visibly damaged items.
2. Conduct fiber testing as described below upon completion of installation. Test fully completed systems only. Piecemeal testing is not acceptable, except by prior written approval from the Architect.
3. After installation of connectors, visually inspect each fiber end-face at 10x magnification. Refinish fibers with visible defects and/or variations in the core area.
4. Perform end-to-end, bi-directional attenuation (loss) test for each fiber strand at 850 nm and 1300nm wave lengths. Conduct tests in accordance with EIA/TIA-526-14, method B and with test instrument manufacturers printed instructions test equipment must have calibration certificate.
5. Demonstrate that measured link loss does not exceed the allowable loss, which is the sum of: the connectors loss (based on the number of mated connector pairs at the EIA/TIA-568 maximum allowable loss of 3.75 dB/km @ 850nm and 1.5dB/km @ 1300nm).
6. Strands whose measured attenuation falls outside the acceptable range shall be subject to further inspection and testing to determine the nature of the fault. At a minimum, an OTDR shall be used to determine the true loss for each connector pair, the exact length of the fiber, and to identify the presence of any core damage.
7. Faults related to connectors shall be corrected, and the fiber re-tested as stated in the paragraph above until acceptable attenuation measurements are recorded.
8. Where defects are found to be inherent in the fiber itself, fiber must be removed and replaced. Also, replace any cable having fewer than the manufacturers guarantee number of serviceable fibers.
9. Remove defective cables from pathways system. Do not abandon cables in place.
10. The Architect reserves the right to observe the conduct of any or all portions of the testing process.
11. Test results and corrective procedures are to be documented and submitted to the Owner within fourteen (14) working days of test completion.

3.05 ACCEPTANCE

A. Upon receipt of the Contractor's log of cable testing, the Owner, and/or Engineer will review the installation and may request a retest using Contractor equipment and labor, of up to 10% of the cable/wires installed. Inconsistent results are not acceptable.

END OF SECTION

SECTION 31-00-00 EARTHWORK

PART 1 – GENERAL

1.01 RELATED DOCUMENT

A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SCOPE OF WORK

A. Section includes site cutting, grading, filling, contouring, compacting, and preparation of the site.

1.03 REFERENCES

A. ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.

B. ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.

C. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb Rammer and 18 inch Drop.

D. Soil in Place by the Rubber Balloon Method.

E. ASTM D2419 - Test Method for Sand Equivalent Value of Soils and Fine Aggregate.

F. ASTM D2434 - Test Method for Permeability of Granular Soils (Constant Head).

G. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil Aggregate by Nuclear Methods (shallow depth).

H. The most current edition of the Oregon Standard Specifications for Construction

I. Specification 32 85 00 Landscape Grading

1.04 SUBMITTALS

A. Materials Source: Submit name of imported materials source. Furnish materials of each type from same source throughout the Work. Change of source requires Engineer’s approval.

B. Classification according to ASTM D2487 of each imported subsoil material proposed for fill and backfill.

C. Laboratory compaction curve according to ASTM D1557 for each imported material proposed for fill and backfill.

D. Manufacturers' Literature and Data.

1.05 CLOSEOUT SUBMITTALS

A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

B. Field compaction test reports for all lifts of fill materials.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM and AASHTO procedure standards.

B. Perform grading in accordance with the City of La Grande and Eastern Oregon University grading permit requirements.

C. Perform work in accordance with the most current edition of the IBC Appendix J Grading.

PART 2 – PRODUCTS

2.01 SOIL MATERIALS

A. Native soils that meet acceptable requirements are allowed for reuse. Acceptable soil classification groups include GW, GP, SW, SP and SM or a combination of these groups. Acceptable native soils shall be screened to ensure that it is free of debris, organic material, frozen soil and rock particles greater than 4-inches in diameter.

B. Unsuitable soils shall include soils that are not maintained within 2 percent of optimum moisture content at time of compaction. Unsuitable soils classification groups include GC, SC, CL, ML, OL, CH, MH, OH and PT according to ASTM D 2487, or a combination of these soils.

2.02 IMPORTED SOIL MATERIALS

A. Imported Granular Fill Soils shall consist of clean, non-plastic, free draining crushed gravel and sand, which is free of organic matter, oversized material or other deleterious materials. Imported fill should be pit or quarry run rock and should meet the Oregon Standard Specifications for Construction Section 00330.14 – Selected Granular Backfill and 00330.15 – Selected Stone Backfill. Imported fill material should have less than 5 percent fines (based on the ¾-inch fraction).

B. Imported Crushed Rock Structural Fill shall consist of a well graded 1-1/2” minus aggregate conforming to the Oregon Standard Specifications for Construction Section 02630 – Base Aggregate Table 1.

2.03 COARSE AGGREGATE MATERIAL

A. ¾-inch minus Aggregate Base Course per Oregon Standard Specifications for Construction Section 00641.10

2.04 GRANULAR DRAIN BACKFILL MATERIAL

A. For use with perforated collector pipe only. Shall be in accordance with the Oregon Standard Specifications for Construction Section 00430.11 Granular Drain Backfill Material, 1-1/4 inch to 3/4-inch. Rock shall be clean and washed.

1. Drainage Geotextile: Woven Type 1 per Section 02320 Geosynthetics Table 02320-1 per the Oregon Standard Specifications for Construction.

2.05 SYNTHETIC TURF PERMEABLE AGGREGATE MATERIAL

A. Permeable Aggregate Base Course: For use within the synthetic turf area. Angular, washed aggregate consisting of crushed stone that must be placed and compacted in a uniform manner. The compacted stone shall be stable for use in construction, and suitable for its intended purpose. Rounded stone is not permitted for this application. An independent party must test aggregate prior to delivery to site. The aggregate must meet and/or exceed the specifications as provided herein contingent upon stone availability in specified region. Other products of similar consistency native to region of project may be considered and approved by Architect and/or Engineering of Record.

1. Permeable Aggregate Base Design Criteria

Sieve Dimension	% Passing by Weight
1.5-Inch	100
1.0-Inch	70-95
3/4-Inch	50-80
1/2-Inch	35-65
#8	15-25
#30	0-18
#200	<3
Permeability	>30 inches per hour
Sulfate Soundness (C-88)	<12% loss
LA Abrasion (ASTM C-131)	<140
Optimum Moisture Content	>90

2. Subgrade Geotextile: Woven per Section 02320 Geosynthetics Table 02320-4 per the Oregon Standard Specifications for Construction.

B. Permeable Aggregate Finish Course: For use within the synthetic turf area. Angular, washed aggregate consisting of crushed stone that must be placed and compacted in a uniform manner. The compacted stone shall be stable for use in construction, and suitable for its intended purpose. Rounded stone is not permitted for this application. Depth of finished course not to exceed 2-inches. An independent party must test aggregate prior to delivery to site. The aggregate must meet and/or exceed the specifications as provided herein contingent upon stone availability in specified region. Other products of similar consistency native to region of project may be considered and approved by Architect and/or Engineering of Record.

1. Permeable Aggregate Finish Course

Sieve Dimension	% Passing by Weight
1/4-Inch	65-100
#8	45-75
#16	20-55
#30	5-30
#60	0-10
#200	<3
Permeability	>12 inches per hour
Sulfate Soundness (C-88)	<12% loss
LA Abrasion (ASTM C-131)	<40
Optimum Moisture Content	>90

2.05 TOPSOIL

A. Topsoil: Refer to Specification 32 8500 Landscape Grading.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify existing site conditions prior to beginning work.

B. Verify intended elevations for the Work are as indicated on Drawings.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

C. Locate, identify, and protect utilities indicated to remain, from damage.

D. Notify utility company to remove and relocate utilities.

E. Protect above and below grade utilities indicated to remain.

F. Protect plant life, lawns, and other features remaining as portion of final landscaping.

G. Protect bench marks, survey control points, existing structures, fencing and concrete apron from excavating equipment and vehicular traffic.

H. Prior to beginning any excavating, trenching or grading, contractor shall call 811 or Dig Safe at 888-DIG-SAFE (888-344-7233). Provide a minimum of 3 full working day of notice (excluding weekends and holidays) before any excavating, trenching or grading can begin. No work shall commence without utility locates being conducted.

3.03 SUBSOIL EXCAVATION

A. All excavation shall be considered as unclassified.

B. Do not process wet material to obtain optimum moisture content.

C. Stability: Replace damaged or displaced subsoil as specified for fill.

D. Remove all unsuitable excavated materials from site.

E. Provide dewatering as necessary to install the improvements.

F. Remove all excess materials from the site.

G. Excavate to subgrade elevations regardless of the character of the surface and subsurface conditions encountered.

H. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.04 FILLING

A. Scarify and compact the top 12 inches of existing subsoil subgrade to a minimum of 95% of the maximum dry density per ASTM D1557.

B. Any soft spots or pumping area(s) observed during compaction shall be over-excavated at least 12-inches and replaced with imported crushed rock structural fill.

C. Place subgrade geotextile below synthetic turf areas prior to placing permeable aggregate base as shown on the Drawings.
   1. Fabric to be laid on smooth and compacted subgrade surface.
   2. Fabric shall be overlapped by 24-inches at seams.
   3. Fabric shall not be folded or turned up along edges.
   4. Fabric shall be field cut as necessary to meet field dimensions.

5. Fabric shall not cover collector drain trenches.
6. No trucks are permitted to move over the fabric covered surface until authorized by the Owner's representative.

D. Place flat drains above subgrade geotextile in synthetic turf areas as shown on the Drawings prior to placing permeable aggregate base.

E. Fill areas to contours and elevations with suitable excess excavated soils or imported soils.

F. Place fill material on continuous 8-inch loose non-compacted layers and compact to a minimum of 95% of the maximum dry density per ASTM D1557.

G. Do not place fill material on top of uncontrolled fill, surfaces that are muddy, frozen or contain frost or ice.

H. Maintain optimum moisture content of fill materials to attain required compaction density.

I. Make grade changes gradual. Blend slope into level areas.

J. Remove surplus fill materials from site.

3.05 TOLERANCES

A. Top Surface of Subgrade Field Areas, Sidewalks: Plus or minus 0.10 (1 tenth) foot from required elevation.

B. Top Surface of Landscape Areas: Plus or minus 0.10 (1 tenth) foot from required elevation.

3.06 FIELD QUALITY CONTROL

A. Testing Agency: Contractor shall obtain a qualified independent testing agency to perform field quality-control testing.

B. Testing: Mass Grading/Fill Placement – One compaction test every 2,500 square feet per lift, minimum of 3 tests per testing event.

C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

D. Provide a copy of the compaction test results to the Owner's Representative.

3.07 PROTECTION

A. Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances were completed or partially completed surfaces become eroded, rutted, settled or where they lose compaction due to subsequent construction operations or weather conditions.

C. Where settling occurs before project completion period elapses, remove finished surfacing, backfill with additional soil material, compact and reconstruct surface.

D. Protect newly laid piping. Contractor shall not drive over piping unless there is adequate cover for pipe protection. Replace all damaged piping at no additional cost to the Owner.

3.08 DISPOSAL OF SURPLUS AND WASTE MATERAILS

A. Remove surplus soil and waste material, including unsatisfactory soil, trash, debris and legally dispose of it off Owner's property.

END OF SECTION

SECTION 31-10-00 SITE CLEARING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following:
   1. Removing existing landscaping and irrigation where indicated and as located in the field.
   2. Clearing and grubbing.
   3. Stripping and stockpiling topsoil.
   4. Removing above- and below-grade site improvements.
   5. Disconnecting, capping or sealing, and abandoning site utilities in place and removing site utilities.
   6. Temporary erosion and sedimentation control measures.

1.03 MATERIAL OWNERSHIP

A. Except for stripped topsoil or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.04 SUBMITTALS

A. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing. Submit prior to start of work.

B. Traffic control plan for work on-site and in the public right of way.

C. Site Plan showing areas for temporary construction and field offices.

D. Provide a copy of the 1200-C Permit.

E. Erosion and Sediment Control Plan

1.05 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
   1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
   2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
   3. Pedestrian Traffic: Provide alternate routes around closed or obstructed pedestrian walkways.

B. Utility Locator Service: Contractor shall notify utility locator service for area where Project is located before site clearing. Contractor shall locate existing on-site utilities using a private utility locator service. Contractor shall coordinate with Eastern Oregon University officials when conducting private utility locates.

C. Prior to beginning any excavating, trenching or grading, contractor shall call 811 or Dig Safe at 888-DIG-SAFE (888-344-7233). Provide a minimum of 3 full working day of notice (excluding weekends and holidays) before any excavating, trenching or grading can begin. No work shall commence without utility locates being conducted.

D. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place and utility locates have been performed.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Section 31 00 00 "Earthwork."
   1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification of existing conditions before starting Work.

B. Verify limits of site clearing prior to start of Work.

C. Verify limits of tree protection fencing.

3.02 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Locate and clearly flag trees and vegetation to remain or to be relocated.

C. Protect existing site improvements to remain from damage during construction.
   1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.03 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Plan and execute construction to prevent erosion and sedimentation from leaving the site.

B. Temporary erosion and sediment control is required for this project. The Contractor’s attention is directed to the Oregon Standard Specifications for Construction.

C. The Contractor shall be responsible for all dust, erosion, and sediment control on the site. The contractor is to be familiar with the following requirements.
   1. Section 402(p) Federal Water Pollution Control Act (Clean Water Act).
   2. 40 CFR Parts 122, 123, and 124 (November 9, 1999) EPA Administration Permit Programs the NPDES.
   3. Oregon Department of Environmental Quality (DEQ) 1200-C Permit.
   4. Project Permits.

D. Contractor shall obtain a 1200-C Permit through the Oregon DEQ prior to Site Clearing. Contractor shall prepare an Erosion and Sediment Control Plan as required Oregon DEQ.

E. During the life of the contract the contractor will be required to provide reasonable erosion control measures to prevent, control, and stop water pollution, erosion or dust pollution which could adversely affect adjacent properties.

F. Controlling erosion may require the contractor to perform temporary work including but not limited to the following:
   1. Providing ditches, berms, silt fencing, culverts, and other measures to control surface runoff water.
   2. Controlling silt build-up in storm drainage collection structures.
   3. Covering and/or otherwise protecting slopes and disturbed areas until such time that permanent erosion control measures are established.

G. The Contractor shall be responsible for obtaining and complying with all local, State, and Federal permits required for stormwater pollution prevention as a result of construction activities.

3.04 UTILITIES

A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.
   1. Arrange with utility companies to shut off indicated utilities.
   2. Conduct private utility locates throughout the project area to help identify existing on-site utilities.

B. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
   1. Notify Construction Manager not less than two days in advance of proposed utility interruptions.
   2. Do not proceed with utility interruptions without Construction Manager's written permission.

C. Excavate for and remove underground utilities indicated to be removed. Backfill and compact area of removed utility in accordance with Section 31 00 00 "Earthwork".

3.05 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction.
   1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
   2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
   3. Grind stumps and remove roots, obstructions, and debris extending to a depth of 18 inches below exposed subgrade.
   4. Use only hand methods for grubbing within tree protection zone.
   5. Chip removed tree branches and dispose of off-site.
   6. Remove vegetation, mulch, soil and roots to a minimum of 8-inches in shrub beds that will be replanted to allow for placement of new topsoil and amendment.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
   1. Place fill material in horizontal layers not exceeding a loose depth of 8-inches and compact each layer to a density equal to adjacent original ground.

C. Do not disturb or remove off-site field vegetation until ready to install underground utilities.

3.06 TOPSOIL STRIPPING

A. Remove sod, grass and all other vegetation before stripping topsoil.

B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and non-soil materials from topsoil, including trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil materials away from edge of excavations, at location indicated or where directed by Owner and/or Owner's Representative, without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Limit height of topsoil stockpiles to 72 inches unless OTHERWISE APPROVED BY Owner and or Owner's Representative.

2. Topsoil stockpile shall not contain soils and/or debris that does not meet the Topsoil material requirements as specified in Specification 32 85 00 Landscape Grading. Contractor shall be responsible to remove and dispose of all soils, debris and other miscellaneous materials that are not acceptable at no additional cost to the Owner.

3. Contractor shall sort and/or screen topsoil stockpile to meet material requirements prior to placement.

4. Stockpile location shall be approved by the Owner prior to placing materials. Stockpile locations that are not approved shall be moved at the Contractor's expense.

3.07 SITE IMPROVEMENTS

A. Remove existing above and below grade improvements as indicated and as necessary to facilitate new construction.

B. Remove slabs, paving, sidewalks, curbs, gutters, fencing and other miscellaneous items as indicated.

1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.

3.08 DISPOSAL

A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

1. Separate recyclable materials produced during site clearing from other non-recyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.
2. Disposal waste sites shall meet all requirements of governing Health Department.
3. Refer to Construction Waste Management and Disposal Requirements.
4. Contractor shall remove and dispose of excess soil materials that are stockpiled on-site at no additional cost to the Owner.

3.09 CLEANUP

A. Upon completion of site Work and project, clean the entire Work area. Remove all excess excavated material, rocks, boulders, logs, trees, pipe or debris of any type and dispose from the site.

END OF SECTION

SECTION 31-23-23 TRENCHING AND BACKFILL

PART 1 - GENERAL

1.01 RELATED DOCUMENT

A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes excavating trenches for utilities; compacted fill from top of utility bedding to subgrade elevations; and backfilling and compaction.

1.03 REFERENCES

A. ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.

B. ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.

C. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb Rammer and 18-inch drop.

D. ASTM D2167 - Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

E. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil Aggregate by Nuclear Methods (shallow depth).

F. Most current edition of the Oregon Standard Specifications for Construction

G. Latest edition of the local jurisdictional governing agencies Standard Drawings and Specifications.

1.04 DEFINITIONS

A. Utility: Any buried pipe, duct, conduit, cable or underground storage tank/structure.

1.05 SUBMITTALS

A. Samples: Submit, in airtight containers, 45 lb. (20 kg) sample of each type of soil trench backfill material to testing laboratory. Submit test results to Engineer.

B. Materials Source: Submit name and ODOT Pit Identification Number of imported material suppliers. Provide materials from same source throughout the Work. Change of source requires Engineer’s approval.

1.06 CLOSEOUT SUBMITTALS

A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

B. Field compaction test reports for all lifts of fill materials.

1.07 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.08 COORDINATION

A. Verify location and depths of existing utilities. Notify Engineer immediately of any conflict with existing utilities.

B. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

A. Trench Backfill:
   1. Trench backfill materials shall be in accordance with the City of La Grande Standard Specifications.
   2. Trench backfill shall be Class A or Class B in accordance with ODOT Standard Specifications 00405.14.

B. Pipe Bedding and Pipe Zone:
   1. Pipe bedding and pipe zone material shall be 3/4-inch minus crushed aggregate per ODOT Standard Specifications 00405.12 and 00405.13 unless otherwise noted.

2.02 ACCESSORIES

A. Warning Tape: Acid and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6-inches wide and 4 mils thick, continuously inscribed with a description of the utility, colored to comply with local practice or requirements of the local authorities.

B. Detectable Warning Tape: Acid and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6-inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30-inches deep, colored to comply with local practice or requirements of the local authorities.

PART 3 - EXECUTION

3.01 LINES AND GRADES

A. Grades:
   1. Lay pipes to lines and grades indicated on Drawings.
   2. Maintain grade alignment of pipe using laser-beam instrument with qualified operator to establish lines and grades.

B. Location of Pipe Lines:
   1. Location and approximate depths of proposed pipe lines and tanks are shown on Drawings.
   2. Engineer reserves right to make changes in lines, grades, and depths of pipe lines and manholes when changes are required for Project conditions.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. Protect plant life, lawns, and other features remaining as portion of final landscaping.

C. Protect bench marks, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

D. Maintain and protect above and below grade utilities indicated to remain.

E. Prior to beginning any excavating, trenching or grading, contractor shall call 811 or Dig Safe at 888-DIG-SAFE (888-344-7233). Provide a minimum of 3 full working day of notice (excluding weekends and holidays) before any excavating, trenching or grading can begin. No work shall commence without utility locates being conducted.

F. Provide traffic control as required by the City of La Grande and/or Eastern Oregon University.

3.03 TRENCHING

A. Trench excavation: In accordance with the Oregon Standard Specifications for Construction.

B. Dewatering: Provide and maintain sufficient pumping equipment for removal of groundwater when encountered during trench excavation. Associated costs for dewatering to be included in the Contract Price. Lay no pipe or structures in standing water.

C. Hand trim excavation: Hand trim for bell and spigot pipe joints. Remove loose matter.

D. Correct areas over excavated areas with compacted backfill as specified for authorized excavation or replace with fill concrete as directed by Architect/Engineer.

E. Protect open trench to prevent danger to the public and construction traffic.

F. All trench excavation shall be considered as unclassified.

G. Repair damaged existing underground utilities, including irrigation systems, as related to trenching activities. Replacement materials/parts shall match existing utility materials/parts.

3.04 SHORING AND TRENCH SAFETY SYSTEMS

A. Provie shoring in accordance with Oregon Occupational Safety and Health requirements (OSHA).

B. Shoring and Trench Safety Systems shall meet the requirements of Oregon OSHA.

C. Repair damage caused by failure of the shoring, bracing or trench safety systems and for settlement of filled excavations or adjacent soil.

D. Repair damage to new and existing Work from settlement, water or earth pressure or other causes resulting from inadequate shoring, bracing or trench safety systems.

3.05 BACKFILLING

A. Place backfill and fill soil materials evenly on all sides of utilities to required elevations and uniformly along the full length of the utilities.

B. Place backfill on subgrades free of mud, frost, snow or ice.

C. Place and compact final backfill of satisfactory soil to final subgrade elevation.

D. Place backfill material on continuous 8-inch loose non-compacted layers and compact to a minimum of 95% of the maximum dry density per ASTM D1557.

E. Install warning tape directly above utilities, 24-inches below finished grade.

F. Backfill in accordance with the Oregon Standard Specifications for Construction and the local jurisdictional governing agency Standard Specifications and as shown on the Drawings.

G. Backfill trenches to contours and elevations indicated on the Drawings.

H. Place pipe bedding and pipe zone material in accordance with the Oregon Standard Specifications for Construction and the local jurisdictional governing agency Standard Specifications and as shown on the Drawings.

I. Place trench backfill material in accordance with the Oregon Standard Specifications for Construction and the local jurisdictional governing agency Standard Specifications and as shown on the Drawings.

J. Protect open trench to prevent danger to the public.

K. Remove surplus fill materials from site.

L. Leave fill material stockpile areas completely free of excess fill materials.

M. Restore all damaged landscape and/or hardscape surfaces related to construction activities to match existing conditions, materials and as shown on the Drawings.

3.06 TOLERANCES

A. Top Surface of General Backfilling: Plus or minus 0.10 feet from required elevations.

3.07 FIELD QUALITY CONTROL

A. Testing Agency: Contractor shall obtain a qualified independent testing agency to perform field quality-control testing.

B. All backfill shall be compacted to a minimum of 95% of the maximum dry density per ASTM D1557.

C. Compaction Testing: Contractor shall provide testing in accordance with ASTM D1556, ASTM D1557, ASTM D2167, and ASTM D6938.

1. Trench Backfill: One compaction test every 100 lineal feet of trench and minimum of 3 tests per utility alignment, whichever results in the greatest number of tests, per each fill lift and per testing event.

D. When tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest.

E. Provide a copy of the compaction test results to the Owner’s Representative.

3.08 PROTECTION OF FINISHED WORK

A. Protect finished work from damage.

B. Reshape and re-compact fills subjected to vehicular traffic during construction.

END OF SECTION

SECTION 32-01-90 90-DAY ESTABLISHMENT PERIOD

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The General Conditions of the contract apply to the work of this section the same as though written herein.

1.02 SCOPE OF WORK

A. Furnish all labor, materials, and equipment to provide, and install, landscape drainage pipe, drain inlets and grates, tree pit drainage systems, and plant pit breather tubes as described herein and upon the drawings.

B. The Contractor shall adequately protect the work, adjacent property, and the public, and shall be responsible for any damage, injury, and loss due to his acts or neglect. Contractor shall continuously protect and maintain all areas included in the contract during the progress of the work, through the establishment period, and until final acceptance of the work. Contractor is responsible for all repairs or replacements caused by acts of vandalism, including theft.

C. The Contractor shall employ only Certified Landscape Technicians (CLT's) with the Oregon Landscape Contractors Association (OLCA), as foremen for all landscape drainage installation work.

D. Landscape maintenance of designated areas as specified herein. During and at the end of the maintenance period, all plant material shall be in a healthy, growing condition. Contractor shall provide all equipment, labor, all landscaped areas, turf sports fields, turf playfields, lawns, mulched areas, hydroseeded areas, slopes, tree wells, and other landscaped areas constructed as a part of this contract and materials necessary for performing landscape maintenance according to the following specifications.

E. Complete landscape maintenance of entire site, including, but not limited to: pruning, shaping and training of trees, shrubs, and ground cover plants; fertilization; weed control, control of all plant diseases and insect pests; maintenance and repairs of irrigation and drainage systems; rodents; and all other maintenance required to maintain the landscaping in safe, attractive, and usable condition, and maintain all plant materiel in good condition with horticulturally acceptable growth and color.

1.03 RELATED SECTIONS

A. 32-8400 Planting Irrigation

B. 32-9113 Soil Preparation

C. 32-9220 Native Seeding

D. 32-9223 Sodding

E. 32-9300 Plants

1.04 SUBMITTALS

A. Submit product data under provisions of Section 013300 - Submittals. Partial or incomplete submittals are not acceptable and will be returned without a review.

B. Submit descriptive literature and specifications for the following:

C. Any materials, which differ from that, specified, when a brand name is called for on the drawings or in these specifications.

D. Contractor shall submit to the Landscape Architect within 30 days from notice to proceed photocopies of current CLT registration for all foremen performing work on this project.

1.05 QUALITY OF WORK

A. All work shall be performed in accordance with the best landscape maintenance practices, and shall be in keeping with the high aesthetic level of the facilities being maintained.

1.06 DEFINITION

A. Where “as directed”, “as required”, “as permitted”, “approved”, “acceptance”, or words of similar import are used, it shall be understood that the direction, requirement, permission, approval or acceptance of the Owner is intended unless otherwise stated. As used herein, “provide” shall be understood to mean “ provide complete”, in place, that is “furnish and install”, the word “site” as used hereinafter shall be understood to mean the location receiving the service. The use of the word “Owner” shall be construed to mean Bend Research Inc. or its delegated representative(s). The use of the Word “Contractor” shall be held to mean the Contractor and/or any person employed by him and working under this contract. The use of the words “shall” and “may” shall be held to mean “mandatory” and “permissible”, respectively. The use of the word “pruning” shall include the practices sometimes referred to as “trimming”.

1.07 CONTRACTOR’S RESPONSIBILITIES

A. Local Office: The contractor shall maintain a local office with a competent English-speaking company representative that can be reached during normal working hours and authorized to discuss matters pertaining to this contract with the Owner. A local office is one that can be reached by telephone without it being a toll call. An answering service or mobile telephone shall not fulfill the requirement for a local office.

B. Licenses and Permits: The Contractor shall, prior to award of contract and without additional expense to the Owner, possess all licenses and permits required for the performance of the work required by this Contract.

C. Personnel:

1. The Contractor shall furnish sufficient supervisory and working personnel capable of promptly accomplishing on schedule, to the satisfaction of the owner, all work required under this contract during the regular and prescribed hours.
2. The Contractor and his employees shall conduct themselves in a proper and efficient manner at all times and shall cause the least possible annoyance to the students, faculty, and the public. They shall be fully clothed in suitable uniformed attire.
3. The Contractor shall provide restroom facilities, i.e. (Porta John) at the maintenance yard for employee use.
4. All contractor maintenance vehicles shall be marked with the company name and/or logo so as to identify personnel working on the job.
5. The Owner may require the Contractor to remove from the work site any employee(s) deemed careless, incompetent, or otherwise objectionable, whose continued employment on the job is considered to be contrary to the best interests of the Owner.
6. The Contractor shall have competent English speaking supervisor, who may be a working supervisor, on the job at all times work is being performed, who are capable of discussing with the Owner matters pertaining to this contract. Supervisor must have a minimum of three years of actual field experience in landscape maintenance exclusively, and must be able to demonstrate to the satisfaction of the Owner that they possess adequate technical background. Supervisor must possess a current CLT certificate in landscape maintenance. Adequate and competent supervision shall be provided for all work being done by the Contractor’s employees to ensure accomplishment of high quality work which will be

acceptable to the Owner. In addition, a non-working supervisor shall inspect all areas under the contract a minimum of two (2) times each week.

D. Repairs to Existing Facilities

1. All portions of buildings, structures, equipment or other facilities, including irrigation systems, lighting, and signage which are damaged or altered in any way, as a result of the performance of work under this specification during the terms of the contract, shall be repaired or replaced in kind and in an approved manner. All work of this kind shall be performed by the Contractor at no extra cost to the Owner and shall be accomplished as directed by the Owner. Repairs to facilities shall be make immediately after damage or alteration occurs, unless otherwise directed. A comprehensive testing and check of all irrigation systems shall be make approximately 30 days before the end of the contract and any repairs deemed the responsibility of the Contractor shall be made by the Contractor to the satisfaction of the Owner.
2. The Contractor shall keep controller and valve boxes clear of soil and debris and maintain the irrigation system including the replacement, repair, adjustment, raise or lower, straighten, and any other operations required for the continued proper operation of the system from the water meter throughout the site. Repair or replacement includes, but is not limited to: sprinkler system laterals (piping), sprinkler mains (pressure lines), mainline sleeves, sprinkler control valves, sprinkler controllers, sprinkler heads, sprinkler caps, sprinkler head riser, valve covers, boxes and lids, including electrical pull boxes and lids, valve sleeves, quick coupler valves, hose bibs, and booster pumps.
3. The Owner shall be notified, within twenty-four (24) hours, of any damage caused by accident, vandalism, theft, acts of God, or mysterious causes and shall follow up notification within four (4) working days with a written description of the problem and steps taken, if any, to rectify the problems.
4. Repairs to existing structures or facilities, including irrigation systems, which are damaged or altered in any way, including acts of God, vandalism, vehicular damage, theft or mysterious damages that do not result from the performance or lack of performance of the work by the Contractor, shall be repaired by the Contractor as directed by the Owner at no cost to the Contractor except where the specifications provide otherwise. Invoices for repairs to existing facilities shall be broken down by phases and units, into parkways, medians, slopes, entry monuments or recreation areas.
5. Any replacement must conform to the type and kind of existing system. Any deviation must be submitted in writing for approval by the Owner prior to installation. Any materials installed without this approval, and subsequently rejected by the Owner, shall be promptly removed by the Contractor at no cost to the Owner.

E. Safety Requirements: All work performed under this contract shall be performed in such a manner as to provide maximum safety to the public and where applicable, comply with all safety standards required by CAL-OSHA. The Owner reserves the right to issue restraint or cease and desist order to the Contractor when unsafe or harmful acts are observed or reported relative to the performance of the work under this contract.

F. Hazardous Conditions: The Contractor shall maintain all work sites free of hazards to persons and or property resulting from his operations. Any hazardous condition noted by the Contractor, which is not a result of this operation, shall be immediately reported to the Owner.

G. Litter

1. Contractor-Generated Trash: The Contractor shall promptly remove from the work area all debris generated by his performance of pruning, trimming, weeding, edging and other work required in the specifications. The Contractor shall clean, with suitable equipment, public streets and walks, driveways and paved areas immediately after working in the areas and at such other times as may be required by the Owner.

2. Litter Pickup: All areas in the work site shall be kept free of, but not limited to the following items: bottles, glass, cans, paper, cardboard, metallic items and other debris. Litter pickup (litter removal from slope areas) shall be removed from the site and shall not be placed in "on-site" containers.
3. Broken glass, a hazard, and other material or litter which may be hazard shall be picked up and removed from the site immediately by the Contractor.
4. Seating areas, lunch courts, exercise areas, tunnel area, parking areas and other areas may on occasion be exceptionally littered and shall be cleared of litter before noon on the business day after the litter occurs.

H. Failure to Perform Satisfactorily: Those discrepancies and deficiencies in the work that remain uncorrected may be the necessary justification for a billing adjustment in the month following in the occurrence. Billing adjustments for this unsatisfactory service shall be permanent retention of 100% of the estimated monthly cost for work that is incomplete or deficient as stated herein.

I. Emergency Calls: The Contractor shall have the capability to receive and to respond immediately to calls of an emergency nature during normal working hours and during hours outside of normal working hours. Calls of an emergency nature received by the Owner shall be referred to the Contractor for immediate disposition.

J. Monthly Walk-Throughs: The Contractor shall provide to the Owner a schedule of monthly walk-throughs. Any changes to this schedule shall be provided to the Owner at least two weeks prior to that meeting. Monthly maintenance walk-through to be performed with the Contractor and Owner's representative.

1.08 REPORTS / INSPECTIONS

A. No special work shall be performed without first obtaining the written approval of the Owner.

B. As part of the service, the Contractor shall submit a monthly "Landscape Report" to the Owner. This report shall outline the general condition of the landscape areas, any problem areas that have been found, recommendations on how the landscape should be improved and the status of projects pursuant to maintenance programs in progress.

C. Once a month the Contractor shall accompany the Owner's Representative on a landscape inspection to review the status of maintenance, Landscape Report, and the landscape in general.

PART 2 - MATERIALS

2.01 All replacement landscape materials shall be per Section 329300 of these specifications.

2.02 Fertilizer shall be per Section 329113.

2.03 Supplemental fertilizer shall be per Section 32 91 00. N - P - K analysis shall be determined by soils analysis reports, when needed.

2.04 Replacement plant materials shall be per Section 329300.

2.05 Pre-emergent herbicides shall be per Section 329300.

2.06 Touch-up paint for site furnishings such as pots, trash/recycle containers, benches, exercise equipment and the like shall be from the corresponding site furnishings manufacturer/supplier.

PART 3 - EXECUTION

3.01 SCHEDULING OF WORK

A. The Contractor shall accomplish all normal landscape maintenance required under this contract between the hours of 7:00 a.m. and 8:00 p.m., Monday through Saturday. Exceptions may be made to normal working hours, where incidence of use may be too great during the hours

specified to allow for proper maintenance. The Owner may grant, on an individual basis, permission to perform contract maintenance at other hours. No maintenance function that generates excess noise which would cause annoyance to residences in the area shall be commenced before 8:00 a.m... The Contractor shall establish a schedule of routine work to be followed in performance of this contract. This schedule shall include, but not be limited to turf mowing and edging days, dates of weeding, and dates for fertilizer application. This schedule shall be revised quarterly and a copy of this schedule shall be provided to the Owner prior to the performance of any work required by these specifications, and any changes in scheduling shall be reported, in writing, to the Owner immediately.

3.02 WORKFORCE

A. For each area of maintenance responsibility the contractor shall assign the following minimum work force of competent, experienced maintenance personnel full-time to this project.

Description	Personnel Assigned
General Site Trash Removal, Sweeping, Cleaning	0.5
Irrigation System Maintenance and Repair	0.5
Fertilization/Plant Replacements/Pruning	0.5
Total personnel assigned full-time	1.5

B. This work force shall be the minimum work force assigned to this period on a continuing day-to-day basis. If temporary conditions or emergency situations arise which prevent routine maintenance from being performed, according to the schedules and performance standards of these specifications, the Contractor shall assign additional personnel and crews on a temporary basis as required, to assure performance standards of this contract are continually being met. This includes the need to close off a lane when performing maintenance on parkways with the proper coning and significant notification to the City of Bend. This shall be done at no additional cost to the Owner.

C. As additional areas are added to and made part of the contract, the number of personnel assigned will be adjusted as required, to adequately maintain all landscaped areas according to the provisions and performance schedules and standards of these specifications. The Contractor shall conduct the work at all times in a manner which will not interfere with normal pedestrian traffic on adjacent sidewalks or vehicular traffic on adjacent streets. In addition, a special schedule listing exact starting date for pesticide application, fertilization pruning and other infrequent operations, shall be furnished to the Owner on a yearly basis and any changes in scheduling shall be reported in writing, to the Owner immediately.

3.03 METHOD OF PERFORMING WORK

A. Irrigation System Maintenance & Repair

1. Irrigation shall be done by the use of automatic sprinkler systems, where available and operable; however, failure of the existing irrigation system to provide full and proper coverage shall not relieve the Contractor of the responsibility to provide adequate irrigation with full and proper coverage to all areas in the work site.
2. Any damages to public or private property resulting from excessive irrigation water or irrigation water runoff shall be charged against the contract payment unless immediate repairs are made by the Contractor to the satisfaction of the Owner.
3. The Contractor shall periodically inspect the operation of the system for any malfunction. The Contractor shall maintain all sprinkler systems, in such a way as to guarantee proper coverage and full working capability and make whatever adjustments may be necessary to prevent excessive runoff into street right-of-way or other areas not meant to be irrigated.

4. This periodic inspection may occur more often, but not less frequently, than one inspection per week for turf areas and one inspection per two week period for slope areas.
5. Contractor will inspect the irrigation system for broken and clogged heads, malfunctioning or leaking valves, or any other condition which hamper the correct operation of the system.
6. Written notice must be given to the Owner a minimum of one week before proceeding with any work not covered by this contract. The Owner retains the option to disapprove the work at any time before it is started. All areas not adequately covered by a sprinkler system shall be irrigated by a portable irrigation method. The Contractor shall furnish all hoses, nozzles, sprinkler, etc., necessary to accomplish this supplementary irrigation. Care shall be exercised to prevent a waste of water, erosion and/or detrimental seepage into existing underground improvements or structures.
7. Controllers shall be programmed, where possible, to water between 9:00 p.m. and 6:00 a.m.
8. Contractor to repair/correct malfunctions of valves, sprinklers and irrigation lines and notify the Owner a minimum of 24 hours in advance of such repairs when at the Owner's expense. Notice will be followed by a written description of repairs/corrections make within four working days of completion of work.

B. Shrubs

1. All plants shall receive sufficient water to insure healthy growth.
2. Weeds shall be removed from beds regularly, by hand. Nut Grass and Bermuda grass and other noxious weeds shall not be allowed to become established.
3. Invasive weeds shall be removed roots and all.
4. Prune to maintain a natural shape as a continuous operation but not when plant is in flower. Branches shall be cut individually. Cuts shall be inside the outline of foliage to thin out. All shrubs growing in the work areas shall be pruned, as required, to maintain plants healthy, growing condition and to maintain plant growth within reasonable bounds to prevent encroachment of passage ways walks, streets, views of signs or in any manner deemed objectionable by the Owner. Dead or damaged limbs or branches shall be removed immediately and all pruning cuts shall be make cleanly with sharp pruning tools, with no projections or stubs remaining. Any pruning cut which exceeds two inches in diameter shall be sealed with an approved pruning paint. Pruning shall be done in a manner to permit plants to grow naturally in accordance with their normal growth characteristics. Box hedging may be required on some hedges where authorized by the Owner. Or severe pruning of plants, shall not be permitted.
5. Replacement of plants due to circumstance beyond the Contractor's control shall be at the Owner's expense, provided and installed by the Contractor. Replacement required through negligence of the Contractor shall be at the Contractor's expense.

C. Ground Cover

1. Watering shall provide enough moisture to penetrate throughout the root zone and only as frequently as necessary to maintain healthy growth.
2. Weeds shall be removed completely, on a regular basis, manually (see weeding schedule above).
3. All ground covers shall be edged back to walks and established boundaries and kept off walks. Trim top growth to achieve an overall, even appearance, renew growth, and improve density and attractiveness.
4. Control rodents, rabbits, insects, snails, and diseases as necessary, using legally approved materials and methods.
5. Dead and missing plants will be replaced at no expense to Owner when due to Contractor's negligence. When damages are due to circumstances beyond Contractor's control, written notice shall be given to the Owner a minimum of one week before plants are to be replaced. Owner shall retain the option to not approve plant replacement before the work is done.

D. Tree Maintenance

1. All trees in the work site shall be maintained in their natural shapes. This work shall be accomplished in a manner which will ensure that each individual tree is trimmed carefully to promote the tree's health and appearance. All work shall be of the highest quality and performed in accordance with approved professional tree trimming standards, and to remove or prevent encroachment where it blocks vision or encroaches in any manner deemed undesirable by the Owner. The Contractor shall be responsible for all tree trimming.
2. Pruning
    a. All trees on the work site shall be maintained in their natural shapes, whether specifically mentioned or not. Trees shall be pruned in a manner to select and develop permanent scaffold branches that are smaller in diameter than the trunk or branches to which they are attached; to provide radial orientation so as not to overlay one another; to eliminate dead, diseased or damaged growth; to eliminate narrow "V" shaped branch forks that strength; to reduce toppling and wind damaged by thinning out crowns; to maintain growth within space limitations and to balance crown with roots.
    b. All pruning cuts shall be made to cambium "collar". "Stubbing" will not be permitted. Use tree scale for cuts one inch or greater in diameter.
    c. Deciduous species shall be pruned during the early spring months..
3. All trees must be watered sufficiently to insure health and growth.
4. Staking and Tying: Trees shall be properly staked and tied as necessary. Tree ties shall be inspected at least three times a year to prevent girdling of trunks or branches and to prevent bark wounds caused by abrasion. When trees attain a trunk caliper of 4" removal of existing stakes and guys should be considered. If unstable at this time, then replacement should be recommended to Owner.
5. Provide immediate control of insects and diseases following signs of an infestation using approved methods and materials.
6. The Contractor shall bring to the attention of the Owner within twenty-four (24) hours any tree that shows sign of root heaving, leaning, or has hanger limbs, or for any reason is a safety hazard; and the Contractor shall submit a proposal to the Owner for the proper tree maintenance and, with the Owner's approval, proceed with the proposal.
7. The Contractor shall be responsible for the complete removal and replacement of trees lost due to Contractor's faulty maintenance or negligence. Replacement shall be made by Contractor with the size of trees being determined by the Owner. When there is a difference in value between the trees lost and the replacement trees, this difference will be deducted from the Contractor's payment. In all cases, the value of the tree lost will be determined using the latest American Shade Tree Conference guidelines for value determination.
8. Trees lost from causes other than Contractor's negligence shall be removed and replaced by the Contractor with an approved size tree. The Owner may specify a species of tree for replacement different from the one lost.
9. Immediately after every storm, trees shall be visually observed for damage and all trees retied as necessary.

E. Fertilization

1. Notification: The Contractor shall inform the Owner at least forty eight (48) hours before beginning any fertilization and shall have previously submitted a schedule of application showing the site, date and approximate time to application of the fertilizer.
2. Rate and Time of Fertilization
    a. Surface applications of additional fertilizer may be necessary initially or occasionally to encourage new plantings or nitrogen-starved ground cover. As part of the bi-monthly inspection of work the Owner may authorize the Contractor to have a soil analysis done in those areas that need greater attention. The method and areas for

taking the soil samples and the laboratory doing the analysis along with recommendations and costs will be submitted to the Owner for approval before additional work is started. Contractor shall blow fertilizer off of paved areas such as tennis courts, pool decks, or any other recreation area.

F. Weed Control: All landscape areas within the specified maintenance areas shall be weeded a minimum of once every 30 days or as necessary and shall include all undesirable or misplaced plants.

1. Removal of all weeds by means of hand removal at regular two week intervals. Care shall be taken so as not to damage existing ground cover. Any Bermuda grass found within slope or shrub areas, should be eradicated immediately, and replanted with same ground cover in that area.

G. Disease Control

1. The Contractor shall regularly inspect all landscaped areas for presence of disease, insects or rodent infestation. The Contractor shall advise the Owner in writing within four (4) days if disease, insect or rodent infestation is found; he shall identify the disease, insects or rodent and specify control measures to be taken. The Owner retains the option to disapprove the work before the work is started. The Contractor shall implement the approved control measures, exercising extreme caution in the application of all spray material, dusts, or other materials utilized.
2. Approved control measures shall be continued until the disease, insect or rodent is controlled to the satisfaction of the Owner. The Contractor shall utilize all safeguards necessary during disease, insect or rodent contract operations to ensure safety of the public and the employees of the Contractor.

H. Replacement of Plant Material

1. The Contractor shall notify the Owner in writing within four (4) days of the loss of plant material due to any cause.
2. The Contractor shall remove and replace any tree, shrub, turf or ground cover which is damaged or lost due to any cause. The Owner retains the option to disapprove the work before it is started and shall be responsible for replacement costs unless plant material is lost due to faulty maintenance or negligence. The size and species of replacement shrubs, turf or ground cover plants shall be as directed by the Owner. For replacement of trees see article.

3.04 OPERATION OF AUTOMATIC IRRIGATION CONTROLLERS

A. Surrender all keys furnished promptly at the end of the contract period, or at anytime deemed necessary by the Owner.

B. Protect the security of the Owner’s property by keeping controller cabinets locked at all times.

C. The Contractor shall verify that the weather-based controller is prohibiting operation on rainy weather and when suspension of irrigation is desirable to conserve while remaining within the guidelines of horticulturally-acceptable maintenance practices

D. Maintain the controller charts in place (within controller cabinet), and update when required.

3.05 MULCHING

A. Replace organic mulch and custom gravel rock mulch materials in mulched areas and shrub areas on a monthly basis, as needed, to maintain minimum thickness as specified in Section 32-9300.

END OF SECTION

SECTION 32-13-13 - CONCRETE PAVING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The General Conditions of the contract apply to the work of this section the same as though written herein.

1.02 SCOPE OF WORK

A. Furnish labor, materials, and equipment to provide, and install, concrete paving, base materials, substrate preparation, and sealants as described herein and upon the Drawings, including the site Geotechnical Report.

1.03 RELATED SECTIONS

A. Section 033001 Site Cast-in-Place Concrete

B. Section 071900 Water Repellent Coatings

C. Section 321373 Site Joint Sealants

D. Section 321413 Precast Concrete Unit Paving

E. Section 129300 Site Furnishings

1.04 REFERENCES

A. American Society for Testing and Materials (ASTM)

B. American Concrete Institute (ACI)

C. Standard Specifications for Public Works Construction (Green Book), latest edition and amendments.

D. The most current revisions of each recommended standard, bulletin, or specification to apply to the work of this Section.

1.05 SUBMITTALS

A. Submit product data under provisions of Section 013300 - Submittals. Partial or incomplete submittals are not acceptable and will be returned without a review.

B. Submit product literature, samples, product data and specifications as noted herein:
   1. Sample will be approved for appearance, colors, aggregate, and texture.

C. Statement of Mix Design: Submit Statement of Mix Design prepared by a certified batch plant. Statement of Mix Design to contain following information that has been certified by batch plant's or contractor's Engineer [Landscape Architect will not review these items, but will review certification.] Statement of Mix Design to include the following:
   1. Name, address, and telephone number of batch plant.
   2. Mix design number.
   3. Date of mix design.
   4. When specified, integral color admixture used, type, manufacturer, and amount.

5. Gradations and proportions for cement, sand, aggregate, and water.
6. When specified, proportions of other additives.
7. Material weights, specific gravity, and absolute volumes.
8. Basis of testing, ie. UBC 2605 D4 and Title 24 2604 D4.
9. 28-day PSI strength rating.
10. Conformation that cement, coarse and fine aggregates will be from a single source for the entire work of this project.
11. Signature of testing laboratory manager.

D. Accompanying mix design, submit materials certificates signed by material producer certifying that each material item complies with, or exceeds, specified requirements.

1.06 MOCK-UPS

A. Prepare field mock-ups under provisions of Section 014339 and as described below; requirements below supersede any conflicts with Section 014339.

B. Construct a mock-up as indicated on the Drawings, or if not so indicated construct a 4’ x 4’ mock-up for each color/ finish specified on the Drawings. Locate mock-ups in a conveniently accessible and protected place. Accepted mock-ups will be standard for comparison of finished work.

C. Mock-ups shall include examples of all specified joints, edge treatments, joint caulking/sanding, and sealers. Obtain Landscape Architect's approval of mock-ups.

D. Where colored concrete is indicated, provide concrete from batch plant, not by field-mixing.

E. Retain accepted mock-up panel(s) for duration of concrete work. Accepted mock-ups may not be incorporated into the work. Remove mock-ups from site upon completion of Work and when directed by Landscape Architect.

1.07 QUALIFICATIONS AND EXPERIENCE

A. Batch Plant: Batch plant shall be able to show a minimum of ten (10) years experience in batching architectural concrete.

B. Installer: Company shall provide a list of local projects installed a minimum of two years prior to the date of this contract to demonstrate the installer’s experience.

1.08 RESPONSIBILITY

A. Pre-Installation Conference

1. Prior to the installation of the paving work, conduct a conference at the site with the manufacturer's representative, installers, and Landscape Architect. Review methods and procedures to be employed during the paving installation to ensure a clear understanding of the drawings and specifications, resolving potential conflicts, and establishing coordination between related trades.

B. The Contractor shall be responsible for the protection of the work and the public and private property adjacent to the work, and shall exercise due caution to avoid damage to such property. The work shall be protected and maintained throughout the contract period, including during suspension of work, and until final acceptance of the work. Contractor shall repair or replace damaged improvements including damages from acts

of vandalism, theft, and graffiti removal. Repairs or replacements shall be at least equal to original condition of the existing improvement and shall match in finish and dimension.

C. Prior to work of this Section, verify that previously installed work is complete to the point where this installation may properly commence. Verify that work of this Section may be installed in strict accordance with the original design, pertinent codes, regulations, and portions of the referenced standards.

D. In the event of discrepancy, immediately notify the Landscape Architect.

E. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved.

1.09 DELIVERY, HANDLING AND STORAGE

A. Store materials in a dry and protected location. Protect reinforcing steel and dowels from rusting, deformation, staining, and moisture damage.

B. Package cement delivered to job in strong paper or jute bags with brand name and manufacturer's name stamped thereon. Store cement under cover. Remove and replace product should it become wet or show any signs of caking or deterioration.

C. Deliver and store seeding aggregates in sealed containers and separate to avoid mixing with other aggregates, soil or other materials.

PART 2 - PRODUCTS

2.01 GENERAL PRODUCT REQUIREMENTS

A. Where criteria shown on Drawings or specified in this specification exceed that of the referenced standards, the more stringent criteria shall apply.

2.02 CONCRETE MATERIALS

A. General Requirements

1. Concrete shall be batched, mixed, and transported in accordance with ASTM C94 - "Specifications for Ready Mixed Concrete."
2. Concrete shall be supplied from a single source, using a single cement supplier. Obtain concrete materials from same source throughout job.
3. Concrete Delivery Time: Concrete loads exceeding 90 minutes from time of batch plant must be approved in writing by Architect.
4. Proportion and mix of cement, aggregate, admixture and water to attain required plasticity and strength in accordance with current edition of ACI Manual of Concrete Practice and PCA "Design and Control of Concrete Mixtures."
5. Concrete mixtures to be designed by an approved commercial testing laboratory, using approved materials to obtain specified minimum compressive strength.
6. Accelerators: Corrosive accelerators such as calcium chloride shall not be used.
7. Batch plant must provide certification of a single source supply for cement, sand, and aggregate for the entire project.

B. Cement

1. Use same brand of cement from single source throughout entire project.
2. Gray cement – shall be Portland cement, Type II, low alkali per ASTM C150.
3. Type III Gray Cement– shall be Portland cement, Type III, low alkali per ASTM C150.

C. Sand

1. Sand shall conform to ASTM C33, C40, and C117, with 100% passing a 3/8 inch sieve.
2. Sand shall be clean, hard, washed, and free of clay, silt, loam organic matter, and shall conform to the gradation specified below.
3. Use same sand from single source throughout entire project

D. Coarse Aggregates

1. Coarse aggregate shall be composed of clean, hard sound, durable, gravel, and/ or crushed rock, uniform in quality, free of shale, mica, schist, organic matter, oil, alkali or other deleterious substances.
2. Concrete mix design aggregate range should be ½" – 1" crushed rock. Pea-gravel concrete mix designs are not allowed.

E. Water

1. Shall be from a potable source.
2. Free from deleterious materials such as oils, acids, and organic matter.

F. Fly Ash

1. Fly ash may be used in a concrete mix design when approved by the Architect. Fly ash shall not replace more than 20% of total Portland cement mass.
2. The combined amount of fly ash and Portland cement shall be based on its 28 day compressive strength, within the minimum cement mix design. Fly ash used shall be from the same source and of the same class throughout the project.
3. Furnish a Certificate of Compliance from the supplier identifying the type of fly ash and confirming that the fly ash complies with ASTM C 618, Type F.
4. Fly ash shall not be used with Type III Portland cement.

G. Chemical Admixtures

1. Chemical admixtures may be used in a concrete mix only when approved by the Architect.
2. Chemical admixtures shall conform to ASTM standards unless otherwise specified and shall be compatible with other ingredients of the concrete mixture.
3. Chemical Admixtures – shall conform to ASTM C494 and ASTM C1017.
4. Air Entrainment Admixtures – shall conform to ASTM C260. When approved for use, shall not exceed 2%.
5. Water Reducing Admixtures – shall conform to ASTM 494.

2.03 BASE MATERIAL

A. Provide base material as specified by the geotechnical soils report for the project.

B. Where no specific material is recommended by the report, provide Class II base material.

2.04 REINFORCING STEEL AND RELATED MATERIALS

A. Reinforcing Steel: Conforming to ASTM A615, clean and free of rust, dirt, grease or oils. Comply with Section 03200 and as shown on Drawings.

B. Tie Wire: 16-gauge plain cold-drawn steel conforming to ASTM A82, clean, and free of rust, dirt, grease or oils.

C. Concrete dobies or clinker block units suitable to support steel reinforcement prior to concrete pour. No manual stabilization of steel during pour shall be permitted.

1. Use 2 inch blocks for 4 inch thick concrete.

2.05 EXPANSION JOINT MATERIALS

A. Expansion Joint Material: W. R. Meadows or equal, Ceramar flexible foam resilient filler, full depth of slab, 1/4 inch thickness or as shown on Drawings.

B. Joint Cap: W. R. Meadows, "SealTight Snap Cap", or approved equal, size required for expansion material.

2.06 EXPANSION JOINT REINFORCING

A. Diamond Dowels as manufactured by PNA Construction Technologies (800) 542-0214.

1. Diamond shaped load plate: Saw cut from hot rolled steel plate meeting ASTM A 36.

a. Plate Dimensions: 3/8” thick x 4.5” x 4.5”

2. Pocket former: High density plastic with internal collapsible fins and spacer that hold diamond shaped load plate in correct position and creates a void to its vertical faces.

3. Plate size and spacing shall meet ACI 360R-06 Design of Slabs on Grade, Table 5.2 and ACI 302.1R-04 Guide for Concrete Floor and Slab Construction, Table 3.2.

Slab Depth	Dowel Dimensions	Dowel On-Center Spacing
5 to 6 inches	¼” thick x 4 ½” x 4 ½”	18” O.C.
7 to 8 inches	3/8” thick x 4 ½” x 4 ½”	18” O.C.
9 to 11 inches	¾” thick x 4 ½” x 4 ½”	20” O.C.

2.07 CONSTRUCTION JOINT REINFORCING

A. Diamond Dowels as manufactured by PNA Construction Technologies (800) 542-0214.

1. As described in under Section Expansion Joint Reinforcing above.

2.08 COLORED ADDITIVES

A. Concrete colors shall be as noted on the drawings.

B. Colored additives containing carbon black are not allowed.

C. Liquid Integral Color Admixture

1. Davis colors such as Hydrotint.

2. Design mix shall be adjusted when cement substitutes such as fly ash or blast furnace slag is used in the mix design.

2.09 SEEDED AGGREGATE FINISHES

A. Seeded aggregates shall be as noted on the drawings.

B. Birdseye Brown aggregate, 3/8” size, shall be as supplied by Decorative Stone Solutions (attention Randy Jurgensen), Rancho Cucamonga, CA, 800-699-1878.

2.10 CHEMICAL STAINS:

A. A ready to use, penetrating, reactive stain, water-based solution of metallic salts to produce a permanent, insoluble color.

1. "Lithochrome® Chemstain™ Classic" - L.M. Scofield Company, (800) 800-9900, www.schofield.com

2.11 RELEASE AGENT:

A. Provide release agent recommended by pattern tool manufacturer and compatible with integral color additives. Release agent shall be selected from manufacturer's standard colors.

2.12 CONCRETE DESIGN MIXES

A. Prepare design mixtures, proportioned according to ACI 301, with the following properties:

1. Compressive Strength (28 Days): 3000 psi (20.7 MPa.
2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.50.
3. Slump Limit: 4 inches (100 mm, plus or minus 1 inch (25 mm).
4. Air Content: 3 percent plus or minus 1.5 percent.

B. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

2.13 SURFACE RETARDER FOR “SAND” AND SEEDED AGGREGATE FINISHES

A. Spray applied, film forming, water based top surface retarder, calibrated for specific sized aggregate and finish requirements Shall be Grace “Top-Cast”, 1-877-423-6491, www.gracedecorativeconcrete.com, color-coded to the depth of the desired surface etch.

B. Depth of etch for seeded aggregate finishes to be #25 Beige, as approved on paving mock-up panels. (Per Drawing requirements, provide two levels of etch for review and selection on mock-up panel, one of which to be #25/Beige.)

C. Depth of etch for “sand” finishes to be #05 Light Blue, as approved on paving mock-up panels. For this finish, do not over-finish the concrete or delay application of retarder beyond the initial bleeding. (Per Drawing requirements, provide two levels of etch for review and selection on mock-up panel, one of which to be #05/Light Blue.)

2.14 JOINT SEALANTS

A. Provide joint sealants complying with Section 321373, at locations specified or as shown on Drawings.

2.15 SEALERS

A. Shall be as specified herein and per Section 071900.

2.16 ROOT BARRIERS AND WATER BARRIERS

A. Shall be specified per Section 329453.

2.17 OTHER MATERIALS

A. Provide materials not specifically described but required for complete and proper installation of this work, as selected by the contractor and subject to the approval of the Landscape Architect.

PART 3 - EXECUTION

3.01 PROJECT / SITE CONDITIONS

A. Work shall not be executed during wet conditions as determined by the Architect.

B. Comply with manufacturer's instructions for weather condition limitations.

3.02 SUBGRADE PREPARATION

A. Subgrade to meet requirements of project geotechnical / soils report and specifications section 312000 Earth Moving.

B. Required base materials shall be placed and compacted per geotechnical soils report prior to placing concrete.

C. Thoroughly wet down sub-grade 24 hours prior to placing concrete.

D. Keep base materials damp prior to placing concrete. Allow no standing water in forms.

3.03 FORMING

A. Contractor shall be responsible for design and engineering of form work as well as its construction.

B. Forming shall conform to recommended practice for concrete form work, ACI 347.

C. Formed areas shall not exceed 20 feet x 20 feet for a single pour.

D. Form lumber shall be new #2 or better grade wood. Previously used form lumber is not acceptable.

E. Perform form layout with a digital electronic transit for line layout accuracy. Install forms in accordance with specified tolerances.

F. Stake rigidly in place at maximum intervals of 4 feet on center. Secure so as to prevent displacement during pouring and finishing process.

G. Thoroughly clean forms, removing debris, coatings and foreign matter. Coat forms with approved bond breaker, suitable for use on concrete without staining or discoloration.

H. Dampen forms as required to tighten joints and cracks in forming material.

I. Install stretched wires or other device to provide form displacement indication.

J. Allow forms to remain in place long enough to allow concrete to set properly. Remove forms when appropriate.

3.04 CONCRETE PAVING INSTALLATION

A. Preparation

1. Verify that utilities, including irrigation lines are at proper depth below finished surfaces and trenches compacted to specifications.
2. Verify sub-grade, base material, conduit, and other embedded items are properly located in relation to concrete paving. Secure embedded items against displacement during pour.
3. Verify grades for pitch and fall prior to pouring pavements.
4. Verify that cross-fall and ramp criteria comply with local accessibility regulations, including Title 24 requirements.

5. Notify Architect 48 hours prior to placing concrete. Obtain Architect's approval of subgrade, base materials, forming, and embedded items prior to placing concrete.

B. Placement

1. Perform work in accordance with ACI 301, 303, 304, 305, 306, and 309.
2. Proof roll existing sub-grade prior to installing base. Where shown on Drawings, place specified base material over compacted sub-grade. Compact with hand roller or suitable alternate to the minimum density recommended in the geotechnical report. Where no report is available compact to 95 percent relative density.
3. Install concrete paving per Section 303-5 of the "Standard Specifications", as specified herein, and as shown on Drawings.
4. Place concrete on site within 90 minutes after proportioning materials at batch plant.
5. Provide reinforcing in accordance with Section 032000.
    a. Install deformed bar reinforcing on approved concrete supports. Install in accordance with Section 032000.
    b. Drill existing concrete for dowel embeds wherever new concrete is to be poured against existing concrete paving.
    c. Provide reinforcing bar dowels at expansion joints on each side of joint. If shown on the drawings, install as shown. Otherwise, install at 12 inches on center spacing. Use approved sleeving system.
    d. Where reinforcing bar is not shown, provide wire mesh reinforcing on approved concrete supports. Using "hook and pull" method of reinforcing placement is not acceptable. Overlap mesh minimum 12 inches at edges and tie with wire.

3.05 CONCRETE FINISHING

A. General Finishing Requirements

1. Allow bleed water to dissipate prior to commencing with finishing operations. Do not dust any cement onto surface to absorb bleed water.
2. Delay steel troweling until water sheen has disappeared from surface.
3. Avoid excessive manipulation of the surface.
4. Do not use magnesium float tools.

B. Patterned Color Hardened Concrete

1. Float and wood float surface to required slopes and planes.
2. Apply Color Hardener evenly to plastic surface at rate recommended by manufacturer. Apply in minimum of two passes or shakes. Float after each pass, and steel trowel only after final floating.
3. Apply release agent to steel troweled surface.
4. Apply specified curing compound as recommended by manufacturer.
5. Surfaces shall provide a coefficient of friction in excess of 0.60 (wet) per ASTM C 1028. Ramp surfaces shall provide a coefficient of friction in excess of 0.80 (wet) per ASTM C 1028.
6. Pattern shall be as shown on Drawings and specified herein.

C. Broom Finish

1. Float and steel trowel surface to required slopes and planes.
2. Apply broom texture, transverse to direction of pedestrian travel, and using a soft hair or nylon bristle broom specifically designed for concrete texturing.
3. Provide light, medium, or heavy broom texture per approved sample. Obtain approval of finish texture samples by Architect for various applications.
4. Install stair tread nosing treatment, at each tread in accordance with manufacturer's recommendations. Extend the width of tread minus 2 inches each side.
5. Non-ramp surfaces shall provide a coefficient of friction in excess of 0.60 (wet) per ASTM C 1028. Ramp surfaces shall provide a coefficient of friction in excess of 0.80 (wet) per ASTM C 1028 per ASTM C 1028.

D. Mechanically-Abrated (Buffwash) Finishes

1. Float and steel trowel surface to required slopes and planes.
2. Finish shall be produced on partially-hardened concrete. The surface shall be thoroughly wetted and brushed with stiff fiber, carbide-tipped, or wire brushes, using water freely, until the surface laitance is removed and the aggregate is uniformly exposed. The surface shall then be rinsed with clean water.
3. Expose fines and matrix to match the approved mock-up panel.
4. Non-ramp surfaces shall provide a coefficient of friction in excess of 0.60 (wet) per ASTM C 1028. Ramp surfaces shall provide a coefficient of friction in excess of 0.80 (wet) per ASTM C 1028 per ASTM C 1028.

E. Shot Blast / Sand Blast Finish

1. Unless otherwise specified, degree of sandblasting shall be light. (Light sandblasting is sandblasting sufficient to expose fine aggregate with occasional exposure of coarse aggregate; exposed coarse aggregate should not project more than 1/16 inch (1.5 mm) from the matrix.)
2. After sandblasting, patch any voids caused by blowouts with matching concrete and lightly sandblast or sponge finish to blend repair area.
3. Sandblasting operations shall conform to local and state codes and ordinances.

F. General Retardant Finish for Sand and Seeded Aggregate Finishes

1. Protect all existing concrete that is not to be etched by a coat of Pieri Face Off prior to pouring the new concrete that is to be etched/retarded. Allow coating to dry before pouring new concrete.
2. Place and consolidated concrete as necessary to fill voids and form spaces. Do not use a grate tamper
3. Float surface to slopes and planes indicated.
4. Finish with steel trowel. Edge corners of slabs as detailed.
5. Apply surface retarder as specified below.
6. After surface retarder has been applied and washed off, apply specified curing compounds as recommended by manufacturer.

G. Concrete Retarder Application for Sand and Seeded Aggregate Finishes

1. Preparation and Application

    a. Protect all curbs, borders, adjacent stones, pavers, etc. that are not to receive retarded finish prior to application of retarders. Use Protector Face Off by Grace Construction Products.

b. Pour concrete, seed aggregates where called for, float and lightly trowel finish where required. Do Not Delay The Application of The Surface Retarder Beyond the Loss of the Initial Bleed Water Especially in Warmer Temperatures for Best Results.
c. Apply Top Cast Retarders with a low-pressure sprayer at a rate of 250-350 sq.ft./ gal. Per manufacturers' requirements. Material is colored to allow for verification of even and complete coverage.
d. Apply retarder solution for Sand and Seeded Aggregate finish such that top is retarded to meet the depth of etch per the approved mock-up panel.
e. Once dry (1-2 hours), Top Cast provides protection against intermittent rain or hot, windy conditions and requires no additional covering.

H. Finishing

1. Wash with water rinse/light broom or pressure wash with power equipment within 6 – 24 hours after the retarder is applied. Retarder removal intervals depend on strength of mix, exposed aggregate size and desired washing techniques. Earlier washing for light etch finishes may be necessary. Verify in test panels.
   a. Do not over-finish and/or delay application beyond the initial bleeding on the light finishes.

3.06 JOINTING

A. Refer to ACI 302 "Guide for Concrete Floor and Slab Construction" for work under this Section.

B. Expansion Joint Caulking – Install expansion joint caulking per Section 321373 - Site Joint Sealants.

C. Saw-Cut Joints

1. Saw-cut to the depth and width indicated on the Drawings.
   a. Saw-cut construction and contraction joints in locations indicated on Drawings.
   b. Perform jointing with a new diamond tip circular saw.
   c. Joint width shall be per Drawings.
   d. Use new, sharp, segmented diamond concrete saw blades for seeded aggregate finishes.
2. Use a hand-held tool to saw-cut up to vertical edges such as walls, steps, curbs and columns. No cutting into vertical surfaces will be allowed.
   a. Depth of saw-cuts shall be per drawings:
   b. Saw-cut joints in a straight line with no over-cutting.

D. Expansion Joints

1. No "zip-strip joint" products and technique permitted.
2. Provide 3/8" wide expansion joints at locations shown on Drawings, and as follows:
   a. Where paving is adjacent to buildings, walls, columns, bollards, light poles, or other utilities.
   b. At approximately 20 feet on center each way, and as necessary to limit area to a maximum of 400 square feet.
   c. At 20 feet on center in linear walkways.

d. Tool edges adjacent to expansion material with maximum 1/8 inch radius tool.

e. Install joint sealants per Section 321373 and as shown on Drawings.

3. Diamond Dowel Installation per manufacturer's recommendations.

a. Place diamond dowels within 6" from joint intersections

b. Installation template will ensure that the minimum requirement of 2 ¼" of coverage of concrete over the dowel is maintained.

E. Control Joints

1. Provide control saw-cut joints at locations shown on Drawings, and as follows:

a. At curbs, curb and gutter assemblies, and cross gutters at 20 feet on center maximum. Where concrete pavement occurs adjacent to curb, align curb and pavement joints.

b. At pavement plazas and fields, approximately 10 feet on center each way, and as necessary to limit area to a maximum of 100 square feet.

c. At pavement areas at re-entrant corners both ways and at changes in direction.

d. Provide control joints by saw-cutting method, hand held jointing tools, or by use of SOF-CUT equipment. Use of zip-strip not acceptable.

e. Extend control joints a minimum of 1/4 the thickness of the pavement. Provide hand-cutters, tooled joints or other approved tools for conditions where equipment cannot continue cutting to outside edge.

f. Schedule cutting control joints as necessary to avoid raveling edge, but as necessary to avoid shrinkage cracking of pavement.

3.07 CONCRETE CURING AND SEALING

A. Cure concrete with specified compound, if specified, per Section 071900.

B. Natural colored slabs may be water cured by means of fine mist spray. Maintain in damp condition for a period of seven (7) days after pouring.

3.08 ROOT BARRIERS AND WATER BARRIERS

C. Install root barriers and water barriers where required, per Section 329453.

3.09 FIELD QUALITY CONTROL

A. Flood Test

1. Provide flood test of for all areas of paving.

2. Where ponding occurs, or where drainage rate is less than that established by original design, replace defective concrete. Remove concrete to the nearest joint line.

B. Tolerances

1. Level: 3/16 inch plus or minus, at any point, measured along a 10 foot straight edge.

2. Adjacent surfaces: 1/8 inch maximum difference at any point between adjacent concrete pours or between paving and adjacent paving materials.

3. Joint Alignment: 1/16 inch deviation from adjacent joint.

4. Line: 1/4 inch, plus or minus, deviation from a straight line in any 10 foot length, non-cumulative.

5. Final elevations shall comply with grades as shown on Drawings, to a tolerance of plus or minus 0.25 inch.

6. Tolerances do not permit violation of dimensions or grade and slopes relationships required by code or jurisdictional authority. Adjust work as required to comply with such requirements.

C. Appearance

1. Remove and replace concrete not matching approved mock-ups, concrete not complying with specified tolerances, and concrete with the following defects:
   a. Inconsistent texture.
   b. Irregular or misaligned direction of texture.
   c. Concrete with spalled or raveled control or expansion joints.
   d. Concrete exhibiting splotching or discoloration in surface including discoloration due to "carbonation".
   e. Concrete exhibiting cracking that is determined to be beyond industry standards as judged by the landscape architect.
2. Use of patching mortar for repair of edge defects may be allowed if approved by Architect and is subject to acceptance of final color and texture by Landscape Architect.

D. Adjustments and Clean-up

1. Protect exposed finished concrete paving and other work of this section as necessary to prevent damage resulting from impact or from subsequent work or rubbish.
   a. Maintain protection in effective condition for as long as need for protection exists.
   b. Control use of water and chemicals so that no damage to previously installed work or existing structures and finish is permitted to occur.
2. Remove equipment, trash, debris, and surplus materials from the site. Thoroughly sweep and wash down paving and other work of this section.
   a. Inspect and clean finished work and adjacent structures of stains, splatter, dust, and overpour resulting from the work of this Section.
   b. Clean joint sealant from finished surfaces and adjacent structures.

3.10 INSPECTIONS

A. Contractor shall give 48 hours notice and set appointment for reviews by the Landscape Architect.

B. Review by Landscape Architect shall be scheduled for the following operations:

1. Approval of completed mock-ups.
2. Approval of forming, reinforcement, and base materials placement, prior to pouring.

C. In the event the Contractor requests inspection of work, and said work is substantially incomplete, the Contractor shall be responsible for Landscape Architect's hourly charges and per diem costs

END OF SECTION

SECTION 32-13-73 SITE JOINT SEALANTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The General Conditions of the contract apply to the work of this section the same as though written herein.

1.02 SCOPE OF WORK

A. Furnish labor, materials, equipment, facilities, transportation and services to complete joints and joint sealants and related work as described herein and upon the drawings.

B. Sealants and joint treatment necessary to provide a positive barrier against passage of moisture and air.

C. Sealants at material joints necessary to provide closure for ease of cleaning and maintenance.

1.03 RELATED SECTIONS

A. Section 071900 – Water Repellent Coatings

B. Section 321313 – Concrete Paving

C. Section 033001 – Site Cast-in-Place Concrete

1.04 REFERENCES

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference:
   1. American Society for Testing and Materials (ASTM)

1.05 SUBMITTALS

A. Submit product data under provisions of Section 013300 - Submittals. Partial or incomplete submittals are not acceptable and will be returned without a review.

B. Partial or incomplete submittals are not acceptable and will be returned without a review.

C. Submit descriptive literature and specifications for the following:
   1. Materials List / Product Data: Submit complete materials list, including catalogue data, of materials, equipment, and products.
   2. Staining Test Data: Provide test data, performed on concrete, demonstrating no staining or discoloration of adjacent substrate from sealant or primer.
   3. Fine gray quartz sand for joint sanding

D. Substitutions: Materials which differ from that specified when a brand name is called for on the drawings or in these specifications.

1.06 QUALIFICATIONS AND EXPERIENCE

A. Qualifications: Provide adequate numbers of skilled staff, thoroughly trained and experienced in the necessary craft and installation methods associated with the specified products.

1.07 RESPONSIBILITY

A. The Contractor shall be responsible for the protection of the improvements and public and private property adjacent to the work, and shall exercise due caution to avoid damage to such property. The work shall be protected and maintained throughout the contract period, including during suspension or work, and until final acceptance of the work. Contractor shall repair or replace

damage improvements including damage from acts of vandalism, theft, and graffiti removal. Repairs or replacements shall be at least equal to the original condition of existing improvement and match in finish and dimension.

B. Prior to the work of this section, verify that previously installed work is complete to the point where this installation may properly commence. Verify that concrete pavement may be installed in accordance with the design, pertinent codes, regulations, and portions of the referenced standards.

C. In the event of discrepancy, immediately notify the Landscape Architect and/or Owner's Representative.

D. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved.

E. Sequence work to assure orderly progress without removal of previously installed work and prevent damage to finishes and products.

1.08 DELIVERY HANDLING AND STORAGE

A. Protection: Use means necessary to protect work in this section before, during and after installation and to protect the installed work and materials of other trades.

B. Replacements: In the event of damage, immediately make repairs and replacements necessary to the acceptance of the Architect and at no additional cost to the Owner.

C. Product Storage: Do not retain on-site material which has exceeded the shelf life recommended by the manufacturer.

1.09 GUARANTEE

A. Provide Owner with written Guarantee on Contractor's letterhead and signed by General Contractor and sealant system subcontractor.

B. Provide guarantee for a time period of five years, commencing from the date of final acceptance of the project, against the following defects:

1. Adhesive or cohesive sealant joint failure.
2. Pin holes or blistering of sealant joints.
3. Staining of adjacent substrate or surrounding material.
4. Chalking or color change exceeding manufacturers published data.

C. Make inspections and emergency repairs to defects or leaks in the sealant system within twenty-four (24) hours of receipt of notice from the Owner.

D. Restore the affected areas to the standard of the original specifications as soon as the weather permits.

PART 2 - PRODUCTS

2.01 SEALANTS

A. General

1. Sealants for each Type application shall be the product of a single manufacturer, suitable for the intended use, and per the following product characteristics.
2. Unless noted otherwise, use sealants in applications defined below.
3. For other applications provide products especially formulated for the proposed use and accepted by the Architect.

B. Product Characteristics

1. Type 1: Concrete paving joints exposed to pedestrian and vehicular traffic, and all joints subject to immersion:
   a. Product: Sikaflex 2C-NS
   b. Manufacturer: Sika Corp 1-800-933-SIKA
   c. Colors: To be selected by architect to match nearest adjacent concrete color.

2.02 EXPANSION JOINT MATERIALS

A. Expansion Joint Material: W. R. Meadows or equal, Ceramar flexible foam resilient filler, full depth of slab, 1/2-inch thickness or as shown on Drawings.

B. Joint Cap: W. R. Meadows, "SealTight Snap Cap", or approved equal, size required for expansion material.

2.03 JOINT REINFORCING

A. As specified in Section 321313.

2.04 PRIMERS

A. Provide primer as specifically recommended for this installation by the manufacturer of the sealant used and have been tested for staining, adhesion and durability on applicable surfaces.

2.05 OTHER MATERIALS

A. Fine Quartz sand for joint-sanding shall be gray in color.

B. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 – EXECUTION

3.01 PREPARATION

A. Concrete and Masonry Surfaces:
   1. Install only on surfaces which are dry, sound, and well brushed, wiping free from dust.
   2. At open joints, remove dust by mechanically blown compressed air if so required.
   3. To remove oil and grease, use water blasting or wire brushing.
   4. Where surfaces have been treated, remove the surface treatment by sandblasting or wire brushing.
   5. Remove laitance and mortar from joint cavities.

3.02 INSTALLATION OF ACCESSORY MATERIALS

A. When using back-up of tube or rod stick, avoid lengthwise stretching of material. Do not twist or braid hose or rod back-up stock.

B. Prime joints in accordance with manufacturer’s recommendations.

C. Remove joint cap. Provide bond breaker tape at surface of joint material cover cap.

3.03 INSTALLATION OF SEALANTS

A. Install joint sealant and joint material assembly as shown on Drawings.

B. Comply with joint sealant manufacturer's installation instructions for products, primers and applications indicated unless more stringent project specific instructions or requirements apply.

C. Prior to start of installation in each joint, verify the joint type according to details on the Drawings, or as otherwise directed by the Architect, and verify that the required proportion of width of joint into depth of joint to depth of joint has been secured.

D. Equipment: Apply sealant using proper joint sealant dispensing equipment recommended by sealant manufacturer. Hand poured sealant installation is not permitted.

E. Thoroughly and completely mask joints where the appearance of primer or sealant on adjacent surfaces would be objectionable.

F. Install the sealant in strict accordance with the sealant manufacturer's instructions, thoroughly fill joints by pushing sealant beads into opening to fully wet-out joint sealant substrates. Fill sealant joint opening to full and proper configuration.

G. Use of sealant dams contained within the joint is not permitted. Install sealant without interruption from end to end of joint.

H. Tool joints to the profile shown on the Drawings, and per manufacturer's recommendations. Dry tooling is required for joint sealants and wet tooling agents are not allowed.

I. Tool joints to a smooth and consistent transition. Do not leave ripples, strings, or surface tooling marks in sealant.

J. If specified, apply fine quartz sand to joints at the appropriate timing, to ensure even adherence that matches the approved mock-ups.

3.04 CLEANING

A. Remove masking tape immediately after joints have been tooled.

B. Clean adjacent surfaces free from sealant as the installation progresses, using solvent or cleaning agent recommended by the manufacturer of the sealant used.

C. Upon completion of the work of this section, promptly remove from the job site debris, containers, and surplus material derived from this portion of the work.

END OF SECTION

SECTION 32-14-45 STABILIZED AGGREGATE PATHWAY

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes material and labor requirements for construction with decomposed granite or crushed 3/8” or 1/4" minus aggregate paving with stabilizer binder additive for the following items:
   1. Stabilized aggregate pathway and patios

B. Related Sections:
   1. Section 02100 – Site Preparation
   2. Section 02200 – Earthwork

1.02 PERFORMANCE REQUIREMENTS

A. Perform gradation of decomposed granite material or 3/8” or 1/4" minus crushed aggregate in accordance with ASTM C 136 – Method for Sieve Analysis for Fine and Course.

1.03 SUBMITTALS

A. Products Data: For each product specified. Submit a 5 lb. sample and sieve analysis for grading of decomposed granite or crushed 3/8” or 1/4" minus aggregate to be sent to Stabilizer Solutions, Inc. prior to any construction – (allow 2 week turn around). Must be approved by Landscape Architect and owner.

B. Shop Drawings: If details are not provided on drawings, show details of installation, including plans and sections.

1.04 PROJECT/SITE CONDITIONS

A. Field Measurements: Each bidder is required to visit the site of the Work to verify the existing conditions. No adjustments will be made to the Contract Sum for variations in the existing conditions.
   1. Where surfacing is indicated to fit with other construction, verify dimensions of other construction by field measurements before proceeding with the work.

B. Environmental Limitations: Do not install decomposed granite or crushed 3/8” or 1/4" minus aggregate paving during rainy conditions or below 40 degrees Fahrenheit and falling.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Installer to provide evidence to indicate successful experience in providing decomposed granite, crushed 3/8”, or 1/4" minus aggregate paving containing Stabilizer binder additive

B. Mock-ups: Install 4 ft. wide x 10 ft. long mock-up of decomposed granite or 3/8” or 1/4“ minus crushed aggregate paving with Stabilizer additive at location as directed by owner’s representative.

1.06 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. Special Warranty: Submit a written warranty executed by the installer agreeing to repair or replace components of stabilized surfacing that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:

1. Premature wear and tear, provide the material is maintained in accordance with manufacturer's written maintenance instructions.
2. Failure of system to meet performance requirements.

C. Warranty Period: Contractor shall provide warranty for performance of product. Contractor shall warranty installation of product for the time of one year from completion.

D. Contractor shall provide, for a period of sixty days, unconditional maintenance and repairs as required.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Stabilizer for crushed stone surfaces provided by the following manufacturer:

1. Stabilizer Solutions, Inc. 205 South 28th St., Phoenix, AZ 85034; phone (602) 225-5900, (800) 336-2468; fax (602) 225-5902; website stabilizersolutions.com; email lphubbs@stabilizersolutions.com

2.02 MATERIALS

A. Decomposed Granite, 3/8", or 1/4" crushed aggregate screenings

1. Crushed Stone Sieve Analysis Percentage of Weight Passing a Square Mesh Sieve AASHTO T11-82 and T27-82

1/4" MINUS AGGREGATE GRADATION

U.S. Sieve No.	Percent Passing by Weight
# 3/8"	100
# 4	90 – 100
# 8	75 – 80
# 16	55 – 65
# 30	40 – 50
# 50	25 – 35
# 100	15 – 20
# 200 to	10 – 15

2. Acceptable local supplier list to be provided by Architect

B. Stabilized Binder

1. Patented, non-toxic, organic binder that is a colorless and odorless concentrated powder that binds decomposed granite, crushed 3/8", or 1/4" minus aggregate

2.03 EXCESS MATERIALS

A. Provide owner's authorized rep. With the following excess materials for use in future decomposed granite or 3/8" or 1/4" minus crushed aggregate paving repair: 40 to 50 lb. Bags of the aggregate paving blended with proper amount of Stabilizer.

PART 3 - EXECUTION

3.01 BLENDING STABILIZER

A. Blend 12 to 16 lbs.(refer to manufacturer's instructions for exact blend) of Stabilizer per 1-ton of decomposed granite or crushed 3/8" or 1/4" minus aggregate screenings. It is critical that Stabilizer be thoroughly and uniformly mixed throughout decomposed granite or crushed 3/8" or 1/4" minus aggregate screenings.

3.02 PLACEMENT

A. After pre-blending, place the Stabilized decomposed aggregate or 3/8" or 1/4" crushed aggregate screenings on prepared sub-grade. Level to desired grade and cross section.

B. Depth of pathways – 3" for heavy foot traffic and light vehicles.

3.03 WATERING

A. Water heavily to achieve full depth moisture penetration of the Stabilized pathway Profile. Water activates Stabilizer. To achieve saturation of Stabilized pathway Profile, 25 to 45 gallons of water per 1-ton must be applied. During water application randomly test for depth using a probing device to the final depth.

3.04 COMPACTION

A. Upon thorough moisture penetration, compact aggregate screenings to 85% relative compaction by compaction equipment such as; a 2 to 4-ton double drum roller or a 1,000 lb. Single drum roller with vibratory plate tamp. Do not begin compaction for 6 hours after placement and up to 48 hours.

B. Take care in compacting decomposed granite or crushed 3/8" or 1/4" minus aggregate screenings when adjacent to planting and irrigation systems. Hand tamping with 8" or 10" hand tamp recommended

3.05 INSPECTION

A. Finished surface of pathway shall be smooth, uniform and solid. There shall be no evidence of chipping or cracking. Cured and compacted pathway shall be firm throughout profile with no spongy areas. Loose material shall not be present on the surface. Any significant irregularities in path surface shall be repaired to the uniformity of entire installation.

3.06 MAINTENANCE

A. Remove debris, such as paper, grass clippings, leaves or other organic material by mechanically blowing or hand raking the surface as needed. Any plowing program required during winter months shall involve the use of a rubber baffle on the plow blade or wheels on the plow that lifts the blade 1/4" off the paving surface.

B. During the first year, a minor amount of loose aggregate will appear on the paving surface (1/16" to 1/4"). If this material exceeds a 1/4", redistribute the material over the entire surface. Water thoroughly to the depth of 1". Compact with power roller of no less than 1000 lbs. This process should be repeated as needed.

C. If cracking occurs, simply sweep fines into the cracks, water thoroughly and hand tamp with an 8" – 10" hand tamp plate.

3.07 REPAIRS

A. Excavate damaged area to the depth of the Stabilized aggregate and square off sidewalls.

B. If area is dry, moisten damaged portion lightly.

C. Pre-bend the dry required amount of Stabilizer powder with the proper amount of aggregate in a concrete mixer or similar.

D. Add water to the pre-blended aggregate and Stabilizer. Thoroughly moisten mix with 25 to 45 gallons per 1-ton of pre-blended material or to approximately 10% moisture content.

E. Apply moistened pre-blended aggregate to excavated area to finish grade.

F. Compact with an 8” to 10” hand tamp or 250 to 300 pound roller. Keep traffic off areas for 12 to 48 hours after repair has been completed.

END OF SECTION

SECTION 32-18-13 SYNTHETIC GRASS SURFACING

PART 1 - GENERAL REQUIREMENTS

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this section.

1.02 SCOPE OF WORK

A. Furnish all labor, materials, tools, and equipment necessary to install, in place, all synthetic turf material as indicated on the plans and as specified herein. The installation of all new materials shall be performed in strict accordance with the Manufacturer's written installation instructions, and in accordance with all approved shop drawings.

B. Prior to order of materials, the Synthetic Turf Contractor shall submit the following:
   1. Product data, including Independent Laboratory Test Results
   2. Installation details
   3. Sample Warranty
   4. Field layout and striping plans
   5. Details on construction, especially any details that may deviate from plans and specifications.
      a. Prior to the beginning of installation, the Synthetic Turf Contractor of the synthetic turf shall verify the base for planarity. Upon written confirmation from the base contractor that compaction/planarity and drainage/permeability specifications have been achieved, the installation of synthetic turf will proceed as arranged.
      b. Prior to Final Acceptance, the Synthetic Turf Contractor shall submit to the Owner three (3) copies of Executed Warranty Documents and Maintenance Manuals, which will include necessary instructions for the proper care and preventative maintenance of the synthetic turf system, including painting and striping.

1.03 SHOP DRAWINGS

A. Shop drawings shall be prepared and contain all pertinent information regarding installation. These drawings shall be submitted to the Owner or Owner's representative for approval prior to the manufacturing and shipment of materials.

B. Submit drawings for:
   1. Installation details, edge detail, goal post detail, other inserts, and covers, etc., as required by contract.
   2. Striping plan showing any field lines, markings and boundaries, and field logos per project drawings.

1.04 QUALITY ASSURANCE

A. Synthetic Turf Manufacturer is defined as:
   1. A company specializing in the design and manufacturing of infilled turf systems with not less than ten (10) years documented experience.
   2. The Synthetic Turf Manufacturer must have been in business under the same ownership for at least ten (10) years, and shall have been installing similar sports fields for that entire period.

3. Manufacturer shall have an experienced technical services and sales professional who is available during the course of the work to meet personally with the Owner, Contractor, and Landscape Architect.

B. Synthetic Turf Manufacturer's Experience:
   1. The Synthetic Turf Manufacturer shall have the experience of at least one hundred (100) acceptable installations of full-size fields (minimum 65,000 sq. ft.) in the United States within the past twelve (12) months of tufted, polyethylene grass-like fabrics with infill. Submit a list of all applicable installations with the bid.
   2. The Synthetic Turf Manufacturer shall have the experience of one hundred (100) acceptable installations (minimum 65,000 sq. ft.) of fields that are at least eight (8) years old. Submit a list of all applicable installations with the bid.
   3. The Synthetic Turf Manufacturer shall have the experience of fifty (50) acceptable installations of the specific fiber system specified. Submit a list of all applicable installations with the bid.
   4. The Synthetic Turf Manufacturer must be a certified member of the Synthetic Turf Council in good standing.
   5. The Synthetic Turf Manufacturer must have and operate its own extensive research and development laboratory. This laboratory must include testing devices for the following tests: Yarn Tensile Strength, Yarn Elongation, Tuft Bind, Grab Tear Strength, Seam Strength, g-max, Force Reduction, Vertical Deformation, Ball Roll, Ball Rebound, Rotational Resistance, Linear Traction, Relative Abrasive Index, UV Resistance, Flammability, and Simulated Aging.
   6. Manufacturer must have an ISO 17025 Accredited Laboratory in place at the time of manufacturing to verify product standards and quality. Manufactures without an ISO 17025 Accredited Laboratory will not be accepted.
   7. Testing of the synthetic turf system is mandatory and must be provided from a laboratory that is accredited by the NVLAP. Testing from laboratories that are not NVLAP accredited will not be accepted. The National Institute of Standards and Technology (NIST) is part of the U.S. Department of Commerce and administers the National Voluntary Laboratory Accreditation Program (NVLAP). Accreditation requirements are established in accordance with the U.S. Code of Federal Regulations (CFR, Title 15, Part 285), National Voluntary Laboratory Accreditation Program, and encompass the requirements of ISO/IEC 17025.
   8. The Synthetic Turf Manufacturer must have manufactured and installed fields at every level of competition, including high school, college and professional.
   9. The Synthetic Turf Manufacturer must have at least five (5) NCAA Division 1 fields, (2) NFL game fields and two (2) MLB fields currently installed.
   10. The Synthetic Turf Manufacturer must not have had more than (5) five fields replaced, under warranty, during the past five (5) years.
   11. The Synthetic Turf Manufacturer must be vertically integrated including in-house tufting, polyethylene monofilament extrusion, in-house coating, polyurethane compounding, manufacture own primary backing, in-house yarn texturizing, ability and flexibility to tuft various gauge widths and have the ability to recycle used/old fields.
   12. The Synthetic Turf Manufacturer must have a fully integrated quality system, directly based on and compliant with ISO 9000, ISO 14001 and OHSAS 18001 international standards.
   13. The Synthetic Turf System Vendor shall have the capability to remove, reclaim and recycle the synthetic turf system at the end of its useful life.
       The Synthetic Turf System Vendor must provide documentation outlining their product lifetime recycle / reuse program that is currently in place. A minimum of 5 fields must have been used in this process. All material must demonstrate the capability to reuse in a product that employs a cradle to cradle design. Reuse or

other diversion plans that do not include production of a new and useful product will not be considered.

C. Synthetic Turf Contractor is defined as:

1. A company that has built and installed a minimum of ten (10) infilled synthetic turf fields. Turf contractors and on-site superintendent shall provide a resume to provide proof of experience.
2. The Synthetic Turf Manufacturer must have been in business under the same ownership for at least five years, and shall have been installing similar sports fields for that entire period.
    a. At any time after award of the contract and before the completion of the project, should any member of the approved crew or subcontractor discontinue their relationship with the synthetic turf crew or subcontractor the Owner shall be notified. Failure to provide personnel meeting the minimum qualifications shall be considered default of the contract requirements

D. Warranty: The Synthetic Turf Contractor shall submit its Manufacturer's Warranty, which guarantees the usability and playability of the synthetic turf system for its intended uses for an eight (8) year period commencing with the date of Substantial Completion.
1. The warranty submitted must have the following characteristics:
    a. Must provide full-field coverage for eight (8) years from date of Substantial Completion,
    b. Must warrant materials and workmanship,
    c. Must warrant that the materials installed meet or the product specifications within manufacturing tolerances,
    d. Must have a provision to either repair or replace such portion of the installed materials that are no longer serviceable to maintain a serviceable and playable surface,
    e. Must be a Manufacturer's warranty from a single source covering workmanship and all self-manufactured or procured materials,
    f. Must not be limited to the amount of annual usage,
    g. Must provide, at the time of bid, a copy of its pre-paid 3rd party insurance policy. This policy must have an annual aggregate amount of no less than $60 million, and a per incident limit of no less than $7 million per claim. The third party insurer must have an AM Best rating of A++ or better.

1.05 EXISTING CONDITIONS

A. If the surface on which the new synthetic turf is to be installed is an existing asphaltic/concrete base, the Synthetic Turf Contractor will be responsible for any damage due to negligence to the concrete during removal/installation of the synthetic turf system provided there are no failures below the surface which contribute to the damage. The football goal posts, if any, are to be removed and reinstalled by the Owner or Prime Contractor to facilitate the installation of the new synthetic turf system.

B. If the surface on which the new synthetic turf to be installed is a new asphaltic/concrete base or a new base of compacted, porous aggregate, the Synthetic Turf Contractor will be responsible for any damage to the base during removal/installation of the synthetic turf system after the deficiencies (if any) have been corrected by the base contractor with respect to planarity, compaction, and drainage/permeability. New in ground equipment, football goal post (if any) and /or infield mix backfill within the contiguous synthetic turf limits or immediately adjacent thereto are to be installed prior to the installation of the synthetic turf system. Damage to the synthetic

turf system during the installation of such materials is not the responsibility of the Synthetic Turf Contactor.

1.06 SCHEDULE

A. The Synthetic Turf Contractor shall complete all work on the synthetic turf system in accordance with the published project schedule, or as mutually agreed upon.

B. The synthetic turf contractor will require unencumbered use of staging area within fifty (50) feet of the synthetic turf area(s) being installed in order to complete the work. The Synthetic Turf Contractor shall also be afforded unencumbered access through the construction site to reach the synthetic turf field area being installed.

1.07 SURFACE AREA

A. The Synthetic Turf Contractor is to verify all measurements.

1.08 UTILITIES

A. Owner or Prime Contractor will supply necessary water, adequate lighting, and electricity for installation. Owner or Prime Contractor shall permit use of toilet and wash up facilities.

PART 2 – PRODUCTS

2.01 APPROVED PRODUCTS

A. Shaw Sports Turf: Legion 2.0 or approved equal

2.02 MATERIALS

A. Shall be tufted, polyethylene, grass-like fabric coated with a secondary backing of high-grade polyurethane. Refer to grid in section 2.2 H. The two fibers specified in this grid shall be tufted through the same needle in a grass-like fabric to a finished pile-height also specified in the grid.

B. All components and their installation method shall be designed and manufactured for use on outdoor athletic fields. The materials as hereinafter specified should be able to withstand exposure in all climates, be resistant to insect infestation, rot, fungus, mildew, ultraviolet light and heat degradation, and shall have the basic characteristics of flow-through drainage, allowing free movement of surface runoff through the synthetic turf fabric where such water may flow to the existing base and into the field drainage system.

C. The finished playing surface shall appear as mowed grass and shall resist abrasion and cutting from normal use.

D. The polyethylene pile yarn shall be a proven athletic caliber yarn designed specifically for outdoor use and stabilized to resist the effect of ultraviolet degradation, heat, foot traffic, water, and airborne pollutants.

E. The system shall be tufted at the pile height and gauge listed in specification grid, refer to grid in section 2.2 H.

F. The Primary Backing must be a multi-layer backing, contain UV stabilizers and must pass 3000 hours of QUV A testing, refer to grid in section 2.2 H.

G. The Secondary Backing of high-grade polyurethane shall be applied to the Primary Backing. Secondary Backing adds resistance to water degradation and strengthens grip on fibers, refer to grid in 2.2 H.

H. The entire backing shall be coated with holes perforated throughout the backing at the Synthetic Turf Manufacturer's recommended interval to allow for drainage. Partially coated backings or latex coating materials shall not be acceptable.

I.

Pile Yarn	Polyethelene Monofilament/Slit Film	METHOD
Linear Density (Denier) Mono/Slit*	7,200/5,000	ASTM D 1577
Yarn Thickness Mono/Slit	300/100 microns	ASTM D 3218
Pile Weight****	35 oz./yd^2	ASTM D 5848
Finished Pile Height****	2.0	ASTM D 5823
Product Weight (total)***	63 oz./yd^2	ASTM D 5848
Primary Backing Weight****	8 oz./yd^2	ASTM D 5848
Secondary Coating Weight+	20 oz./yd^2	ASTM D 5848
Fabric Width	15' (4.57m)	ASTM D 5793
Tuft Gauge	1/2"	ASTM D 5793
Grab Tear Strength Avg.	> 200 lb.-F	ASTM D 5034
Tuft Bind (Avg.)	> 10 lb.-F	ASTM D 1335
Infilltrometer	> 25	ASTM D3885

Except where noted the above specifications are nominal.

* Values are +/- 8%. ***Values are +/- 10 oz. ****Values are +/- 5%. +Values are +/- 3 oz./yd2.

J. Infill materials must conform to the grid in section 2.2 I

Property	Standard	Specification
Rubber Granule Comp	N/A	All black SBR
Rubber Granule Shape	EN 14955	Spherical, Moderate, Angular
Rubber Sieve Analysis	ASTM D 5644	10 / 20MESH (2.0mm – 0.85mm)
Sand Granule Shape	ASTM D442	Semi-rounded to rounded angularity
Sand Sieve Analysis	ASTM E11	20 / 40 MESH (0.85mm - 0.425 mm)
Infill Lbs. of Rubber	N/A	3.01 lbs.
Infill Lbs. of Sand	N/A	1.29 lbs.

K. Perimeter edge details, underground storm sewer piping and connections, and goal post foundations required for the system shall be as detailed and recommended by the Design

Professional, and as approved by the Owner. The cost for these embedded items shall be included in the Sitework Contractor's price along with the compacted, porous base.

L. Aggregate Base Design Criteria

Sieve Dimension	% Passing by Weight
1.5-inch	100
1.0-inch	70-95
3/4-inch	50-80
1/2-inch	35-65
#8	15-25
#200	<3
Permeability	>30 inches per hour
Sulfate Soundness (C-88)	<12% loss
LA Abrasion (ASTM C-131)	<140
Optimum Moisture Content	>90

M. Aggregate Finish Course: For use within the synthetic turf area. Angular, washed aggregate consisting of crushed stone that must be placed and compacted in a uniform manner. The compacted stone shall be stable for use in construction, and suitable for its intended purpose. Rounded stone is not permitted for this application. Depth of finished course not to exceed 2-inches. An independent party must test aggregate prior to delivery to site. The aggregate must meet and/or exceed the specifications as provided herein contingent upon stone availability in specified region. Other products of similar consistency native to region of project may be considered and approved by Architect and/or Engineer of Record.

a. Aggregate Finish Course

Sieve Dimension	% Passing by Weight
1/4-inch	60-100
#8	45-75
#16	20-55
#30	5-30
#60	0-10
#200	<3
Permeability	>12 inches per hour
Sulfate Soundness (C-88)	<12% loss
LA Abrasion (ASTM C-131)	<40
Optimum Moisture Content	>90

PART 3 - EXECUTION

3.01 GENERAL

A. The installation shall be performed in full compliance with approved shop drawings.

B. Only factory-trained technicians skilled in the installation of athletic caliber synthetic turf systems shall undertake the placement of the system.

C. Subject to the requirements in Section 1.2(B), the surface to receive the synthetic turf shall be verified by the Synthetic Turf Contractor as ready for the installation of the synthetic turf system and must be perfectly clean as installation commences and shall be maintained in that condition throughout the process.

3.02 REMOVAL (if necessary)

A. Synthetic Turf Contractor shall remove the existing synthetic turf and under-pad from the field (as required by contract).

B. After removal of the stadium surface, the existing synthetic turf and pad materials shall be rolled up and placed at a location designated by the Owner.

3.03 INSTALLATION

A. The completed base and adjacent curbs/perimeter nailer shall be inspected by the Engineer or Sitework Contractor by means of a laser and plotted on a 10-foot grid. Based upon the Contractor's inspection of the topographical survey, the Sitework Contractor shall fine grade the base suitably, including properly rolling and compacting the base to achieve a surface planarity within ¼" in 10-feet (+0, -1/4"). OWNER, ENGINEER, OR PRIME CONTRACTOR SHALL NOT APPROVE THE BASE FOR TOLERANCE TO GRADE WITHOUT OBTAINING THE TOPOGRAPHICAL SURVEY.

B. Subgrade and base shall be uniformly compacted to a minimum of 95% of maximum dry density. Care must be exercised to minimize segregation. Engineer/Sitework Contractor shall make written records available to Synthetic Turf Contractor's inspector for both drainage/permeability and compaction/planarity as obtained from a minimum 10' x 10' grid.

C. The Synthetic Turf Project Superintendent shall thoroughly inspect all synthetic turf materials delivered to the site for both mixing and quantity to assure that the entire installation shall have sufficient material to maintain proper mixing ratios.

D. Synthetic turf shall be loose-laid across the field, stretched, and attached to the perimeter edge detail. Synthetic turf shall be of sufficient length to permit full cross-field installation. No head or cross seams will be allowed except as needed for inlaid fabric striping or to accommodate programmed cut-outs.

E. All seams shall be flat, tight, and permanent with no separation or fraying. Selvedge edges of all panels must be cut and discarded prior to being sewn together. A butt-stitch method of seaming must be implemented and a double-lock stitch with cord recommended by the Synthetic Turf Manufacturer shall be utilized. Bagger stitching is prohibited. Seaming tape is to be constructed of high tenacity, coated non-woven fabric. Inlaid markings shall be adhered to seaming tape with a high strength polyurethane adhesive applied per the Synthetic Turf Manufacturer's standard procedures for outdoor applications. All main fabric seams shall be transverse to the field direction (i.e. run perpendicularly across the field).

F. Infill materials shall be properly applied in numerous lifts using special broadcasting equipment. The synthetic turf shall be raked and brushed properly as the mixture is applied. The infill materials can only be applied when the synthetic turf fabric is dry.

G. g-Max (shock attenuation) test < 200 at installation.

3.04 FIELD MARKINGS AND DECORATIONS

A. Field markings and decorations shall be installed in accordance with approved project shop drawings.

3.05 CLEAN UP

A. Synthetic Turf Contractor shall provide the labor, supplies, and equipment, as necessary, for final cleaning of the surfaces.

B. The Synthetic Turf Contractor shall keep the area clean and clear of debris throughout the project.

C. Surfaces, recesses, enclosures, etc., shall be cleaned as necessary to leave the work area in a clean, immaculate condition ready for immediate occupancy and use by Owner.

END OF SECTION

SECTION 32-31-13 CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes chain-link fences and swing gates.

1.02 PERFORMANCE REQUIREMENTS

B. Structural Performance: Chain-link fence and gate framework shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to the Oregon Structural Specialty Code:

1. Minimum Post Size: Determine according to ASTM F 1043 for framework up to 12 feet high, and post spacing not to exceed 10 feet.
2. Minimum Post Size and Maximum Spacing: Determine according to CLFMI WLG 2445, based on mesh size and pattern specified and on the following:
    a. Wind Loads: 120 mph.
    b. Exposure Category: B
    c. Fence Height: As indicated on drawings.
    d. Material Group: Schedule 40 steel pipe per ASTM F1083.

1.03 ACTION SUBMITTALS

A. Submit product data under provisions of Section 013300 - Submittals. Partial or incomplete submittals are not acceptable and will be returned without a review.

B. Product Data: For each type of product indicated.

C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

D. Samples: For each polymer-coated product and for each color and texture specified, in 6-inch lengths for components and on full-sized units for accessories.

1.04 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of chain-link fence and gate, from manufacturer.

B. Product Test Reports: For framing strength according to ASTM F 1043.

C. Sample of special warranty.

1.05 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.02 WARRANTY

A. Special Warranty: Manufacturer's standard form in which [manufacturer] [Installer] agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, deterioration of metals, metal finishes, and other materials beyond normal weathering.
2. Warranty Period: Five (5) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 CHAIN-LINK FENCE FABRIC

A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with CLFMI Product Manual and with requirements indicated below:

1. ASTM standards and CLFMI Product Manual limit height of fence fabric to 12 feet.
2. Fabric Height: As indicated on Drawings.
3. Wire diameter and mesh sizes in the first two subparagraphs below are commonly available and are limited to certain heights depending on the usage of the fence. See ASTM standards and CLFMI Product Manual.Retain first subparagraph below for steel wire fabric mesh. CLFMI limits wire diameter in last option to residential applications, but other standards do not make this distinction.
4. Steel Wire Fabric: Wire with a diameter of 0.148 inch (9-gauge).
    a. Mesh Size: 1-3/4 inches.
    b. Polymer-Coated Fabric: ASTM F 668, Class 2a over zinc-coated steel wire.
        1) Color: Black, complying with ASTM F 934.
5. Selvage: Knuckled at both selvages.

2.02 FENCE FRAMING

A. Posts and Rails: Comply with ASTM F 1043 for framing, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 based on the following:

1. Fence Height: As indicated on Drawings.
2. Heavy Industrial Strength: Material Group IA, round steel pipe, Schedule 40.
    a. Line Post: 2.375 inches in diameter.
    b. End, Corner and Pull Post: 2.875 inches in diameter.
3. Horizontal Framework Members: top and bottom rails complying with ASTM F 1043.
4. Brace Rails: Comply with ASTM F 1043.
5. Polymer coating over metallic coating.
    a. Color: Match chain-link fabric, complying with ASTM F 934.

2.03 TENSION WIRE

A. Polymer-Coated Steel Wire: 0.177-inch diameter, tension wire complying with ASTM F 1664, Class 2a over zinc-coated steel wire.

1. Color: Match chain-link fabric, complying with ASTM F 934.

2.04 SWING GATES

A. General: Comply with ASTM F 900 for gate posts and swing gate types.

1. Gate Leaf Width: As indicated on drawings.
2. Gate Fabric Height: As indicated on drawings.

B. Pipe and Tubing:

1. Zinc-Coated Steel: Comply with ASTM F 1043 and ASTM F 1083; protective coating and finish to match fence framing.
2. Gate Posts: Round tubular steel.
3. Gate Frames and Bracing: Round tubular steel.

C. Frame Corner Construction: assembled with corner fittings.

D. Hardware:

1. Hinges: 180-degree swing direction as indicated on drawings.
2. Latches permitting operation from both sides of gate with provision for padlocking accessible from both sides of gate.
3. Padlock and Chain: Owner furnished.
4. Lock: to be coordinated with Landscape Architect and/or Owner's representative.
5. Closer: Manufacturer's standard.

2.05 FITTINGS

A. General: Comply with ASTM F 626.

B. Finish:

1. Metallic Coating for Pressed Steel: Not less than 1.2 oz. /sq. ft. zinc.
   a. Polymer coating over metallic coating.

2.06 GROUT AND ANCHORING CEMENT

A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.

B. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer, for exterior applications.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for[a verified survey of property lines and legal boundaries,] site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.

1. Do not begin installation before final grading is completed unless otherwise permitted by Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet (152.5 m) or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

D. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements indicated.

E. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.

F. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.

1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.

a. Exposed Concrete: Extend 2 inches above grade; shape and smooth to shed water.

G. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more.

H. Line Posts: Space line posts uniformly at 10 feet max o.c.

I. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Provide horizontal tension wire at the following locations:

1. As indicated.

J. Chain-Link Fabric: Apply fabric to inside of enclosing framework for ballfields, outside for perimeter fencing and as per Landscape Architect & Owner's representative direction for all other areas. Leave 1-inch between finish grade or surface and bottom selvage unless otherwise indicated.

K. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

L. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

END OF SECTION

SECTION 32-84-00 PLANTING IRRIGATION

PART 1 - GENERAL

1.01 RELATED DOCUMENT

A. The General and Special Conditions of the contract apply to the work of this section the same as though written herein.

B. Comply with local and State codes, ordinances, safety orders, and regulations of legally constituted authorities having jurisdiction over this work.

1.02 SCOPE OF WORK

A. Furnish labor, materials, and equipment to provide, install, and maintain the irrigation system described herein and shown on the Drawings.

1.03 RELATED SECTIONS

A. Section 32 91 13 – Soil Preparation

B. Section 32 9220 – Native Seeding

C. Section 32 92 23 - Sodding

D. Section 32 93 00 – Plants

1.04 REFERENCES

A. ASTM D 1785 Requirements for Schedule 40 Plastic Pipe

B. ASTM D 22466 Requirements for Schedule 40 Plastic Fittings

C. ASTM D 2467 Requirements for Schedule 80 Plastic Fittings

D. ASTM D 2464 Requirements for Schedule 80 Plastic Threaded Fittings

E. ASTM D 2241 Requirements for Class 200 and Class 315 Bell and Gasket Plastic Pipe

F. ASTM D 1869 Requirements for Rubber Ring Gasket

G. ASTM A 120 Steel Pipe and Fittings

H. ASTM D 2855 Installation of Plastic Pipe

1.05 SUBMITTALS

A. Submittals shall conform to provisions of Section 01 33 00. Partial or incomplete submittals are not acceptable and will be returned without a review.

B. Submit descriptive literature and specifications for the following:

1. Catalog data for products, equipment, and materials specified herein and as shown on the Drawings.
2. Substitutions: shall conform to provisions of Section 01 25 00.

C. Submit photocopies of current CLT registration for foremen performing work on this project.

D. Submit shop drawings and specifications for controller enclosure assemblies, including electrical wiring schematic. Submit shop drawings and specifications for booster pump, fertilizer injection, central control system, moisture-sensing equipment, and other fabricated assemblies shown on the Drawings. (edit this section)

E. Equipment or materials installed or furnished without the prior approval of the Architect may be rejected and the Contractor required to remove such materials from the site at his own expense.

F. Acceptance of item alternate or substitutes indicates only that the products apparently meet the requirements of the drawings and specifications on the basis of the information or samples submitted.

G. Manufacturer's warranties shall not relieve the Contractor of his liability under the guarantee. Such warranty shall only supplement the guarantee.

H. The Architect can at his option require a manufacturer's warranty on product offered for use.

1.06 QUALIFICATIONS AND EXPERIENCE

A. The Contractor shall employ only Landscape Industry Certified Technician registered with the Oregon Landscape Contractors Association (OLCA), as foremen for irrigation installation work.

1.07 RESPONSIBILITY

A. Obtain and pay for plumbing permits and inspections required by local jurisdictions.

B. The work performed under this Section is the responsibility of the Contractor. No subcontractor shall relieve the Contractor of his liability to complete the work shown on the Drawings and indicated in the specifications.

C. Protection of public and private property adjacent to the work and exercising due caution to avoid damage to such property. The work shall be protected and maintained throughout the contract period, including during suspension of work, and until final acceptance of the work. Repair or replace damaged improvements including acts of vandalism, theft, and graffiti removal. Repairs or replacements shall be at least equal to the original condition of the existing improvement, and shall match in finish and dimension.

D. Prior to starting the work of this Section, verify that previously installed work is complete to the point where this installation may properly commence. Verify that work of this Section may be installed in accordance with the design, pertinent codes, regulations, and portions of the referenced standards. In the event of discrepancy, immediately notify the Architect.

E. Locate and mark new and existing underground utilities and equipment shown on as-built drawings and field record drawings of other trades. Review the layout work of this Section with the Architect a minimum of 24 hours prior to commencing with trenching and excavating in these areas. Notify the Architect when utilities not located or marked are found during excavation.

F. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved. Failure to notify the Architect of discovery or damage to unmarked utilities shall result in repair or replacement by the Contractor at no additional cost to the Owner.

1.08 RECORD DOCUMENTS

A. Comply with Section 01 78 39 and General Conditions

1.09 DELIVERY, STORAGE, AND HANDLING

A. Store PVC pipe in a neat and orderly manner, fully supported, and protected from sunlight.

PART 2 - PRODUCTS

2.01 BRASS PIPE

A. Brass pipe shall be heavy wall type with threads complying to ANSI Specifications.

B. Fitting shall be case brass or case bronze threaded joint and shall comply with ANSI. Specifications. Thread on pipe and fittings shall be tapered type, NPT standard.

2.02 PLASTIC PIPE AND FITTINGS

A. Plastic pipe shall be extruded from 100% virgin polyvinyl chloride (PVC) Type 1, Grade 1 as manufactured by Lasco Industries, Pacific Plastics, John-Manville, or acceptable equal. Pipe shall be new and unused.

B. Plastic pipe shall be continuously and permanently marked with the manufacturer's name, nominal pipe size, PVC 1120, the pressure rating in PSI, and NSF (National Sanitation Foundation)

C. Plastic pipe for non-pressure lateral lines shall be PVC 1120, Schedule 40 unless noted otherwise on the Drawing.

D. Plastic pipe for pressure mainline shall be PVC 1220, Schedule 40 for sizes up to and including 1-1/2 inch, and Class 315 for sizes 2 inch and larger.

E. Plastic fittings for pressure side of valves shall be PVC 1220, IPS Schedule 80. Plastic fittings for non-pressure pipe shall be PVC 1220, IPS Schedule 40, NSF slip fittings and Schedule 40 threaded fittings, as manufactured by Lasco, Pacific, Western, or acceptable equal.

F. Solvent-weld glue shall be Lasco #711 Grey Heavy Body, or acceptable equal. Pressure-side pipe shall be primed with Lasco “Purple Primer” solvent before gluing.

G. Threaded nipples shall be standard weight Schedule 80 molded threads. Threaded nipples exposed above grade shall be gray in color.

H. Pipe for sleeves shall be PVC 1120, Schedule 40, sized as indicated on the Drawings. Provide pull rope 10 feet longer than sleeve.

I. Above-grade pipe shall be ultraviolet resistant (UVR) Schedule 40 PVC pipe, as manufactured by Pacific Plastics, or acceptable equal. Above-grade fittings shall be ultraviolet resistant, as manufactured by Spears Manufacturing Company, or acceptable equal. (Check plans)

J. Conduit for flow sensor wires shall be PVC 1120, Schedule 40, grey, sized as indicated on the Drawings. (Check plans)

K. Drip tubing shall be low density polyethylene, ultraviolet resistant, in the size noted on the Drawings. (Check plans)

2.03 MECHANICAL JOINT RESTRAINTS

A. Restraint devices for mechanical joint fittings and appurtenances conforming to either ANSI/AWWA C111/A21.11 or ANSI/AWWA C153/A21.53, shall conform to the following:

B. Design

1. Restraint devices for nominal pipe sizes 3 inch through 36 inch shall consist of multiple gripping wedges incorporated into a follower gland meeting the applicable requirements of ANSI/AWWA C110/A21.10.

2. The devices shall have a working pressure rating equal to that found in the most current product brochure. Ratings are for water pressure and must include a minimum safety factor of 2:1 in all sizes.

C. Material

1. Gland body, wedges and wedge actuating components shall be cast from grade 65-45-12 ductile iron material in accordance with ASTM A536.
2. Three (3) test bars shall be incrementally poured per production shift as per Underwriter's Laboratory (U.L.) specifications and ASTM A536. Testing for tensile, yield and elongation shall be done in accordance with ASTM E8.
3. Chemical and nodularity tests shall be performed as recommended by the Ductile Iron Society, on a per ladle basis.

D. Traceability

1. An identification number consisting of year, day, plant and shift (YYDDD) (plant designation) (Shift number), shall be cast into each gland body.
2. All physical and chemical test results shall be recorded such that they can be accessed via the identification number on the casting. These Material Traceability Records (MTR's) are to be made available, in hard copy, to the purchaser that requests such documentation and submits his gland body identification number.
3. Production pieces that are too small to accommodate individual numbering, such as fasteners and wedges, shall be controlled in segregate inventory until such time as all quality control tests are passed. These component parts may then be released to a general inventory for final assembly and packaging.
4. All components shall be manufactured and assembled in the United States. The purchaser shall, with reasonable notice, have the right to plant visitation at his/her expense.

E. Installation

1. Mechanical joint restraint shall require conventional tools and installation procedures per AWWA C600, while retaining full mechanical joint deflection during assembly.
2. Proper actuation of the gripping wedges shall be ensured with torque limiting twist off nuts.

F. Approvals

1. Mechanical Joint Restraints shall be Listed by Underwriters Laboratories in the 4 inch through 12 inch sizes.
2. Mechanical Joint Restraints shall be Factory Mutual Approved in the 4 inch through 12 inch sizes.
3. Mechanical Joint Restraints, 4 inch through 24 inch, shall meet or exceed the requirements of ASTM F1674 of the latest revision.
4. Mechanical joint restraint shall be Series 2000PV produced by EBAA Iron Inc. or approved equal.

G. MEGA-BOND® Restraint Coating System

1. Coating for restraint devices shall consist of the following:
2. All wedge assemblies and related parts shall be processed through a phosphate wash, rinse and drying operation prior to coating application. The coating shall consist of a minimum of two coats of liquid thermoset epoxy coating with heat cure to follow each coat.
3. All casting bodies shall be surface pretreated with a phosphate wash, rinse and sealer before drying. The coating shall be electrostatically applied and heat cured. The coating shall be a polyester based powder to provide corrosion, impact and UV resistance.

4. The coating system shall be MEGA-BOND by EBAA Iron, Inc. or approved equal. Requests for approved equal must submit coating material and process details for review prior to bid.
5. For more information regarding MEGA-BOND, refer to the MEGA-BOND brochure or visit www.ebaa.com.

2.04 AUTOMATIC CONTROLLER AND RELATED EQUIPMENT

A. Controller shall be as indicated on the Drawings.

B. Controller enclosure shall be stainless steel, heavy duty as indicated on the Drawings.

C. Controller number and remote control access number shall be neatly stenciled onto outside of enclosure door in 2-inch high letters, using paint designed for direct application onto stainless steel.

2.05 SPRAY AND BUBBLER HEADS

A. Sprinkler heads shall be as indicated on the Drawings.

B. Pop-up sprinkler body shall be as indicated on the Drawings. Where not specifically called-out, pop-up heights shall be 6 inch body type.

2.06 ROTOR HEADS

A. Rotor heads shall be as indicated on the Drawings.

B. Pop-up rotor body shall be as indicated on the Drawings. Where not specifically called-out, pop-up height shall be 6 inch body type.

2.07 CONTROL WIRE AND CONNECTORS

A. Control Wire: shall be PVC insulated, solid copper conductor AWG 14 ga., of type acceptable for direct burial. Pilot wire shall be a single color and the common wire shall be white with a stripe the same color as the pilot wires. Each controller shall be a different color wire. Spare wires shall be black.

B. Master Valve Wire: shall be PVC insulated, solid copper conductor AWG 14 ga. direct burial wire, color different from pilot and spare wires. (Check plans)

C. Flow Sensor Wire: shall be a PVC jacketed two conductor cable. The conductors shall be 16 AWG 7 strand annealed copper, conforming to ASTM B-3 and B-8 with heat and moisture resistant PVC, covered with a .004 wall of stabilizing nylon conforming to UL83 heated at 90 degrees C. The conductor shall be twisted and encased in a single outer jacket of .050 inch minimal wall of sunlight and moisture resistant PVC conforming to UL, ICEA and NEMA standards. The tow conductors shall be color coded with one conductor yellow and the other gray as manufactured by Arizona Electrical Fabricators model #9516-2SP. (Check plans)

D. Control Wire Connectors: shall be Dri-Splice DS-400 as manufactured by the Spears, or acceptable equal.

E. Line Voltage Connections: shall be made by clamp and waterproofed with 3M Company Scotchcast splicing kits or acceptable equal.

2.08 REMOTE CONTROL VALVES

A. Remote control valves shall be as indicated on the Drawings.

2.09 QUICK COUPLING VALVES

A. Quick coupling valves shall be two-piece body designed for working pressure of 125 PSI as indicated in the legend and installed in accordance with detail thereof. Quick coupling valves shall be installed with locking yellow vinyl covers.

2.10 BALL VALVES

A. Ball valves shall be of size, type, and manufacturer as indicated on the Drawings, or acceptable equal.

2.11 GATE VALVES

A. Gate valves shall be of size, type and manufacturer as indicated on the Drawings, or acceptable equal.

2.12 MASTER VALVE (Check plans)

A. Master valve shall be of size, type and manufacturer as indicated on the Drawings. Unless noted otherwise on the Drawings, master valve shall be a normally closed valve.

2.13 CHECK VALVES (Check plans)

A. Swing check valves 2" and smaller: 200 pound W.O.G. bronze construction with replaceable composition, neoprene, or rubber disc meeting or exceeding Federal Specification WW-V-51D, Class A, Type IV.

B. Anti-drain valves: Shall be of heavy-duty virgin PVC construction with FIP threaded inlet and outlet. Internal parts shall be stainless steel and neoprene. Anti-drain valves shall be field adjustable against drawout from 5 to 40 feet of head. Anti-drain valve shall be similar to the Valcon "ADV" or acceptable equal.

2.14 FLOW SENSOR (Check plans)

A. Flow sensor shall be of the size, type and manufacturer as indicated on the Drawings.

2.15 VALVE BOXES AND RELATED MATERIALS

A. Valve box lids shall be green when located in lawn areas; black when located in shrub areas.

B. 12 Inch Rectangular Box and Lid: shall be HDPE plastic type, model #1419-12. Lids shall be model #1419-4B T-Cover Bolt Down, non-hinged, with stainless steel locking bolt, as manufactured by Carson Industries, (800) 735-5566, or acceptable equal.

C. 10 Inch Round Box and Lid: Shall be HDPE plastic type, model #910-10. Lids shall be model #910-4B T-Cover Bolt Down, green color, with stainless steel locking bolt, as manufactured by Carson Industries (800) 735-5566, or acceptable equal.

D. Box lids shall be neatly and permanently heat branded as indicated on the Drawings with pre-formed steel letters/numerals and branding tool into the center of the lid.

E. Base materials for setting valve boxes shall be 1/2” - 3/4” crushed aggregate and 2 x 4 x 8 red brick or concrete brick.

F. Top dressing gravel inside valve boxes shall be ½” – ¾” crushed aggregate

2.16 BACKFLOW PREVENTION DEVICE

A. Backflow prevention devices shall be of the size and type as noted on the Drawings.

B. Backflow assembly shall be shipped to the job site as a complete assembly, including gate valves and wye strainer.

C. Valve and wye strainer shall be cast bronze construction, and valve shall have resilient wedge gates.

2.17 PRESSURE REGULATOR

A. Pressure regulator shall be bronze construction with stainless steel internal components, and threaded connections. Regulator shall be of the size and type indicated on the Drawings. (check plans)

2.18 MARKERS, TAGS, AND SIGNAGE

A. Warning Tape: a detectable 3 inch wide, minimum 5.0 mil, 5 ply composition of ultra high modular weight 100 percent virgin polyethylene, acid, alkaline and corrosion resistant, elongation properties in accordance with ASTM D882-80A and shall be 80 percent MD and 135 percent TD. Tape shall have a minimum 20 gauge solid aluminum foil core, adhered to a 2.55 mil polyethylene backing.

1. Control Wire Tape - Tape color to be red with black lettering, and shall read “Caution: Electrical Line Buried Below”. Christy’s™ Detectable Marking Tape #TA-DT-3-R-E, T. Christy Enterprises, Inc., (714) 507-3300, or acceptable equal.
2. Mainline Marking Tape - Tape shall be blue with black lettering and shall read “Caution: Irrigation Line Buried Below”. Provide 3 inch tape for mainline up to 4 inch, provide 6 inch tape for mainline larger than 4 inches. Christy’s™ Detectable Marking Tape #TA-DT-3-B-I, for 3” tape, #TA-DT-6-B-I for 6 inch tape, T. Christy Enterprises, Inc., (714) 507-3300, or acceptable equal.

B. Valve Identification Tags: shall be polyurethane plastic with and integral attachment neck and reinforced attachment hole. Tags shall be hot stamped with the controller designation letter and valve station number indicated on the Drawings. Tag color shall be yellow with black lettering, Christy’s™ Standard Tags, T. Christy Enterprises, Inc., (714) 507-3300, or acceptable equal.

2.19 DRIPPERLINE ASSEMBLY (Check plans)

A. Dripperline shall be Hunter PLD pressure compensating dripperline.

B. Dripperline Fittings shall be Hunter PLD fittings, sized to match dripperline.

C. Staples shall be 9” galvanized steel wire staples spaced at 5’ o.c.

D. Flush Valves shall be as indicated on the Drawings.

E. Air/ Vacuum Relief Valves shall be as indicated on the Drawings.

F. Valve Boxes for flush valves and air release valves shall be round type #708-9-4, black with black lid, as manufactured by Carson Industries (800) 735-5566, or acceptable equal.

PART 3 - EXECUTION

3.01 GENERAL

A. The Drawings are diagrammatic, products and equipment are shown at their approximate location and at an appropriate scale for clarity. Detail drawings provide clarification of installation and relationships of the product and equipment to existing conditions and new construction.

B. The installation of irrigation materials shall be coordinated with the landscape planting plans to avoid interfering with the trees, shrubs, or other plantings. Layout sprinkler heads and dripperline and make minor adjustments as needed to conform to differences between the site conditions

and the Drawings. Minor adjustments shall be within the intent of the Drawings, and implemented without additional costs to the Owner.

C. Spacing of sprinkler heads are not to be scaled off of the Drawings, but located to prevent overspray onto buildings, walks, and structures. Do not willfully install the sprinkler system when it is obvious in the field that obstructions or grade differences exist. Notify the Architect immediately of discrepancies between plans and actual field conditions.

3.02 WATER SUPPLY AND STATIC PRESSURE TESTS

A. Connection to the water supply shall be at the location shown on the Drawings. Installation shall be in accordance with local codes and regulations, and the requirement of the governing water district.

B. Prior to commencing with the work, a static pressure test shall be submitted to the Architect for each point of connection. The test shall be a continuous reading of the static pressure recorded over a 24 hour period. The recorded print out shall be documented with the date and time period the reading was taken. Submit the recorded data to the Architect.

C. When static pressure at a point of connection is below that called out by more than 5 percent, notify the Architect before proceeding with work.

3.03 INSTALLATION

A. Assemblies

1. Threaded pipe and fittings shall be assembled using Teflon tape or equivalent, applied to the male threads only.
2. Assemblies specified herein shall be installed in accordance with their respective detail. In the absence of detail drawings or specifications pertaining to the specific items required to complete the work, the Contractor shall perform such work in accordance with the best standard practice and to the satisfaction of the Owner.

B. Pipe And Pipe Clearances

1. Pressure lines and lateral lines shall have a minimum clearance as indicated on the Drawings. Parallel lines shall not be installed directly over one another. If clearances are not indicated on the Drawings, all clearances shall be per City of Bend Standard Details and Specifications.

C. Trenching, and Backfilling

1. Trenches: Pipe shall have the continuous support of the trench bottom and shall be laid to an even grade. Trenching excavation shall follow the layout indicated on the drawings and shall be of sufficient width to allow "snaking" of pipe in trench.
2. Backfill for trenching shall be compacted to a dry density equal to the adjacent undisturbed soil in planting areas and 95% under paved areas and shall conform to the adjacent grades without dips, sunken areas, humps, or other irregularities. Initial backfill on lines shall be of a fine granular material with no foreign matter larger than one-half inch in size.
3. If, in the opinion of the Architect, the excavated material is not satisfactory for use as backfill, the Contractor shall dispose of this unsatisfactory material and provide a clean granular fill or sand bedding material. Backfill material shall be placed as indicated on the Drawings.
4. Provide concrete thrust blocks at angles, and bends in mainline runs per Drawings.
5. Pressure-side pipe shall be laid with a detectable warning tape 9 inches above the pipe as indicated on the Drawings.
6. Trenches shall be backfilled promptly after the open trench inspection.

D. Pipe Sleeves

1. Sleeves shall of the size and material noted on the Drawings.
2. Sleeves shall extend four (2) feet minimum beyond the edge of paving.
3. Provide permanent pavement marking pin at both ends of sleeve, standard brass survey pin in lead, set 1 inch from edge of paving or walkway.

E. Control Wires

1. Between controllers and remote control valves, use a continuous wire. Under no circumstance shall splicing exist.
2. Where more than one wire is placed in a trench, the wiring shall be taped together at intervals of ten feet.
3. Wiring shall occupy the same trench and shall be installed along the same route as the pressure supply line wherever possible. Wire bundle shall be placed along the side of mainline pipe. Wire bundles shall not cross over top of mainline.
4. A loop of 12 inches shall be provided at each directional turn in the wire run.
5. Wire shall be laid loosely in trench, not pulled tight. Lay wire so that there is 12 inches of slack for every 100 feet of length.
6. Provide at least 1 extra spare wire for every 3 valves being served by the wire run. Extra wires shall be continuous from controller to end of wire run.
7. Provide sufficient extra wire under valve boxes so that valve can be completely removed from ground and box for servicing without disconnecting wires.

F. Valve Boxes

1. Install valve boxes in accordance with the details thereof.
2. Seal below-grade openings in valve boxes and around piping to prevent soil from entering the valve box. Suitable materials include geotextile fabric, heavy gauge shrink-wrap plastic, or other flexible material accepted by the Architect. Do not use cardboard, duct tape, or other materials that will deteriorate in wet conditions.
3. Keep valve box lids in place during soil preparation to keep soil out. Remove soil materials, which enter the valve box during construction.
4. Where valve boxes occur adjacent to walks, curbs, or headerboard, locate them 6 inches clear from edge of improvement. Where two or more valve boxes occur together, locate them with 6 inches clear between and in a straight row.
5. Install valve boxes so rim is 2 inches above finish grade in shrub areas, 1/2 inch in turf areas.
6. Due to the schematic nature of plans, if questions arise, confirm actual valve manifold locations with Architect before proceeding with work.

G. Sprinkler Heads

1. Install each type of sprinkler head in accordance with the Drawings.
2. Install sprinkler heads 6 inches away from walkway or paving edge; 12 inches away from buildings, above ground utility structures, transformers, and other items.
3. Install sprinkler heads 12 inches away from walls and wood fences.
4. Install sprinkler heads 6 inches away from chainlink fences.
5. Do not locate sprinkler heads where it is obvious they will spray onto or into utility structures, buildings, signs, controller equipment, or other structures.
6. Install pressure compensating screens as necessary to prevent overspraying onto buildings, walks or utility structures. Choose screens per manufacturer's selection chart.
7. Provide adjustable, part-circle rotor heads when 360˚ full-circle type is not appropriate for the area being irrigated, whether indicated or not on the drawings.

8. Sprinkler heads on slopes shall be set so that they are angled downhill, halfway between plumb and perpendicular to slope angle.

H. Dripperline Tubing and Assemblies (Check plans)

1. Trenches shall be made wide enough to allow minimum of two (2") inches between parallel pipe lines. Trenches for pipelines shall be made of sufficient depth to provide minimum cover from finish grade as follows:
   a. 15" minimum cover over main lines.
   b. 12" minimum cover over control lines from controller to valves.
   c. 4" – 6" cover over dripperline.
2. Dripperline Installation (Check plans)
   a. Install all dripperline as indicated on drawings. Use only Teflon tape on all threaded connections.
   b. Clamp driperline fittings with Oetiker clamps when operating pressure exceeds specific dripperline fitting requirements.
3. Cap or plug all openings as soon as lines have been installed to prevent the entrance of materials that would obstruct the pipe. Leave in place until removal is necessary for completion of installation.
4. Thoroughly flush all water lines before installing valves and other equipment.

I. Pressure Test

1. Pressure lines shall be tested under hydrostatic pressure of 150 PSI, and non-pressure lines shall be tested under the existing static pressure and both be proven watertight. (Contractor to supply equipment needed for testing.)
2. Pressure shall be sustained in the lines for not less than two hours. If leaks develop, the joints shall be replaced and the test repeated until the entire system is proven watertight.
3. Tests shall be observed and accepted by the Architect prior to backfill.
4. Upon completion of each phase of the work, the entire system shall be tested and adjusted to meet site requirements.

J. Flushing the System

1. After valves, lateral lines, and risers are in place and connected, flush entire system, one valve at a time, to clear lines of dirt and debris.
2. Install sprinkler heads, filter screens, and nozzles immediately after flushing operation is completed.

K. Adjusting Of System

1. The Contractor shall flush and adjust sprinkler heads for best possible performance and to prevent overspray onto walks, roadways, fences, and buildings.
2. If it is determined that adjustments in the irrigation equipment or nozzle changes will provide proper and more adequate coverage, Contractor shall make all necessary changes, including installation of additional sprinkler heads, or moving sprinkler heads, without additional cost to the Owner, prior to planting.
3. The entire system shall be operating properly before planting operations commence.
4. Lower raised sprinkler heads in lawn areas within ten days after notification by the Architect.

L. Electrical

1. Contractor shall verify power sources shall be as indicated on the drawings.
2. The Contractor shall be responsible for making 110 volt electrical connections to the automatic controller and wire circuits from remote control valves to controllers. electrical

work shall be in accordance with local and /or county ordinances. Wire sizes to be as per manufacturer's specifications.

3.04 TURNOVER EQUIPMENT

A. The Contractor shall provide 2 sets of sprinkler wrenches for adjusting, cleaning, or disassembling each type of sprinkler.

B. Provide 2 each of special tools required for other equipment.

C. Provide 2 keys for each automatic controller.

D. Provide 2 quick coupler keys for each type of quick-coupler valve used.

E. Two service manuals and information pages for equipment used shall be furnished to the Owner. Manuals shall be loose leaf in 3-ring binders and should show drawings or exploded views of equipment and catalog number. Operating instructions for equipment shall be furnished.

3.05 REVIEW OF WORK

A. Installations and operations are to be reviewed and accepted by the Architect.

B. In no event shall the Contractor cover-up or otherwise remove from view work under this contract without prior acceptance of the Architect. Work covered prior to review shall be uncovered by the Contractor at no additional cost to the Owner. The Contractor shall request a review by the Architect at least two days in advance. Reviews will be required for the following:

1. Mainline pressure test and installation prior to backfilling
2. Coverage test upon sprinkler system completion and prior to planting

C. Materials and equipment required for testing of the system shall be provided by the Contractor at no additional cost to the Owner.

3.06 RECORD DRAWINGS

A. The Contractor shall maintain a complete and accurate set of project record Drawings. The Drawings shall be kept up to date with the progress of the work in accordance with Section 01780.

B. Contractor shall provide adequate measurements and field notes for preparation of accurate "project record" drawings. Show either actual locations or dimensions form two permanent points of reference such as building corners, curbs, sidewalk, intersections, etc. (but not from irrigation equipment) locations of the following:

1. Connections to water sources
2. Water meters
3. Routing of main lines
4. Location of both ends of sleeves
5. Remote control valves
6. Quick coupler valves
7. Backflow prevention devices
8. Gate valves
9. Routing of control wiring
10. Controllers

C. Record Documents, accurately record locations of new piping and equipment horizontally to within one (1) foot and vertically to within 0.5 feet.

D. The completed and accepted reproducible record drawings and record job set blueprints shall be delivered to the Owner on or prior to the final inspection.

3.07 CONTROLLER CHARTS

A. Project record drawings shall be prepared by the Contractor before charts are prepared.

B. Provide one controller chart for each controller supplied.

C. The chart shall show the area controlled by automatic controller and shall be the maximum size controller door will allow.

D. The chart is to be reduced drawing of the installed system. However, in the event the controller sequencing is not legible when the drawings is reduced, it shall be enlarged to a size that will be readable when reduced. If controller sequencing has been changed from the original drawings, the new sequencing shall be indicated on the controller chart.

E. Chart shall be non-fading blackline print and a different color shall be used to show area of coverage for each valve station.

F. The chart shall be mounted using Velcro, or an approved equal type of comparable quality.

G. When completed and accepted, the chart shall be laminated between two pieces of clear plastic, each piece being a minimum of 20 mils thick.

H. Charts shall be completed and accepted prior to final acceptance of the irrigation system.

I. Controller chart shall include the following information:
   1. Color-coded area of coverage for each valve.
   2. Valve size, station number, and controller designation.

3.08 CLEAN-UP AND REPAIR

A. Upon completion of the work, make the ground surface level, remove excess materials, rubbish, debris, etc., and remove construction and installation equipment from the premises.

B. Replace and/or repair to the satisfaction of the Architect existing paving disturbed during the course of this work. New paving shall be the same type, strength, texture, finish, and be equal in every way to the material removed.

C. Contractor will be responsible for all maintenance and repair of entire irrigation system, including vandalism and theft, until final acceptance.

3.09 FINAL INSPECTION

A. The Contractor shall show evidence to the Owner's Representative that the Owner has received required accessories, charts, record drawings, etc., before final inspection can occur.

B. Notification by the Contractor shall be made in writing to the Owner seven days prior to final inspection. The final inspection of the work shall be made in the presence of the Owner's Representative at the time the work is completed.

3.10 GUARANTEE

A. The entire sprinkler system shall be guaranteed by the Contractor as to material and workmanship, including settling of backfilled areas and trenches for a period of one year following the date of final acceptance of the work.

B. Should operational difficulties in connection with the sprinkler system develop within the specified guarantee period, which in the opinion of the Owner may be due to inferior material and/or workmanship, said difficulties shall be immediately corrected by the Contractor to the satisfaction of the Owner, at no additional cost.

3.11 TEMPORARY REPAIRS

C. The Owner reserves the right to make temporary repairs as necessary to keep the sprinkler system equipment in operating condition. The exercise of this right by the Owner shall not relieve the Contractor of his responsibilities under the term of the guarantee as herein specified.

PART 4 - PAYMENT

4.01 Payment for the work of this section shall be included in the price bid for “Planting Irrigation - Complete” and no additional compensation will be considered.

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SECTION 32-91-13 SOIL PREPARATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The General and Special Conditions of the contract apply to the work of this section the same as though written herein.

1.02 SCOPE OF WORK

A. Furnishing and installing of cast-in-place concrete site walls, stairs, footings and curbs as noted on the Drawings and as specified herein.

B. Work not included: Rough grading and storm drainage

1.03 RELATED SECTIONS

A. Section 32 84 00 – Planting Irrigation

B. Section 32 93 00 – Plants

C. Section 32 92 23 – Sodding

1.04 REFERENCES

A. American Society for Testing and Materials (ASTM)

B. American Association of State Highway and Transportation Officials (AASHTO)

C. Standard Specifications for Public Works Construction, latest edition (Greenbook)

1.05 SUBMITTALS

A. Submit product data under provisions of Section 013300 - Submittals. Partial or incomplete submittals are not acceptable and will be returned without a review.

1. Organic soil amendments – Submit samples and product specifications not more than 30 days old. Specification shall include particle size evaluation, total nitrogen (N), ammonia (NH4-N, nitrate (NO3-N), ECe, pH, micro nutrients, and metals.
2. Inorganic conditioners, fertilizers, and chemicals – Submit product literature and specifications.
3. Topsoil, Light Weight Soil, Structural Soil – Submit sample and product analysis.
4. Agricultural Soil Tests – Submit analysis report and recommendations for soil samples.

B. Certifications – Submit copies of Landscape Industry Certified Technician registration for foremen performing work on this project.

C. Costs for sampling, testing or inspection of materials are included in bid, and copies of inspections, certificates, and tests results shall be furnished without additional cost to the Owner.

D. Substitutions – For materials that differ from a specified brand or product, submit samples, product specifications, and product literature. Follow procedures as prescribed under Section 01 25 00 Substitutions.

1.06 EXPERIENCE AND QUALIFICATIONS

A. The Contractor shall employ Landscape Industry Certified Technicians registered with the Oregon Landscape Contractors Association (CLCA), as foremen for landscape installation work.

B. Submit proof that personnel have at least five (5) years experience in installation of Light Weight Soil, Structural Soil. Submit at least five (5) references for completed projects. (edit)

1.07 RESPONSIBILITY

A. The Contractor shall be responsible for the protection of public and private property adjacent to the work, and shall exercise due caution to avoid damage to such property. The work shall be protected and maintained throughout the contract period, including during suspension of work, and until final acceptance of the work. Contractor shall repair or replace damaged improvements including acts of vandalism, theft, and graffiti removal. Repairs or replacements shall be at least equal to original condition of the existing improvement, and shall match in finish and dimension.

B. Prior to starting the work of this Section, verify that previously installed work is complete to the point where this installation may properly commence. Verify that work of this Section may be installed in accordance with the design, pertinent codes, regulations, and portions of the referenced standards.

C. In the event of discrepancy, immediately notify the Landscape Architect.

D. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved.

PART 2 - PRODUCTS

2.01 SOIL AMENDMENTS

A. Organic Soil Conditioner- Humic Compost

1. Product shall be fully composted 100 percent recycled organic product, consisting of composted bio-solids and aged wood fiber with particles passing a ½ inch screen. Product shall be non-hazardous, and conform to U.S. EPA 40 CFR 503 criteria for class “A” product. Manufactured by Agri-Service, Oceanside, CA.

B. Humate Plus

1. A commercially mined and packaged soil conditioner containing 40 percent organic matter, 40 percent Carbon, and 40 percent humic acids. Manufactured by Tri- C Enterprises, Chino, CA, (800) 927-3311.

C. Agricultural Gypsum

1. A commercially processed and packaged product with a minimum 90 percent Calcium Sulfate dihydrate ($CaSO_4 2H_2O$) and minimum 14 percent Sulfur (S). Gypsum shall be free flowing, fine granular form with 100 percent passing a 10 mesh screen. Product shall be environmentally safe and produced specifically for agricultural or landscape use.

D. Granular Fertilizer

1. Fertilizer shall be a commercial grade product, uniform and homogenous in composition, dust free, dry, and free flowing granular or pelletized form suitable for application with approved equipment, and shall contain the following minimum available percentages by weight of plant food:

Nitrogen	6.00%
Phosphorus	20.00%
Potassium	20.00%

2. Fertilizer shall be delivered to the site in original unopened containers bearing the manufacturer’s guaranteed analysis. Wet or caked fertilizer is not acceptable.

E. EZ Wet 26% Sprayable Soil Penetrant

1. A commercially produced organic bio-degradable neutral PH soil penetrant packaged in liquid form.

F. Refer to section 32 93 00 Plants for additional soil amendments used at planting pits including fertilizer tablets and mycorrhizal incoculum.

2.02 PRE-EMERGENT HERBICIDES

A. Pre- emergent herbicides shall be a wettable powder or granule type product, suitable for use with the groundcovers specified on the plans and suitable for use with the on-site soil.

B. Herbicides shall be selected for controlling the weeds indigenous to the site.

C. Herbicides shall comply with requirements of local and state agencies having jurisdiction over the project.

2.03 AMENDMENTS FOR BID

A. Amendments are for bidding purposes only. Quantity and procedure adjustments will be made per the Agricultural Soil Analysis report and recommendations. Contractor shall send the report to the Landscape Architect for review. Adjustments by the Landscape Architect will issued in writing. The following amendments and quantities are to be used as the basis for bids:

1. Soil amendments for planting areas with gradient less than 2:1 in slope. Quantity per 1,000 square feet:

4 cu. yds.	Organic soil conditioner
10 lbs.	Humate Plus
5 lbs.	Granular fertilizer
25 lbs.	Agricultural gypsum
8 oz.	EZ Wet (in 12 gallons of water)

2. Soil amendments for 2:1 slopes. Quantities per 1000 square feet:

1/3 cu. yds.	Organic soil conditioner
8 oz	EZ Wet soil penetrant

3. Refer to Section 32 93 00 Plants for bid amendments for plant pit backfill mix.

2.04 IMPORTED TOPSOIL

A. Imported soil shall be Class A topsoil as defined under Section 212-1.1.2 of the Standard Specifications. Provide soil free of subsoil, brush, objectionable weeds, seeds, rocks, organic or inorganic debris, silt, and clay, toxic substance, organic or inorganic; soil sterilants; salts; and soil removed from road bed excavations.

B. The Contractor shall furnish upon the request of the Landscape Architect a soils report made from the intended import by an approved agricultural lab. The report shall include pH, N-P-K, SAR, minerals, micro-nutrients, ECe, boron levels, soil particle size, and textural elevation. Soil imported to site and found to be unsuitable by the Landscape Architect shall be removed from the site and replaced with an approved soil at the Contractor's expense. The Contractor shall pay expenses for soil testing of import materials.

2.05 LIGHT WEIGHT SOIL (Check plans and edit)

A. Lite Top ® custom growing media mix manufactured by American Hydrotech, Inc. (Use w/ Hydrotech waterproofing system only)

B. Specifications for custom growing media mix:

Grain Size	Semi-Intensive/Lawn*	Intensive*
Clay Fraction	<2%	0-2%
Passing #200 sieve	3-6%	5-15%
Passing #60 sieve	10-30%	10-25%
Passing #18 sieve	20-50%	20-50%
Passing 1/8-inch sieve	90-100%	90-100%
Density		
Application Density	0.8 - 1.2 g/cm3 (50 lbs – 75lbs/ cf)	0.7 - 1.1 g/cm3 (44 lbs – 68 lbs/cf)
Saturated Density	1.0 - 1.5 g/cm3 (62 lbs - 93 lbs/cf)	1.0 - 1.5 g/cm3 (62 lbs - 93 lbs/cf)
Dry Density	0.7 -1.1 g/cm3 (44 lbs - 68 lbs/cf)	0.6 -1.1 g/cm3 (38 lbs - 68 lbs/cf)
Water & Air Management (% vol.)		
saturated water capacity	>35 %	>40 %
saturated air content	>15 %	>10 %
Saturated Hydraulic Conductivity		
	>1.2 mm/min (>2.8 in/hr)	>0.5 mm/min (>1.0 in/hr)
pH, Lime, and Salt Content		
pH (saturated paste)	6.0 - 7.5	5.5 - 7.5
carbonate content	<25 g/l	<25 g/l
salts content (water extract)	(<2.0 mmhos/cm)	<3.0 g/l <3.0 g/l (2.0 mmhos/cm)
Organics		
OM content	3 – 6 mass %	6 – 12 mass %
C/N ratio	<20	<20
Nutrients** (plant available)		
nitrogen (NO3)	3 – 15	3 – 15
phosphorus	1 – 7	1 – 7
potassium	6 – 15	6 – 15

Calcium	19 – 65	19 – 65
magnesium	3 – 15	3 – 15
CEC Capacity	>5 cmol/kg	>6 cmol/kg

Compost Fraction

1. Meet or exceed USEPA Class A standard, 40 CFR 503.13, Tables 1 & 3 (chemical contaminants) and 40 CFR 503.32(a) (pathogens) and/or be permitted in the state of origin to produce Class A material.
2. Meet US Compost Council STA/TMECC criteria or equal for Class I or II stable, mature product.

   * Values may be adjusted due to availability of local materials or special project conditions related to plant selection and/or environmental conditions.

   ** Nutrients shall be adjusted with appropriate slow-release fertilizer with micronutrient additions if below lower target range.
3. Expanded lightweight aggregate for use as fill material for drainage/water retention component as required.
   a. American Hydrotech, Inc., LiteTop Lightweight Aggregate
   b. 3/8” - 3/4” (9.5 - 20 mm) expanded, lightweight aggregate

2.06 LIGHT WEIGHT SOIL (Check plans and edit)

A. A blended soil of the following composition, used to backfill planters and pots. A-1-2000 Lightweight Soil, a lightweight soil mixture, available from A-1 Soils, San Diego, CA (858) 547-2144, or an acceptable equal. (Projects in San Diego County only, find local source for projects outside of county)

pH	6.8 – 7.2
Ece	1.7 – 2.0 mmhos/cm
Bulk Density (at saturation)	76 lbs./ cu.ft.

B. Soil shall be premixed by machine blender prior to delivery to the site.

C. The mix shall contain a long-lasting form of iron and non-ionic wetting agent.

2.07 STRUCTURAL SOIL (Check plans and edit, this is not a soil supplier, use recipe and products)

A. Shall be CU-structural soil manufactured by Amereq, Inc., New York, NY, (800) 832-8788 or an acceptable equal.

B. Shall be composed of the following materials by weight:

Crushed stone – granite or limestone – 100 lbs., graded from ¾” – 1½” highly angular, no fines.

Clay loam – 20 lbs.

Hydrogel – 0.03 lbs.

C. Total moisture content at mixing shall be 10% AASHTO T-99 optimum moisture.

D. Mixing may be done on-site on a paved surface as follows: spread stone in a layer; dry hydrogel evenly spread; screened moist loam. Turn and mix entire pile until uniformly blended.

PART 3 - EXECUTION

3.01 GENERAL

A. Planting operations shall not commence until completion of construction work, grading, soil preparation, weed control, and sprinkler installation.
B. Irrigation system shall be fully operational including automatic controller, before commencing planting operations.

3.02 AGRICULTURAL SOIL TESTING

A. The Contractor is responsible for correction of soil pH, nutrient levels, and chemical balance until final acceptance by the Owner.

B. Soil samples shall be taken from three separate locations and submitted to a soil analysis laboratory. Separate results shall be provided for each of the 3 samples, with each having its own individual letter or number to identify it. Include with the samples, a description of the proposed planting, a reduced scale site plan showing where each sample was taken with its letter or number shown, and the type of organic amendment to be used.

C. The analysis report shall include pH, N-P-K, SAR, ECe, boron levels, percolation rates, and soil particle size and textural evaluation. The report shall include recommendations for amendments, fertilizers, application rates, and procedures for conditioning the soil.

D. The Landscape Architect shall review the analysis reports prior to ordering amendments.

E. A pre-approved laboratory offering soil testing services is: Soil & Plant Laboratories, 1101 S. Winchester Blvd. Suite G-173, San Jose, CA 95128.

3.03 PERCOLATION TESTS

A. Test for percolation prior to sending soil sample to analysis laboratory.

B. Auger twenty (20) holes four (4) feet deep at locations determined by the Landscape Architect. Fill holes with water to one half the depth of each hole. Let drain.

C. Once holes have drained, fill holes again to one half the depth of each hole.

D. Record drop in water level at thirty (30) minute intervals for maximum of six hours (6) or until the water has percolated.

E. When the percolation rate is one half (½) inch per hour or less, notify the Landscape Architect. Alternative will be requested with cost for improving percolation and drainage of the planting area.

3.04 TOPSOIL PLACEMENT

A. Refer to the Drawings for areas to receive, and the depth of topsoil.

B. The topsoil shall be placed in maximum 6 inch lifts with the first lift placed and tilled into the top 6 inches of the existing soil. Prior to placing each lift, the area shall be thoroughly moistened but not saturated. Each succeeding lift shall be placed and compacted to until the finished grades indicated on the drawings are achieved.

C. The finished grades shall be free of depressions, humps, rocks, debris, air pockets, and ready to receive soil amendments.

3.05 INITIAL WEED ABATEMENT

A. In areas designated to receive amendments, irrigate normally for two weeks to germinate weed seeds. Apply broad spectrum non-selective herbicide per manufacturer's instructions.

B. Repeat the application of herbicide when weeds remain or new weeds appear one (1) week after initial application.

C. Clear and grub dead weeds and organic debris prior to commencing topsoil placement or soil preparation.

3.06 SOIL PREPARATION

A. Manually remove weeks as described above in Initial Weed Abatement.

B. In planting areas with a gradient less than 2:1, mechanically rip or hand till the area in two directions to a minimum depth of 6 inches.

C. Remove rock and hard clods 3 inches in diameter and larger, remove construction debris, roots, stumps, trash and other deleterious materials from the top 6 inches of soil.

D. Apply soil amendments, fertilizers, and conditioners evenly and at the specified application rates.

E. Rototill top 6 inches of soil to a loose and friable consistency.

F. Fine grade to contours and spot elevations shown on Drawings.

3.07 LANDSCAPE FINISH GRADING

A. Finish grading shall establish flow lines and gradients for uniform water drainage. Flow lines and gradients shall be established from the high point to the drainage structure or outfall area. Finished grades shall be of uniform slope and grade between points of fixed elevations or elevation controls. Flow lines shall have a minimum 2 percent gradient from highpoint to inlet or outfall area. Contractor shall notify the Landscape Architect when grades or flow lines conflict with other construction or when positive drainage is not achievable and request a resolution. Failure to report the conflicts prior to planting shall result in removing the plant material, re-grading to correct the discrepancy and replacement of the plant material at no cost to the Owner.

B. Unless noted otherwise, finished grades along walkways and curbs shall maintain a constant relationship between the finished paving and finished grade. Finished grade for lawn areas shall be 1 inch below sidewalks and curbs. Finished grades for mulch or ground cover areas shall be 2 inches below sidewalks and curbs.

C. Finished grades shall be floated to a uniform surface free of irregular dips, humps, valleys or ridges. Refer to Section 02925 for additional requirements for preparing lawn areas.

D. The finished grades shall maintain drainage away from buildings, structures, walls, paving, and towards drain inlets or outfall areas. Flow lines shall be established to drain water from behind walls and towards drain structures.

E. When no compaction rate for planting areas is specified geotechnical report or when no report is available, compact turf and groundcover areas a minimum 85 percent to a maximum 90 percent relative density or as shown on drawings or specified elsewhere.

3.08 SECOND WEED CONTROL

A. After completion of Soil Preparation and finish grading commence irrigation of all plant beds, lawns and lawn repair areas. Inspect planting areas, 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 weds. If weeds are present, apply a second application of broad spectrum herbicide to affected areas and delay planting until all weeds are dead.

3.09 LIGHT WEIGHT SOIL INSTALLATION (Hydrotech soil, check and edit)

A. LiteTop soil shall be placed carefully to avoid damage or displacement of other materials such as walls, paving, drainage components, filter fabric, and roofing membrane.

B. LiteTop soil shall be placed to within 1 inch greater than final grade or to a depth of no greater than 8 inches and compacted. For finished grade less than 8 inches only one round of compaction shall be preformed and remaining soil loosely placed such that top of soil exceeds finished grade by 1 inch. For finished grades greater than 8 inches, place soil at no greater than 6 inches and repeat procedure until soil has been compacted within 1 inch of finished grade.

C. Compaction shall be preformed with a 200-300 lb. Landscape roller or lightly compacted with a hand held mechanical compactor to achieve a 50 – 60% compaction as determined by ASTM D1557.

D. After compaction remaining soil shall be placed at 1 inch greater than final grade and thoroughly watered or jetted over entire area. Low settled areas shall be filled with additional soil and re-wet to achieve uniform prescribed final grade.

3.10 LIGHT WEIGHT SOIL INSTALLATION (Check and edit)

A. Refer to Drawings and details for depth and planter and receiving lightweight soil.

B. In areas designated to receive lightweight soil, install in 6 inch lifts and compact to 90% Proctor Density AASHTO T-99.

3.11 STRUCTURAL SOIL INSTALLATION (Check and edit)

A. Refer to Drawings and details for depth and areas receiving structural soil.

B. Place and compact to 95% Proctor Density AASHTO T-99, in 6 inch lifts

PART 4 - PAYMENT

Payment for the work of this section shall be included in the price bid for "Soil Preparation - Complete" and no additional compensation will be considered.

END OF SECTION

SECTION 32-92-20 NATIVE SEEDING

PART 1- GENERAL

1.01 RELATED DOCUMENTS

A. Contract Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes requirements for the installation of native grass seed and specified mulch, straw matting if applicable, and maintenance of the seeded areas is achieved as outlined in Article 1.10, “Maintenance”.

B. Related Sections:
   1. Section 32 8400 - Landscape Irrigation
   2. Section 32 9113 – Soil Preparation
   3. Section 32 9223 – Sodding
   4. Section 32 9300 – Plants

1.03 DEFINITIONS

A. Finish Grade: Elevation of finished surface of planting soil.

B. Herbicide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, herbicide, defoliant, or desiccant.

C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

D. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

E. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil is placed.

F. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

G. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.

H. Weeds: Including but not limited to Scotch Thistle, Perennial Pepperwood, Yellowflag Iris, Knapweed, Poision Hemlock, White Top, Puncture Vine, Dalmation Toadflax, Orange Hawkweed, Cheat Grass.

1.04 REFERENCES

A. Comply with U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act and be equal to or better in quality than the standards for Certified Seed.

B. Oregon Department of Transportation (ODOT) – Standards Specifications for Road and Bridge Construction.

1.05 SUBMITTALS

C. Submit items identified following the procedures outlined under Section 01 33 00 Submittals. Partial or incomplete submittals are not acceptable an will be returned without a review.

D. Product Data: For each product indicated.

E. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.

F. Qualification Data: For qualified landscape Installer.

G. Maintenance Instructions: Recommended procedures for maintenance of turf and dryland grasses during a calendar year. Submit before expiration of required initial maintenance periods.

H. The Landscape Architect reserves the right to reject the seed at any time prior to acceptance and that fails to meet specification requirements. Promptly remove rejected seed from the site.

1.06 QUALITY CONTROL

A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful turf and dryland grass establishment.

B. Soil Analysis: Section 32 9113 Soil Preparation.

C. Preinstallation Conference: Conduct conference at Project site to coordinate the process with other trades, to coordinate equipment movement within planting areas and to avoid soil compaction, to review proposed methods of installation, performance criteria, and maintenance procedures. Review underground utility location maps and plans. This meeting shall be coordinated by the Contractor and comply with requirements in Division 01.

D. Standards: All materials and methods used during this portion of the work shall meet or exceed applicable federal, state, county, and local laws and regulations. All seed shall be free from insects and disease. Species shall be true to their scientific name as specified.

E. Materials: The Contractor shall submit to the Landscape Architect for approval a complete list of all materials to be used during this portion of the work prior to delivery of any materials to the site. Include complete data on source, amount and quality. This submittal shall in no way be construed as permitting substitution for specific items described on the plans or in these specifications unless approved in writing by the Landscape Architect.

F. Plant species substitutions shall be submitted to and approved by the Landscape Architect prior to construction.

G. All native grass species shall be supplied as pure live seed. Submit to the Landscape Architect lab germination test results for all grass species. Submit an affidavit that describes estimated purity for all forb species that are not typically tested.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Seed and other Packaged Materials: Deliver seed and packaged materials in original unopened containers bearing weight, analysis and name of supplier. Store in a manner to prevent the materials from becoming wet and deteriorating.

B. Fertilizer: Deliver organic or chemical fertilizer to site in original unopened container bearing manufacturer’s guaranteed chemical analysis, name, trade name, trademark and conformance to state law, and bearing name and warranty of producer.

C. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.

2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.

3. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

4. Seed: Deliver seed materials in original unopened containers, showing bearing weight, analysis and name of supplier. Store in a manner to prevent the materials from wetting and deterioration.

5. Fertilizer: Deliver inorganic or chemical fertilizer to site in original unopened container bearing manufacturer's guaranteed chemical analysis, name, trade name, trademark and conformance to state law, and bearing name and warranty of producer.

D. Material will be inspected upon arrival at project site. Landscape Architect will reject any opened or unacceptable materials as described above.

E. Immediately remove unacceptable material from job site.

1.08 PROJECT/SITE CONDITIONS

A. Work scheduling: Proceed with and complete landscape work as rapidly as portions of the site become available, working within the specified planting season and approved schedule.

B. Planting Restrictions: Planting is preferred in spring but may be performed through September. Coordinate seeding with initial maintenance periods to provide required maintenance from date of Substantial Completion.

C. Vehicular accessibility on site shall be as directed by Landscape Architect. Repair damage to prepared topsoil and existing surfaces, caused by vehicular access and movement during work under this section, to original condition at no additional cost to the City.

D. Do not drill or sow seed during windy, rainy weather or when ground is frozen or otherwise unable to be tilled.

E. Seeding Season: Seeding shall occur between April 1st and October 1st.

F. Existing conditions:

1. Existing Plants: Install seed only after all irrigation items have been installed and accepted by the Landscape Architect.
2. Utilities: Determine location of underground utilities. Perform work in a manner to avoid possible damage. Hand excavate, as required.
3. Excavation: Maintain grade stakes set by others until removal is mutually agreed upon by parties concerned. When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, noxious materials or obstructions, notify Landscape Architect before planting.
4. If weeds are present on site, treat with herbicide prior to preparing soil for installing seed as specified below.

G. Coordination:

1. Coordinate with construction of utilities on site. Do not begin placing topsoil until underground work is completed in the area.

2. Coordinate with seeding and landscape Contractor(s) approved schedule. Limit construction access to areas where topsoil has been placed if placement is completed more than3.three (3) days prior to commencement of landscaping in the area. Limit fine grading to areas that can be prepared for planting within twenty-four (24) hours after fine grading.
3. Coordinate with Contractors work requiring access to site over seeded areas.
4. Coordinate with installation of underground irrigation system.

1.09 WARRANTY

A. Warranty for Native Seed Areas: Warrant areas in seed to be in a healthy, vigorous growing condition, and for consistency and completion of coverage for a period of two (2) years from date of substantial acceptance as a full stand of grass. After seed germination, re-seed any spots where seed has not germinated within the total seeded area. Continue this procedure until a successful stand of grass is growing and accepted by the Landscape Architect.
   1. During the original warranty period, reseed at once with comparable blend/mix, those areas that have failed to achieve a stand of grass or which in the Landscape Architect's opinion are unhealthy.
   2. Reseeding will not be allowed in any season considered unfavorable for seeding by the Landscape Architect.
   3. Reseed in a manner to achieve quality as originally specified.

1.010 MAINTENANCE

A. General: The maintenance period shall begin immediately after each area is seeded and continue until Final Acceptance of entire project. Final Acceptance of seeded areas will not be given until Landscape Architect is satisfied with germination and a full stand of grass, in a vigorous growing condition, with consistent and complete coverage. During this time, be responsible for watering, mowing, spraying, weeding, fertilizing and all related work as necessary to ensure that seeded areas are in a vigorous growing condition. Provide all supervision, labor, material and equipment to develop and maintain seeded areas. After Final Acceptance, maintenance shall become the responsibility of the Owner.

B. Non-irrigated Areas: The seeded areas shall be accepted on the basis of showing evidence of growth of specified seed material over the entire seeded area within three (3) months of seeding during weather conditions that are favorable for seed germination and growth.

C. Mowing and Trimming: Mow native grasses after the grass has gone to seed, cutting back to not less than four-inches (4") in height. Remove clippings from adjacent pavement or irrigated planting areas and remove from site.

D. Fertilizing: Within forty-five (45) days of seeding and every sixty (60) days thereafter until final acceptance, apply specified fertilizer to maintain optimal turf vigor or per the direction of the Landscape Architect.

E. Weed Control: Control annual weeds by mowing prior to seed development. Control perennial weeds through use of selective herbicides approved by the Landscape Architect only after grass stand has matured sufficiently that it will not be harmed by application of herbicides. Any plant material that is harmed due to over spraying, wind drift or improper application shall be replaced by the Contractor at no cost to the City.

F. Insect and Disease Control: As needed, apply insecticide and fungicide approved by the Landscape Architect.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Soil Preparation: See Section 32 9113 – Soil Preparation.

B. General:
   1. All seed mixes shall be obtained from Sunmark Seeds, 12775 NE Marx St., Building 14, Portland, OR 97230, phone 503-241-7333.
   2. All seed shall be furnished in bags or containers clearly labeled to show the name and address of the supplier, the seed name, the lot number, net weight, origin, the percent of weed seed content, the guaranteed percentage of purity and germination, pounds of pure live seed (PLS) of each seed species, and the total pounds of PLS in the container. All brands shall be free from Oregon prohibited noxious weed. The Contractor shall furnish to the Landscape Architect a signed statement certifying that the seed is from a lot that has been tested by a recognized laboratory for seed testing within six months prior to the date of delivery. Seed that has become wet, moldy or damaged in transit or in storage will not be acceptable.
   3. Computation for quantity of seed required on the project is based on Pure Live Seed (PLS).

C. Seed Mixes: As shown on the Drawings

D. Soil Amendment: Per section 32 9113

E. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber; nontoxic and free of plant growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.

F. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant growth or germination inhibitors.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine areas to be planted for compliance with requirements and other conditions affecting performance.
   1. Verify that finish grades are consistent with the slopes and grades indicated on the Contract Drawings.
   2. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
   3. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
   4. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
   5. Uniformly moisten excessively dry soil that is not workable, and which is too dusty.

B. Proceed with installation only after unsatisfactory conditions have been corrected and approved by the Landscape Architect.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by landscape architect and replace with new planting soil.

D. Acceptance: Beginning of installation means acceptance of existing conditions by the Contractor.

3.02 PROTECTION

A. Protect existing utilities, paving and other facilities from damage caused by seeding operations, Contractor shall repair any damage at no additional cost to the Owner.

B. Restrict vehicular and pedestrian traffic from seeded areas until grass is established.

C. Locate, protect and maintain the irrigation system during seeding operations. Repair irrigation system components damaged during seeding operations shall be replaced or repaired at Contractor's expense.

D. Erosion Control: Take measures and furnish equipment and labor necessary to control and prevent soil erosion, blowing soil and accumulation of wind-deposited materials on the site throughout the duration of work.

3.03 PREPARATION

A. Work notification: Notify the Landscape Architect at least seven (7) working days prior to start of seeding operations.

B. Utilize equipment having low unit pressure ground contact within planting areas.

C. Limit preparation to areas that can be seeded within 24 hours of preparation.

D. The Contractor shall prepare the soil of all areas to be seeded with Prairie Mix in accordance with the requirements of Division 32 Section "Soil Preparation". When completed, the soil shall be firmed by float dragging, followed by steel raking, to provide for the proper seeded surface. The seed bed shall be totally free from rock or clay clods over 1-inch in diameter.

E. Fine Grading: Maintain positive drainage, prevent ponding and direct run-off into catch basins, drainage structures, etc., and provide well-contoured surface prior to proceeding. A firm weed-free seed bed is required. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations. Obtain Landscape Architect's approval of finished grade prior to proceeding with seeding operations.

1. Protect adjacent and adjoining areas from hydromulching overspray.

2. Protect grade stakes set by others until directed to remove them.

F. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

G. Verify that all areas are graded to drain at a minimum of two percent (2%) or as indicated on the Contract Drawings. Verify that subsurface drainage system and drain inlets if any, are operative.

H. Verify that irrigation system is operable and provides adequate coverage prior to planting.

3.04 INSTALLATION

A. Seed within twenty-four (24) hours after preparation of seed bed. Seeding at other times may only be done if approved by the Landscape Architect.

B. Areas outside Contract Limits disturbed as a result of construction operations shall be seeded at Contractor's expense.

C. Hydroseeding: Mix specified seed and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.

1. Mix slurry wit fiber-mulch manufacture's recommended tackifier.
2. Spray-apply slurry uniformly to all areas to be seeded in a two-step process. Apply first slurry coat at a rate so that mulch component is deposited at not less than 1500-lb/acre

dry weight, and seed component is deposited at not less than the specified seed-sowing rate. Apply slurry cover coat of fiber mulch at a rate of 1500-lb/acre.

D. Areas not properly hydroseeded, or any damage that may occur during construction is the responsibility of the Contractor and shall be repaired and re-seeded in an acceptable manner at the Contractor's expense. Hydroseeding removed by wind, rain or other causes prior to acceptance shall be re-established by the Contractor at his own expense.

E. Contractor shall remove all hydroseeding from any surface area not specified for seeding, including but not limited to plant materials, fences, paved areas, signs, mulch beds, irrigation components and all other objects as directed by the Landscape Architect.

3.05 DRYLAND GRASS MAINTENANCE

A. Maintain and establish dryland grass seed areas by weeding, mowing, trimming, replanting, watering and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a full coverage stand of grass. Provide materials and installation the same as those used in the original installation.

1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and meadow damaged or lost in areas of subsidence.
2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
3. Apply treatments as required to keep meadow and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of herbicides and reduce hazards.

B. Watering: Contractor shall water dryland seeded areas to obtain establishment of an acceptable grass stand, and to supplement natural moisture levels during dry periods.

1. Water dryland grasses with fine spray at a minimum rate of one-half-inch (1/2") per week for six (6) weeks after planting unless rainfall precipitation is adequate.
2. Do not over-water in a manner which kills drought-tolerant components of the seed mix.
3. Contractor is responsible for providing all water and equipment necessary.

C. Mowing: Allow to grow to a minimum height of twelve-inches (12") prior to mowing. Cut no more than four-inches (4") at a cutting. Monitor weed growth and mow to prevent seed distribution. Mow monthly during the first season.

1. Year One: Mow the planting area 2-4 times during the early growing season to a height of six-inches (6") to eight-inches (8"). Mowing prior to or when non-native and weedy species are flowering to prevent seed-set. Control undesirable plant species by hand-pulling prior to the development and maturation of the plant. Hand-removal shall include the removal of all above-ground and below-ground stems, roots and flower masses prior to the development of seed. If necessary, Round-up herbicide may be selectively applied by a licensed applicator trained in plant identification at no additional cost to the City. Obtain Landscape Architect's approval prior to applying herbicide. Apply per manufacturer's instructions.
2. Year Two, or longer period as arranged with Landscape Architect: Control undesirable plant species as necessary by mowing, hand-pulling, selective herbicide application, and/or prescribed burning.
3. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
4. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of herbicides and reduce hazards.

3.06 SATISFACTORY DRYLAND GRASSES

A. Dryland grass seed installations shall be minimally established to meet the following criteria by Substantial Completion as determined by Landscape Architect:

1. Within three (3) months, total vegetation cover in all zones seeded with cover crop shall exceed seventy percent (70%) by aerial cover. Dryland grass shall be free of weeds, foreign grasses, disease and harmful insects.
2. By the end of the first full growing season after seeding, total vegetation cover including cover crop shall exceed ninety percent (90%) by aerial cover and ten percent (10%) of all species present shall be native.
3. By the end of the first full growing season, seedling from 20% of planted forb species shall be present.
4. At any time during the contract period no more than ten percent (10%) by aerial cover of the seeded area should be dominated by aggressive exotic species
5. Until final acceptance seeded areas that fail after having been replaced previously, shall be replaced until it meets establishment as required above. Replacement materials shall be identical to those originally specified. Provide seed tags to the Landscape Architect for verification.
6. Remedial action: If seeded areas greater than ten (10) square feet fail to meet the terms of the guarantee shown above, the Landscape Contractor will develop and submit to the Owner's Representative a remedial action plan that takes into consideration the site goals and specific deficiencies causing the remedial action. Contractor will implement the remedial action plan and submit a report that describes the remedial action taken. If remedial seeding or planting is required, Contractor will not be required to perform additional remedial seeding or planting in the same area for a minimum of two growing seasons. After two growing seasons following the remedial planting, the performance criteria must be met for the second growing season or additional remedial action must be taken. This guarantee remains in effect until all zones meet the third growing season criteria.
7. Seeded areas will not be accepted in parts. Each time any portion or section of the entire seeded area requires replacement or remedial action, the maintenance period shall extend until all seeded areas meet the minimum establishment requirements stated above.
8. All expense incurred including repairs from vandalism for the replacement and or establishment of the seed areas are the responsibility of the Contractor.
9. If seeded in the fall, review for establishment shall be no later than June 15 of the following year.

3.07 CLEANING

A. Perform cleaning during installation of the work and upon completion of the work. Remove from all excess materials, debris and equipment from site. Repair any damage resulting from seeding operations.

B. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.

C. Remove non-degradable erosion-control measures after grass establishment period.

END OF SECTION

SECTION 32-92-23 SODDING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The General Conditions of the contract apply to the work of this section the same as though written herein.

1.02 SCOPE OF WORK

A. Furnish labor, materials, and equipment to provide, and install, and maintain soil preparation, headers, finish grading, and planting described herein and upon the drawings.

1.03 RELATED SECTIONS

A. Section 32 84 00 – Planting Irrigation

B. Section 32 91 13 – Soil Preparation

C. Section 32 92 19 – Seeding

D. Section 32 93 00 – Plants

E. Section 32 01 90 – 90-Day Establishment Period

1.04 REFERENCES

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference:

1. American Standard for Nursery Stock
2. American National Standards Institute (ANSI)

1.05 SUBMITTALS

A. Submit items identified following the procedures outlined under Section 01 33 00 Submittals. Partial or incomplete submittals are not acceptable an will be returned without a review.

B. Submit descriptive literature and specifications for the following:

1. Sod Type – including brand name, grower/ supplier, and installation instructions.
2. Fertilizer – pre-plant fertilizer as recommended by the sod grower.

C. When called for by local governing jurisdictions, submit copies of inspections, certificates, and produc testing results.

D. Submit photocopies of Landscape Industry Certified Technician certificate for the foremen overseeing the work on the project. Where no CLT certificate is available, submit a resume of the foremen on company letterhead outlining the foremen's experience with projects of similar type and size.

E. Substitutions: For materials that differ from a specified brand or product, submit product literature and specifications. Follow provision outlined under Section 01 25 00 Substitutions.

1.06 QUALIFICATIONS AND EXPERIENCE

A. The Contractor shall employ only Landscape Industry Certified Technician with the Oregon Landscape Contractors Association (OLCA), as foremen for sod installation work.

1.07 RESPONSIBILITIES

A. The Contractor shall be responsible for the protection of the work, and for public and private property adjacent to the work, and shall exercise due caution to avoid damage to such property. The work shall be protected and maintained throughout the contract period, including during suspension of work, and until final acceptance of the work. Contractor shall repair or replace damaged improvements including damages from acts of vandalism, theft, and graffiti removal. Repairs or replacements shall be at least equal to original condition of the improvements, and shall match in finish and dimension.

B. Prior to work of this Section, verify that previously installed work is complete to the point where this installation may properly commence. Verify that work of this Section may be installed in accordance with the design, pertinent codes, regulations, and portions of the referenced standards.

C. In the event of discrepancy, immediately notify the Architect.

D. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved.

PART 2 - PRODUCTS

2.01 SOD

A. Sod shall be “Classic Blend”, available from McPheeter’s, Bend, OR, (541) 546-9081. Contractor shall verify with the supplier, that the sod type and quantity will be available at time of installation. Substitution will not be considered after acceptance of submittals.

B. Sod shall be machine cut at a uniform soil thickness of 5/8 inch plus or minus 1/4 inch. Measurements for thickness shall exclude top growth and thatch. Individual pieces of sod shall be cut to the supplier's standard width and length. Maximum allowable deviation from standard width and lengths shall be 2 percent. Broken rolls or slabs and torn or uneven ends will not be acceptable. Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically from a firm grasp on the upper 10 percent of the section.

C. Sod shall be harvested, delivered and installed within a period of 24 hours, unless a suitable preservation method is approved prior to delivery. Sod not installed within this period shall be reviewed prior to installation and accepted by the Architect. Sod shall not be harvested or transplanted when moisture content may adversely affect handling and installation.

2.02 SOIL AMENDMENTS AND CONDITIONERS

A. Refer to Section 32 91 13 for specification of soil amendments and conditioners.

2.03 PRE-PLANT FERTILIZER

A. Fertilizer shall be an organic, dust free granular type product as recommended by the sod supplier.

PART 3 - EXECUTION

3.01 GENERAL

A. Planting operations shall not commence until completion of construction work, grading, soil preparation, weed control, and sprinkler installation.

B. Irrigation system shall be fully operational including automatic controller, before commencing planting operations.

C. Order sod to be cut and delivered only after finished grading and soil preparation have been accepted by the Architect.

3.02 INSTALLATION

A. Prepare sod bed per Section 32 91 13 Soil Preparation.

B. Smooth sod bed with a water-filled roller to eradicate air pockets of soft areas. Level and fine grade areas of depression and roll to firm up the soil.

C. Water thoroughly to moisten soil to a minimum six (6) inches depth. Check area for settling and low areas, re-grade and re-compact soil where settling occurs. Completed sod beds shall be reviewed by the Architect prior to installing sod.

D. Prior to laying sod, broadcast fertilizer recommended by the grower at 2 pounds per 1,000 square feet and lightly rake into top ½ inch of finished grade.

E. Unroll sod in same direction each time. Sod shall be laid in a straight line and in a staggered pattern, free of gaps or voids between rows. Ends shall be slightly tucked under and butted tight against the previous roll to provide a seamless appearance. Cut rolls as necessary to fit, with no lengths shorter than 18 inches.

F. Where installing on slopes, begin sod along the toe of slope and stagger each succeeding row. On slopes greater than 4:1, stake both ends of every roll with wooden pegs. When sod ends against and open bed of soil, mound the soil against the sod to keep the edges from drying.

G. Roll sodded areas with a roller weighing approximately 16 pounds per lineal inch to compact the soil around the roots and provide a smooth, even mowing surface.

H. Water sod with a fine mist spray within 30 minutes of laying. At the end of the day water thoroughly the entire area a depth of 4 inches. For the following 10 days, continue watering as needed to maintain a wet squishy texture. After the 10 days reduce the watering to a normal seasonal schedule.

I. Protect sod areas from pedestrian traffic, vehicular traffic, and other construction work until acceptance of the areas by the Architect. Replace damaged sod with the same type and from the same source at no additional cost to the Owner.

J. Dead, dying or damage sod shall be replaced at no additional cost to the Owner. Ruts, depressions, dips humps, skinned areas from mowing or other maintenance activities shall be repaired at no additional cost to the Owner.

END OF SECTION

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SECTION 32-93-00 PLANTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. The General Conditions of the contract apply to the work of this section the same as though written herein.

1.2 SCOPE OF WORK

A. Furnish labor, materials, and equipment to provide, and install and maintain trees, shrubs and groundcovers as described herein and upon the drawings.

1.3 RELATED SECTIONS

A. Section 32 8400 – Planting Irrigation

B. Section 32 9113 – Soil Preparation

C. Section 32 9320 – Native Seeding

D. Section 32 9223 – Sodding

E. Section 32 9413 – Landscape Edging

F. Section 32 0190 – 90-Day Establishment Period

1.4 REFERENCE AND STANDARDS

A. American Standard for Nursery Stock – ANSI Z60.1 – 2004

B. Sunset Western Garden Book – latest edition

1.5 SUBMITTALS

A. Submit product data under provisions of Section 013300 - Submittals. Partial or incomplete submittals are not acceptable and will be returned without a review.

B. Submit descriptive literature and specifications for the following:

1. Plant material list of trees, shrubs, and groundcovers to be furnished; include name of supplier or nursery source.
2. Weed abatement herbicides, product literature and specifications
3. Staking, tying, guying, and erosion control products
4. Fertilizers, conditioners, and backfill products
5. Organic and inorganic mulch

C. Contractor shall submit to the Architect within 30 days from notice to proceed photocopies of current CLT registration for foremen performing work on this project.

D. Submit photographs for each species of tree and for shrubs 15 gallon or larger. Photographs shall be of an individual plant with the size, shape and structure clearly defined. The plant material in the photo shall be a representative example of the entire quantity being supplied.

1.6 SUBSTITUTIONS

A. Submit product data under provisions of Section 013300 - Submittals. Partial or incomplete submittals are not acceptable and will be returned without a review.

B. Follow procedures as outline under Section 012500 Substitutions.

C. Products: When a brand name is called for on the Drawings or in these specifications, submit a letter describing the purpose for the substitution and include the product literature and specifications of the substitution.

D. Plant Material: When a plant species is shown to be unavailable in the size or quantity specified, a substitution will be considered provided the substitute materials are reviewed and accepted through the submittal process. Except for the variations so authorized, substitute plant materials shall conform to the requirements of these specifications. If the accepted substitute materials are of less value than those indicated or specified, the contract price will be adjusted in accordance with the provisions of the contract.

1.7 QUALIFICATIONS AND EXPERIENCE

A. The Contractor shall employ only Landscape Industry Certified technicians registered with the Oregon Landscape Contractors Association (OLCA), as foremen for planting installation work.

B. Sampling, testing, or inspection costs of material required by local or state agencies are to be borne by the Contractor, and copies of inspection certificates shall be furnished without additional charge.

1.8 RESPONSIBILITY

A. The Contractor shall be responsible for the protection of the work and the public and private property adjacent to the work and shall exercise due caution to avoid damage to such property. The work shall be protected and maintained throughout the contract period, including during suspension of work, and until final acceptance of the work. Contractor shall repair or replace damaged improvements including damages from acts of vandalism, theft, and graffiti removal. Repairs or replacements shall be at least equal to the original condition of the existing improvement and shall match in finish and dimension.

B. Prior to work of this Section, verify that previously installed work is complete to the point where this installation may properly commence. Verify that work of this Section may be installed in strict accordance with the original design, pertinent codes, regulations, and portions of the referenced standards.

C. In the event of discrepancy, immediately notify the Architect.

D. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved.

PART 2 - PRODUCTS

2.1 PLANT MATERIAL

A. Nomenclature: Plant species' names shall be per the latest edition of Sunset Western Garden Book. Botanical names shall take precedence over common names.

B. Plant material size and quality shall conform to standards established by American Standard For Nursery Stock, ANSI 260.1-2004, May 12, 2004 Edition.

C. Conditions: Plants shall be symmetrical, typical for variety and species, sound, healthy, vigorous, free from plant disease, insect pests or their eggs, excessive abrasions or other objectionable disfigurements, and shall have healthy, normal root systems, well-filling their containers, but not to the point of being root bound. Tree trunks shall be sturdy and well hardened-off. Plants shall not be pruned prior to delivery except as authorized by the Architect.

D. Ground cover plants shall have been grown in flats and shall remain in those flats until time for transplanting. At time of transplanting, the flat soil shall contain sufficient moisture so that the soil does not fall apart when lifting plants from flat. Each plant shall be planted with its proportionate amount of the flat soil in a manner that will ensure a minimum of disturbance to the root system. Plants shall be fully developed and shall be filling the flat.

E. In no case shall trees or shrubs be topped or pruned within 6 months prior to delivery. Plants shall be grown by nurseries that have been inspected by the State Department of Agriculture and have complied with its regulations.

F. Identification: Plants shall be of the variety and size shown on the drawings and shall conform to the requirements herein. One of each bundle or lot shall be tagged with plant name in accordance with recommendations of the American Association of Nurserymen.

G. Container plant inspection and rejection: root condition of container plants will be determined by the Architect through the removal of plant from the container of at least two plants but not more than 2 percent of the total number each species from each source.

H. Landscape Architect will inspect trees and shrubs upon delivery. Trees and shrubs will be rejected for the following characteristics:

1. Enlarged cankers or galls at the base of the trunk, just above the soil level.
2. Crooked trunks
3. Scars or trunk damage, broken branches, etc.
4. Asymmetrical branching
5. Rootbound condition
6. Trees that have been recently pruned
7. Trees not matching in size and shape of the representative photograph sample

I. Quantities: Quantities of plant material shall be furnished as needed to complete work as indicated on the drawings, including reseeding, replanting, and maintenance (replacements) during the contract period.

J. Sizes and Caliper: Minimum height (above soil level), width (average diameter of dripline), and caliper (trees only, measured at 30 inches above the soil level) of plant materials shall be as shown in expanded plant materials legend on planting detail sheet.

2.2 EROSION CONTROL MATTING

A. Slopes steeper than 2:1 shall be protected with jute erosion control matting, properly staked and tied at 4 feet on center, maximum.

2.3 TREE STAKES

A. Tree stakes shall be a minimum 2 inches in diameter by 10 feet long new treated lodge pole pine.

2.4 TREE TIES

A. Tree ties shall be "Cinch-Tie" as manufactured by V.I.T. Products, Escondido, CA (619) 480-6702, or approved equal.

B. 1 1/2 inch galvanized roofing nails to secure ties.

2.5 BACKFILL AMENDMENTS

A. Refer to Section 32 91 13 for specification of soil amendments and conditions.

2.6 IMPORT SOIL OR TOPSOIL

A. Refer to Section 32 91 13 for specification.

2.7 PLANT PIT BACKFILL MATERIAL

A. Backfill material for plant pits shall be a mixture as noted below or as indicated on drawings. The materials shall be thoroughly batch-mixed prior to placement so that they are evenly distributed and without clods or lumps. Backfill shall be so placed in the pits that the plant will be at its natural growing height after settlement. The following amendments and quantities shall be used as the basis for bids.

80 percent by volume	Excavated soil, free from rocks, etc.
20 percent by volume	Organic soil Amendment
5 pounds	Agricultural gypsum per cu. yd. of mix
8 pounds	Humate Plus per cu. yd. of mix
2 pounds	Granular Fertilizer per cu. yd. of mix

2.8 ORGANIC MULCH MATERIAL

A. Pre-approved mulch: Dark Hemlock Bark, available from High Desert Mulching, Bend, OR (541) 330-5558; or approved equal meeting the following requirements:

B. Wood chip mulch shall consist of 100 percent recycled above ground tree products. Mulch shall be nitrogen stabilized and shall contain no trash, hazardous waste, or toxic materials.

C. Mulch shall be ground and screened to 2 inch minus particle size.

2.9 PRE-EMERGENT HERBICIDE

A. Pre-emergent herbicides shall be wettable powder or granular type.

B. Select pre-emergent herbicide appropriate to site area, soil type, indigenous weeds to be controlled, and type of ground cover to be planted.

C. Follow manufacturer's precautions and label instructions. Comply with local jurisdictional restrictions and ordinances.

2.10 FERTILIZER TABLETS

A. Tablets shall be "Agriform" as manufactured by Sierra Industries.

B. Agriform 21 gram tablets.

C. Agriform 5 gram tablets.

2.11 MYCORRHIZAL INOCULUM

A. Shall be “Mycoapply” All Purpose Granular by Mycoorrhizal Applications Inc., Grants Pass, OR p541.476.3985

PART 3 EXECUTION

3.01 GENERAL

A. Planting operations shall not commence until completion of construction work, grading, soil preparation, weed control, and sprinkler installation.

B. Irrigation system shall be fully operational including automatic controller, before commencing planting operations.

3.02 SPACING OF PLANT MATERIAL

A. When plant materials are shown in rows, the total length of the area shall be verified, and the plants equally spaced within the area. When plant materials are shown in a random pattern, the material shall be equally spaced and placed to fill the area. Ground cover material shall be triangular or square spacing as indicated on the Drawings. When spacing is not shown, use triangular spacing.

B. Trees and specimen shrubs shall be located with a wood stake or flag. The locations shall be reviewed and accepted by the Architect prior to planting.

C. The work shown on the Drawings is schematic with trees, shrubs and groundcovers shown in their approximate locations. Contractor shall not locate any items where it is obvious that they are in direct permanent improvements, or pedestrian and vehicular safety considerations. Contractor shall not install plant materials in locations where the ultimate growth of the plant materials will damage or affect structures or impede pedestrian or vehicular circulation. Do not locate trees or taller shrubs in locations where they will block irrigation heads and prevent adequate coverage. Where called for, obtain approval of the landscape architect for placement of trees, shrubs, and other items of work.

D. Locate trees and taller shrubs 10 feet minimum away from rotor irrigation heads, 5 feet minimum from spray heads.

3.03 PLANT PITS AND PLANTING

A. Plant pits shall be dug with level bottoms to widths and depths as shown on the Drawings. Pits for trees shall be dug square. Fill pits with water and allow to drain. All tree pits must meet the drainage requirement set forth in Section 32 91 13, Part 3.03, whether the area of the tree planting was tested for percolation or not. Notify Architect of any tree pit that does not meet the percolation test standard.

B. Plant holes dug by auger method will be acceptable but shall have side walls roughened or squared with a shovel. Slick pit walls caused by auguring in too wet soil will not be accepted for planting.

C. Handling: no canned plant material shall be planted if the ball is broken or cracked either before or during the process of planting.

D. Setting: plants shall be set with top of root ball 1 inch above finish grade. Each plant shall be placed in center of plant pit.

E. Pit Backfilling

1. Build mound of compacted backfill wide enough in bottom of hole to support root ball.
2. Backfill pit with backfill mix half-way to finish grade and water thoroughly.
3. Place 21 gram plant tablets in plant pits, adhering to the following plant size schedule:
    a. 1 Gallon: 1 tablet
    b. 5 gallon: 2 tablets
    c. 15 gallon: 3 tablets
    d. 2” Cal.: 4 tablets
    e. 2.5” Cal.: 6 tablets
    f. 3” Cal.: 8 tablets
4. Backfill to finish grade. Backfill mix shall be tamped lightly, and a shallow basin formed at perimeter of root ball to hold enough water to saturate the root ball and backfill mix.
5. Water immediately to saturate entire root ball and backfill.
6. Remove watering basin prior to hydroseeding (in turf areas only).
7. Apply Granular Mycorrhizal Inoculum per manufacturers instruction, at the following schedule:
    - Liner / 4” pot: 1-2ml
    - 1 gallon: 1tsp
    - 5 gallon: 1tbs
    - 15 gallon: 3tbs.
    - 2” Cal.: ½ cup
    - 2.5” Cal.: 1 cup
    - 3” Cal.: 1 1/2 cups

F. Install tree root barriers, if called for on the plans, per details and Section 32 9453.

3.04 TREE STAKING

A. Stake trees as shown in details.

B. Tree and stakes shall be vertical and plumb in cases.

C. One gallon trees shall be planted with nursery stakes removed.

3.05 FLATTED GROUND COVER

A. Rooted cuttings shall be planted sufficiently deep to cover roots and spaced as specified in ground cover list on landscape plan.

B. Rooted cuttings shall not be allowed to dry out before or while being planted. Wilted plants shall not be accepted.

C. At time of planting ground cover plants, the earth around each plant shall be firmed sufficiently to force out air pockets.

D. Each ground cover plant shall be planted with a minimum of one (1) 5 gram 20-15-5 plant tablet adjacent to root zone.

3.06 APPLICATION OF PRE-EMERGENT HERBICIDE

A. Apply pre-emergent herbicide to shrub and planted groundcover areas only. Do not apply to hydroseeded areas. Strictly adhere to manufacturer's specifications for application rates and methods.

B. Apply pre-emergent only after planting operations have been completed so as to minimize disturbance of the chemical "barrier." Reapply where necessary to areas disturbed by planting or repair operations after initial application.

C. Pay careful attention to activation requirements, "watering-in", etc., per manufacturer's specifications and label instructions. Avoid excessive irrigation run-off that would move or wash away the pre-emergent "barrier" -- use repeat watering cycles and split watering times.

3.07 MULCHING

A. After, planting operations are complete and shrubs areas have been raked and dressed, mulch shrubs and ground cover areas with a 2 inch layer of organic mulch material.

B. Mulch layer should taper to zero at plant stem or tree trunk. Do not place mulch materials up against plant crown or trunk.

C. Mulch flatted ground cover areas prior to planting ground cover, if called for on the drawings.

3.08 PROTECTION

A. The Contractor shall carefully and continuously protect areas included in the contract, including lawn areas, plant material, supports, etc. until final acceptance of the work by the Owner or his representative.

3.10 CLEAN-UP

A. After planting operations are completed, Contractor shall remove trash, excess soil, empty plant containers, or other accumulated debris from the site at no extra cost to Owner. Contractor shall repair scars, ruts, or mars in area caused by work operations. Areas shall be left in a neat and orderly condition.

3.11 OBSERVATIONS

A. Contractor shall give forty-eight (48) hours notice and set appointment for reviews by the Architect.

B. Review by Architect shall be scheduled for the following operations:

1. Review of plant material after delivery to the site.
2. Tree and shrubs placement prior to digging holes.
3. Review of ground cover lines and header board prior to planting.
4. Start of establishment period/acceptance of installation.

C. Reviews shall be called for at the end of planting operations for the purpose of determining compliance with drawings and specifications, intent, workmanship, and clean-up. Contractor shall secure written verification of review data, any corrections required to work, and limits of reviewed area before beginning the described establishment work.

D. In the event the Contractor requests inspection of work, and said work is substantially incomplete, the Contractor shall be responsible for Architect's hourly charges and per diem costs.

3.12 GUARANTEE

A. Shrubs and ground covers shall be guaranteed as to growth and health for a period of 90 days after final acceptance by the Owner or his representative; 15 gallon and box sized trees shall be guaranteed for a period of 1 year after date of substantial completion.

B. Plants which die or lose more than 30 percent of their original leaves shall be replaced under this section.

C. The Contractor, within 14 days of written notification by the Owner, shall remove and replace guaranteed plant materials which for any reason fail to meet the requirements of the guarantee. Plants material replaced shall be guaranteed for the original period, starting from the date of replacement.

END OF SECTION

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SECTION 32-94-53 TREE ROOT BARRIERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General Conditions of the contract apply to the work of this section the same as though written herein.

1.2 SCOPE OF WORK

A. Furnish labor, materials, and equipment to provide, and install root barriers as described herein and upon the Drawings.

1.3 RELATED SECTIONS

A. Section 328400 – Planting Irrigation

B. Section 329300 – Plants

1.4 REFERENCES

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference:

1. American Society for Testing and Materials (ASTM)

1.5 SUBMITTALS

A. Submit items specified following procedures prescribed under Section 01 33 00 Submittals. Partial or incomplete submittals are not acceptable and will be returned without a review.

B. Submit description literature and specifications for the following: (check and edit)

1. Tree root barrier
2. Moisture barrier
3. Tree guard

C. Submit copies of Certified Landscape Technician (CLT) registration for foremen performing work on the project.

D. Submit a minimum of five (5) projects with root barrier installed by the Contractor.

1.6 QUALIFICATIONS AND EXPERIENCE

A. The Contractor shall employ only Certified Landscape Technicians (CLT) with the California Landscape Contractors Association (CLCA), as foremen for root barrier installation work.

B. The Contractor shall show proof that personnel have at least five (5) years experience with installation of root barriers.

1.7 RESPONSIBILITY

A. The Contractor shall be responsible for the protection of the work and for the public and private property adjacent to the work, and shall exercise due caution to avoid damage to such property. The work shall be protected and maintained throughout the contract period, including during suspension of work, and until final acceptance of the work. Contractor shall repair or replace damaged improvements including damages from acts of vandalism, theft, and graffiti removal. Repairs or replacements shall be at least equal to original condition of the existing improvement and shall match in finish and dimension.

B. Prior to work of this Section, verify that previously installed work is complete to the point where this installation may properly commence. Verify that work of this section may be installed in strict accordance with the original design, pertinent codes, regulations and portions of the referenced standards.

C. In the event of discrepancy, immediately notify the Architect.

D. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved.

PART 2 - PRODUCTS

2.1 PLASTIC TREE ROOT BARRIERS

A. The Contractor shall furnish and install tree root barriers as specified. The tree root barriers shall be product #UB 24-2 as manufactured by Deep Root Partners, LP, 345 Lorton Avenue #103, Burlingame, CA 94010, (800) 458-7668, or acceptable equal.

B. The barriers shall be black, injection molded panels, of 0.085” wall thickness in modules 24 inches long by 18 inches deep; manufactured with a minimum 50% post-consumer recycled polypropylene plastic with added ultraviolet inhibitors; recyclable.

C. Each panel shall have:

1. Not less than four (4) molded integral vertical root deflecting ribs of a minimum 0.085” thickness protruding 1/2 inch at 90° from interior of the barrier panel, spaced 6” apart.
2. A double top edge consisting of two parallel, integral, horizontal ridges of a minimum 0.085” thickness, 3/8” wide and 1/4” apart with the lower rib attached to the vertical root deflecting ribs.
3. A minimum of 9 anti-lift ground lock tabs consisting of integral horizontal ridges of a minimum 0.085” thickness in the shape of a segment of a circle, the 2” chord of the segment joining the panel wall and the segment, protruding 3/8” from the panel. The nine ground locks on each panel shall be about equally spaced between each of the vertical root deflecting ribs (3 between each set of ribs)
4. The basic properties of the copolymer polypropylene material shall be:

Test	ASTM Test Method	Value
Tensile stress @ yield	D638	3800 PSI
Elongation @ yield	D638	6.3%
Flexural Modulus	D790B	155,000 PSI
Notched Izod Impact	D256A	7.1
Rockwell Hardness R-scale	D785A	68

5. Preassembled self-locking flexible (0°-180°) joiner strips to connect one panel to the next.

PART 3 - EXECUTION

3.1 TREE ROOT BARRIERS

A. Install the tree root barriers in a linear fashion adjacent to paving, sidewalk, or curb in conditions where trees are to be planted closer than 6 feet to these improvements. Root barriers shall extend 6 feet in each direction from center of tree as measured along length of improvement. Use only full panels.

B. The vertical root deflecting ribs shall be facing inwards to the root ball and the double top edge shall be 1/2 inch above grade.

C. Panels shall be connected with the flexible joiner strips in the length required.

D. Omit barriers for palm trees, unless noted otherwise.

3.2 EXCAVATION AND BACKFILL

A. Excavation and backfill shall conform to the manufacturer's specifications and details.

B. At locations where root barriers are not adjacent to paving, sidewalks, or curbs, the barriers shall be backfilled on the outside with 3/4 inch to 1-1/2 inch gravel or crushed rock to the depth shown on the drawings.

C. No gravel backfill is required for a linear installation.

D. Barriers may be installed in same trench with irrigation lines.

END OF SECTION

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SECTION 33-05-16 UTILITY STRUCTURES

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Modular precast concrete manhole sections, catch basins, utility vaults, water meter boxes, and all associated accessories.

1.02 REFERENCES

A. ACI (American Concrete Institute) 318 - Building Code Requirements for Reinforced Concrete.

B. ASTM A48 - Gray Iron Castings.

C. ASTM C478 - Precast Reinforced Concrete Manhole Sections.

D. ASTM C497 - Test Method for Concrete Pipe, Manhole Sections, or Tile.

E. ASTM C857 - Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures.

F. ASTM C858 - Standard Specification for Underground Precast Concrete Utility Structures.

G. The most current edition of the Oregon Standard Specifications for Construction.

H. Latest edition of the City of La Grande Standard Specifications and Drawings.

1.03 SUBMITTALS

A. Shop Drawings: Indicate manhole, catch basin, , vault and box size, elevations, sumps, piping sizes and elevations of penetrations.

B. Product Data: Submit manhole covers, component construction, features, configuration, dimensions and accessories.

C. Manufacturer's Certificate: Submit Certificate of Compliance for manholes, catch basins, nyloplast drainage structure, water quality structure, vaults, boxes and accessories meet the requirements.

D. Manufacturer’s Installation Instructions: Submit special procedures required to install Products specified.

1.04 CLOSEOUT SUBMITTALS

A. Project Record Documents: Accurately record actual locations of utility structures by horizontal dimensions, rim and invert elevations.

B. As-Built Survey: At substantial completion, prepare an as-built survey of the utility structures to include the following: catch basins, storm drainage manholes, water quality structure, sanitary sewer manholes, cleanout assemblies, vaults and other associated utility structures. Survey shall be on the same project horizontal and vertical datum as noted on the construction documents. Provide rim and invert elevations for all sewer and storm drainage structures. Provide rim and utility structure location for all other utility structures.

1.05 DELIVERY, STORAGE AND HANDLING

A. Comply with manufacturer's instructions for unloading, storing, lifting, and moving precast manholes, vaults and drainage structures.

B. Store precast structures to prevent damage to Owner's property or other public or private property. Repair property damaged from materials storage.

PART 2 PRODUCTS

2.01 MANHOLES, DRYWELLS, CATCH BASINS AND

A. Storm Drain Manhole Diameter as shown on Drawings.

B. Catch Basins: Catch Basins as shown on Drawings.

2.02 FRAMES, COVERS, AND COMPONENTS

A. Manhole Lid and Frame: ASTM A48, Class 30B cast iron construction, solid cover surface, removable lid, with identifying lettering: "STORM", or "SEWER".

1. Buried manhole frame and covers shall be non-corrosive composite material and shall be suitable for AASHTO HS-20 loading.

B. Catch Basin Cover and Frame: As shown on Drawings.

C. Manhole Steps: Formed, ½-inch deformed reinforcing bar polypropylene covered rung or approved equal. Formed integral with manhole and vault sections.

D. Base Pad: Cast-in-place concrete or precast.

E. Adjustment Rings: Concrete adjustment rings commercially available.

F. Utility Vaults: In accordance with the manufacturer's guidelines and recommendations.

G. Water Meter Boxes: In accordance with the City of La Grande Standard Specifications and Drawings and as shown on Drawings.

2.03 PRECAST UTILITY VAULTS, BOXES AND WATER METER BOXES

A. Water Meter Boxes: Per City of La Grande Standard Specifications and Drawings.

B. Utility Vaults: Per manufacturer specifications and requirements as noted in the drawings.

1. All vaults shall be designed to site soil conditions and H-20 traffic loads.
2. All vaults shall be designed to be watertight.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify items provided by other sections of Work are properly sized and located.

B. Verify built-in items are in proper location, and ready for roughing into Work.

C. Verify excavation for manholes, catch basins, vaults and boxes are correct.

3.02 PREPARATION

A. Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.

B. Do not install structures where site conditions induce loads exceeding structural capacity of structures.

C. Inspect precast structures immediately prior to placement in excavation to verify structures are internally clean and free from damage. Remove and replace damaged units.

3.03 INSTALLATION

A. Excavation and Backfill:

1. Excavate for manholes, catch basins, vaults and boxes in accordance with Section 31 23 23 in location and to depth shown on Drawings.
2. Backfill and compact to contours shown on Drawings. Back fill material in accordance with Section 31 23 23 and as shown on Drawings.
3. When groundwater is encountered, prevent accumulation of water in excavations. Provide and maintain sufficient pumping equipment for removal of groundwater when encountered during excavation. Place manholes or drainage structures in dry trench.

B. Place base pad and trowel top surface level for catch basins, manholes, and water quality system.

C. Install manholes, catch basins, vaults and boxes supported at proper grade and alignment on compacted base.

D. Backfill and compact excavations and imported fill for manholes, catch basins, vaults and boxes in accordance with Section 31 23 23 and as shown on drawings.

E. Install manholes, catch basin, vaults and boxes plumb and level, to correct dimensions and elevations.

F. Install manholes, catch basin, vaults and boxes plumb and level as per manufactures guidelines and recommendations.

G. Verify manholes, catch basins, vaults and boxes installed satisfy required alignment and grade.

H. Remove knockouts or cut structure to receive piping without creating openings larger than required to receive pipe. Fill annular space per City of La Grande Standard Drawings and Specifications.

I. Core drill existing structures to receive piping without creating openings larger than required to receive pipe.

J. Cut pipe to finish flush with interior of structure.

K. Set cover frames and covers level without tipping.

3.04 CASTINGS INSTALLATION

A. Set frame and cover in accordance with the City of La Grande Standard Specifications minimum and maximum height adjustments and/or as shown on the Drawings.

B. Manhole covers located in synthetic turf areas shall be set 6-inches below finished grade. Manholes shall be covered with a piece removable synthetic turf as shown on the Drawings.

C. Manhole covers located within the limits of the softball or baseball play areas shall be set 6-inches below finished grade and covered.

3.05 FIELD QUALITY CONTROL

A. Request inspection prior to placing manholes, catch basins, vaults and backfill against structures and over pipe.

B. Testing Agency: Contractor shall obtain a qualified independent testing agency to perform field quality-control testing.

C. Compaction Testing: In accordance with ASTM D1557, and ASTM D6938.

D. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

E. Frequency of Tests: Test shall be taken per each structure at the following increments:
   1. At base of each structure.
   2. Increments of 2 feet vertical depth thereafter or finished subgrade whichever is lower.

END OF SECTION

SECTION 33-11-16 SITE WATER UTILITY DISTRIBUTION PIPING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes pipe and fittings for site water line including domestic water lines, valves, and water services.

1.03 REFERENCES

A. ASTM B 88M - Seamless Copper Water Tube Type K.

B. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb Rammer and 18 inch Drop.

C. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil Aggregate by Nuclear Methods (shallow depth).

D. AWWA C104 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.

E. AWWA C111 - Rubber- Gasket Joints for Ductile Iron and Grey-Iron Pressure Pipe and Fittings.

F. AWWA C151 - Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids.

G. AWWA C500 - Gate Valves, 3 through 48 in NPS, for Water and Sewage Systems.

H. AWWA C502 - Dry Barrel Fire Hydrants.

I. AWWA C600 - Installation of Ductile-Iron Water Mains and Appurtenances.

J. AWWA C605 – Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings

K. AWWA C900 – Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4-inch through 60-inch.

L. Most current edition of the Oregon Standard Specifications for Construction

M. Latest edition of the City of La Grande Standard Drawings and Specifications.

N. 2014 Safe Drinking Water Act.

O. NSF/ANSI 61 – Drinking Water System Components – Health Effects

1.04 SUBMITTALS

A. Product Data: Submit data on pipe materials, pipe fittings, valves and accessories.

B. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

C. Certification that pipe, fittings, and appurtenances meet NSF 61.

1.05 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations.

B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

C. Backflow Assemblies: Provide certified backflow test reports to the City of La Grande Cross Control Specialist.

D. Testing: Provide results of Hydrostatic and Bacteriological Tests.

E. Compaction: Provide compaction test reports for all lifts of backfill materials.

1.06 QUALITY ASSURANCE

A. Install pipe, fittings, and accessories in accordance with the Oregon Standard Specifications for Construction and the City of La Grande Standard Specifications. Where Specifications conflict; City of La Grande Standard Specifications shall prevail. Perform Work in accordance with ASTM, AASTHO and local governing procedure standards.

B. Valves: Manufacturer's name and pressure rating marked on valve body.

C. All wetted materials, including rubber, plastic, interior linings and coatings, adhesives, lubricants, etc. of the potable water system (pipes, pipe fittings, valves, etc.) shall be lead free and meet the requirements of NSF Standard 61 (2014 Safe Water Drinking Act).

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store valves in shipping containers with labeling in place.

PART 2 PRODUCTS

2.01 WATER PIPE

A. Ductile Iron Pipe: AWWA C151, Class 52

1. Fittings and Joints: Shall be mechanical joint restraint, MEGALUG or approved equal, and in accordance with the requirements of the City of La Grande Standard Specifications.

2.02 VALVES – 2-INCH THROUGH 12-INCH

A. Gate Valves (2 IN -10 IN): Meeting the Requirements of City of La Grande Standard Specifications. Accepted manufactures in accordance with the City of La Grande Standard Specifications.

B. Butterfly Valves (12 IN): Meeting the Requirements of City of La Grande Standard Specifications. Accepted manufactures in accordance with the City of La Grande Standard Specifications.

C. Fittings and Joint Material: Meeting the requirements of City of La Grande Standard Specifications.

D. Soft Seat Check Valve: In accordance with the City of La Grande Cross-Control requirements.

2.03 WATER SERVICES AND WATER METERS

A. Cut-In-Tees: Meeting the requirements of City of La Grande Standard Specifications and Drawings.

B. Water Service Line and Assembly: Meeting the requirements of City of La Grande Standard Specifications and Drawings.

C. Water Meter Assembly and Box: Meeting the requirements of City of La Grande Standard Specifications and Drawings.

2.04 MISCELLANEOUS ACCESSORIES AND MATERIALS

A. Cement Concrete for Thrust Blocks: Commercially available; class 3000 meeting the requirements of the City of La Grande Standard Specifications.

B. Restraint Joint Devices: MEGALUG or approved equal and meeting the requirements of the City of La Grande Standard Specifications.

C. Couplers: Shall be Romac 501, Romac Alpha or approved equal.

2.05 PIPE BEDDING, PIPE ZONE AND BACKFILL MATERIALS

A. Bedding and Pipe Zone: As specified in Section 31 23 23 and meeting the requirements of the City of La Grande Standard Specifications.

B. Backfill: As specified in Section 31 23 23.

2.06 PIPE LOCATOR RIBBON

A. Pipe locator ribbon shall be in accordance with the City of La Grande Standard Specifications.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify building service connection and municipal utility water main size, location, and invert are as indicated on Drawings.

3.02 PREPARATION

A. Prepare all pipe and fitting in accordance with City of La Grande Standard Specifications.

B. Contractor to pay all City of La Grande connection and Cut-in fees. Notify City of La Grande a minimum of 10 working days to schedule water main cut-in.

3.03 BEDDING

A. Excavate pipe trench in accordance with the Oregon Standard Specifications for Construction and Section 31 23 23.

B. Place bedding material in accordance with the City of La Grande Standard Specifications and Oregon Standard Specifications for Construction and Section 31 23 23.

C. Backfill around sides and to top of pipe with cover fill, tamp in place and compact to 95 percent of the maximum dry density per ATSM D1557 and per Section 31 23 23.

D. Maintain optimum moisture content of fill material to attain required compaction density.

3.04 INSTALLATION - PIPE

A. Maintain ten (10) feet horizontal separation of water main from sanitary sewer piping.

B. Minimum cover over the top of the water main shall be 4-feet as measured from the top of pipe to the finished ground surface.

C. Install pipe in accordance with the City of La Grande Standard Specifications and the Oregon Standard Specifications for Construction. Where Specifications conflict the City of La Grande Standard Specifications shall prevail.

D. Connect to existing waterline stubs as indicated on Drawings.

E. Form and place concrete for thrust restraints in accordance with the requirements of City of La Grande Standard Drawings and Specifications.

F. Before the trench is backfilled, the installation shall be inspected by the City of La Grande. Contractor shall contact the City to schedule inspections.

G. Backfill trench in accordance with Section 31 23 23.

3.05 INSTALLATION - VALVES

A. Install valves in accordance with City of La Grande Standard Specifications.

3.06 INSTALLATION – PIPE LOCATOR RIBBON

A. Install pipe locator ribbon in accordance with City of La Grande Standard Specifications.

3.07 DISINFECTION AND FLUSHING OF DOMESTIC WATER PIPING SYSTEM

A. Disinfect and flush system in accordance with City of La Grande Standard Specifications and Sections 01140.50 and 01140.52 of the latest edition of the Oregon Standards Specifications for Construction.

1. City of La Grande Water Department shall be the only ones who operate the mainline valves. Contractor shall coordinate with the City of La Grande to schedule flushing of the lines.
2. Contractor shall be responsible for the handling of discharged water.
3. City of La Grande Water Superintendent or their designee must witness, and document disinfection process. Contractor shall coordinate with the City.

3.08 WATER MAIN TIE-INS

A. Connect to existing City water system with tapping sleeve or cut-in tee in accordance with City of La Grande Standard Specifications and Drawings. City crews shall perform all taps and connections to the existing City water main.

B. Coordinate Work with City of La Grande.

C. Contractor to excavate and expose water main at tie-in location.

D. Contractor to construct thrust block and backfill and compact location after cut-in tee is installed.

E. Contractor to repair roadway cut in accordance with City of La Grande Standard Specifications and Drawings.

F. Contractor shall provide traffic control as required by the City of La Grande.

3.09 SERVICE CONNECTIONS

A. Install water service of size and type as indicated on Drawings and in accordance with City of La Grande Standard Specifications and Drawings.

B. Before the trench is backfilled, the installation shall be inspected by the City of La Grande. Contractor shall contact the City to schedule inspections.

C. Hot tap of service line to main shall be performed by the City of La Grande Water Department. Contractor shall schedule tap with the City.

D. Contractor to repair roadway cut in accordance with City of La Grande Standard Specifications and Drawings.

E. Contractor shall provide traffic control as required by the City of La Grande to perform work.

3.10 FIELD QUALITY CONTROL

A. Compaction Testing: In accordance with ASTM D1557, and ASTM D6938.

B. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

C. Backfill Frequency of Tests: In accordance with Section 31 23 23.

1. City of La Grande Water Superintendent or their designee must visually inspect and locate all fittings, using GIS equipment, prior to backfill.

D. Fill and flush water mains and services in accordance with the Section 01140.50 Filling and Flushing of the latest edition of the Oregon Standards Specifications for Construction.

1. City of La Grande Water Department shall be the only ones who operate the mainline valves. Contractor shall coordinate with the City of La Grande to schedule flushing of the lines.
2. Contractor shall be responsible for the handling of discharged water.

E. Bacteriological Tests: Contractor shall perform tests for all new water mains and services in accordance with City of La Grande Standard Specifications and OAR 333-061-0050. Provide a copy of the test results to the City of La Grande and the Owner's Representative.

1. City of La Grande Water Superintendent or their designee must witness, and document water samples being taken. Contractor shall coordinate with the City.

F. Hydrostatic Tests: Conduct test for all new water mains and services in accordance with City of La Grande Standard Specifications and Section 01140.51 Hydrostatic Testing of the latest edition of the Oregon Standards Specifications for Construction. Contractor must pressure test to 1.5 times the working pressure or 150 psi, whatever is the greater. Testing shall be done before joints are covered and after concrete thrust blocks have hardened sufficiently. Repair defective joints or pipe until the leakage of a subsequent test is within the specified allowance. Provide a copy of the test results to the City of La Grande and the Owner's Representative.

1. City of La Grande Water Superintendent or their designee must witness, and document pressure tests. Contractor shall coordinate with the City.

G. Disinfect all new water mains and services per Section 01140.52 Disinfecting of the latest edition of the Oregon Standards Specifications for Construction and in accordance with AWWA standards C651 through C654

1. City of La Grande Water Superintendent or their designee must witness, and document disinfection process. Contractor shall coordinate with the City.

END OF SECTION

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SECTION 33-31-00 SANITARY UTILITY SEWERAGE PIPING

PART 1 GENERAL

1.01 RELATED DOCUMENT

A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes sanitary sewerage drainage piping, fittings, accessories and bedding; and connection of building sanitary drainage system to municipal sewers system.

1.03 REFERENCES

A. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb Rammer and 18 inch Drop.

B. ANSI/ASTM D2321 - Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.

C. ANSI/ASTM D3034 – Poly Vinyl Chloride (PVC) Sewer Pipe and Fittings.

D. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil Aggregate by Nuclear Methods (shallow depth).

E. The most current edition of the Oregon Standard Specifications for Construction

F. Latest edition of the City of La Grande Standard Drawings and Specifications.

1.04 DEFINITIONS

A. Pipe Bedding and Pipe Zone: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.05 SUBMITTALS

A. Product Data: Submit data indicating pipe and pipe accessories.

B. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.06 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record location of pipe runs, connections, manholes cleanouts, and invert elevations.

B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

C. Compaction: Provide compaction test reports for all lifts of backfill materials.

1.07 COORDINATION

A. Coordinate the Work with termination of sanitary sewer connection outside building and connection to municipal sewer utility service.

PART 2 PRODUCTS

2.01 SEWER PIPE MATERIALS

A. Gravity Sanitary Sewer: Less than 15-foot cover: ANSI/ASTM D3034, SDR 35; Greater than 15-foot cover: ANSI/ASTM D3034, SDR26(PS115); size as shown on Drawings, bell and spigot style with rubber gasket.

2.02 PIPE ACCESSORIES

A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

2.03 PIPE BEDDING, PIPE ZONE AND BACKFILL MATERIALS

A. Bedding and Pipe Zone: As specified in Section 31 23 23.

B. Backfill: As specified in Section 31 23 23.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify excavation base is ready to receive work and excavations, dimensions, and elevations are as indicated on Drawings.

3.02 PREPARATION

A. Correct over excavation with fine aggregate.

B. Remove large stones or other hard matter which could damage pipe or impede consistent backfilling or compaction.

3.03 BEDDING

A. Excavate pipe trench in accordance with the Oregon Standard Specifications for Construction and Section 31 23 23. Hand trim excavation for accurate placement of pipe to elevations indicated.

B. Place bedding material in accordance with the City of La Grande Standard Specifications and Oregon Standard Specifications for Construction and Section 31 23 23.

C. Backfill around sides and to top of pipe with cover fill, tamp in place and compact to 95 percent of the maximum dry density per ATSM D1557 and per Section 31 23 23. Maintain optimum moisture content of bedding material to attain required compaction density.

3.04 INSTALLATION - PIPE

A. Install pipe, fittings, and accessories in accordance with the Oregon Standard Specifications for Construction and the City of La Grande Standard Specifications. Where Specifications conflict the City of La Grande Standard Specifications shall prevail.

B. Lay pipe to slope gradients noted on drawings with maximum variation in accordance with the City of La Grande Standard Specifications.

C. Refer to Section 31 23 23 for backfilling and compacting requirements. Do not displace or damage pipe when compacting.

D. Provide sewer to within 5 feet from building line and connect to on-site sewer system.

E. Sanitary sewer line end marker: 2-inch by 4-inch lumber pressure treated, top 2-feet painted green.

3.05 FIELD QUALITY CONTROL

A. Contractor shall inspect interior piping prior to and immediately after placing bedding. Inspection shall include the following:
   1. Alignment: Less than full diameter of inside of pipe is visible between structures.
   2. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5% percent of the piping diameter.
   3. Damage: Crushed, broken, cracked or otherwise damaged piping.
   4. Infiltration: Water leakage into the pipe.
   5. Exfiltration: water leakage from or around piping.

B. Contractor shall remove all debris located within the interior of the pipe.

C. Air Testing: Per Section 00445.72 Pipe Testing (C) Air Testing of the latest edition of the Oregon Standards Specifications for Construction.

D. Compaction Testing: In accordance with ANSI/ASTM D1557, and ASTM D6938.

E. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

F. Backfill Frequency of Tests: In accordance with Section 31 23 23.

3.06 PROTECTION OF FINISHED INSTALLATION

A. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

END OF SECTION

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SECTION 33-41-00 STORM UTILITY DRAINAGE PIPING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section

1.02 SUMMARY

A. Section includes site storm utility drainage piping, fittings and accessories.

1.03 REFERENCES

A. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. Rammer and 18-inch Drop.

B. ASTM D2321 - Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.

C. ASSHTO M294 Type S – Specification for Corrugated Polyethylene Pipe, 12 to 36-Inch Diameter and Fittings.

D. ASSHTO M252 Type S – Specification for Corrugated Polyethylene Pipe, 3 to 10-inch Diameter and Fittings.

E. ASTM D1758 – Poly Vinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120.

F. ASTM D1248 – Standard Specification for Polyethylene Plastics Molding and Extrusion Material.

G. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil Aggregate by Nuclear Methods (shallow depth).

H. The most current edition of the Oregon Standard Specifications for Construction

I. Latest edition of the City of La Grande Standard Drawings and Specifications.

1.04 SUBMITTALS

A. Product Data: Submit data indicating pipe, pipe accessories and drainage geotextile.

B. Manufacturer's Installation Instructions: Submit special procedures required to install Products specified.

C. Manufacturer's Certificate: Submit Certificate of Compliance all pipe and pipe accessories meet the requirements.

1.05 CLOSEOUT SUBMITTALS

A. Project Record Documents:
   1. Accurately record actual locations of pipe runs, connections, and invert elevations.
   2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.
   3. Compaction: Provide compaction test reports for all lifts of backfill materials.

PART 2 PRODUCTS

2.01 MATERIALS

A. Storm Sewer Pipe Materials:

1. Polyvinyl Chloride PVC Pipe shall be Class 150, DR 18. Pipe shall be push on joint or coupled joint conforming to ASTM D1784 Class 12454-A or 12454-B. Pipe shall meet all the material, performance and test requirements of AWWA C900.
2. Corrugated Polyethylene Pipe: AASHTO M252 or M254, Type S, smooth wall interior, size as shown on Drawings.
3. PVC Plastic Pipe: ASTM 3034, SDR 35, size as shown on Drawings.
4. Perforated Pipe: Pipe complying with ASSHTO M292 to M294, Type CP, with Class 2 perforations. Include proprietary fittings, couplings, seals and filter fabric.
5. Flat Drain Pipe: 12-inch Multi-Flow by Varicore Technologies, Inc. or approved equal.

B. Granular Drain Backfill:

1. For use with perforated collector pipe only. Shall be in accordance with Section 00430.11 Granular Drain Backfill Material, 1-1/4 inch to 3/4-inch. Rock shall be clean and washed.
2. Drainage Geotextile: Woven Type 1 per Section 02320 Geosynthetics Table 02320-1 per the Oregon Standard Specifications for Construction.

2.02 ACCESSORIES

A. Pipe Joints: Bell and spigot style rubber ringed sealed gasket joint.

B. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps, end caps, and other configurations required.

C. Storm Sewer Line End Marker: 2-inch by 4-inch lumber pressure treated the top 2-feet painted magenta.

2.03 PIPE BEDDING, PIPE ZONE AND BACKFILL MATERIALS

A. Bedding and Pipe Zone: As specified in Section 31 23 23.

B. Backfill: As specified in Section 31 23 23.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify excavation base is ready to receive work and dimensions, and elevations are as indicated on Drawings.

3.02 PREPARATION

A. Remove large stones or other hard matter that could damage piping or impede consistent backfilling or compaction.

3.03 BEDDING

A. Excavate pipe trench in accordance with Section 31 23 23 for Work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.

B. Place bedding material and compact in accordance with the Oregon Standard Specifications for Construction and Section 31 23 23.

C. Place granular drain backfill for perforated pipe sections as shown on Drawings.

D. Backfill around sides and to top of pipe with cover fill, tamp in place and compact to 95 percent of the maximum dry density per ATSM D1557 and per Section 31 23 23.

E. Maintain optimum moisture content of bedding material to attain required compaction density.

3.04 INSTALLATION - PIPE

A. Install pipe, fittings, and accessories in accordance with the Oregon Standard Specifications for Construction. Seal joints watertight.

B. Refer to Section 31 23 23 for backfilling and compacting requirements. Do not displace or damage pipe when compacting.

C. Refer to Section 33 05 16 for manhole and catch basin requirements.

3.05 INSTALLATION – COLLECTOR DRAIN

A. Install pipe, fittings, and accessories in accordance with the Oregon Standard Specifications for Construction. Seal joints watertight.

B. Lay pipe to slope gradients noted on drawings.

C. Refer to Section 31 23 23 for backfilling and compacting requirements. Do not displace or damage pipe when compacting.

D. Refer to Section 33 05 16 for manhole and catch basin requirements.

E. Protect granular drain backfill from sediment contamination. No sediment allowed in granular drain backfill.
   1. Install drainage geotextile in accordance with manufacture’s guidelines, recommendations and as shown on Drawings.

3.06 INSTALLATION – FLAT DRAIN

A. Install pipe, fittings, and accessories in accordance with the manufacturer’s guidelines, recommendations and as shown on Drawings.
   1. Subgrade geotextile shall be placed prior to placing flat drain.

B. Lay pipe to slope gradients noted on drawings.

C. Flat drain shall extend to the collector drain as shown on the Drawings.

D. Backfill over flat drain as shown on the Drawings.

3.07 FIELD QUALITY CONTROL

A. Contractor shall inspect interior piping prior to and immediately after placing bedding. Inspection shall include the following:

1. Alignment: Less than full diameter of inside of pipe is visible between structures.
2. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5% percent of the piping diameter.
3. Damage: Crushed, broken, cracked or otherwise damaged piping.

B. Contractor shall remove all debris located within the interior of the pipe.

C. Compaction Testing: In accordance with ASTM D1557 and ASTM D6938.

D. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

E. Backfill Frequency of Tests: In accordance with Section 31 23 23.

3.08 PROTECTION OF FINISHED WORK

A. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

B. Take care not to damage or displace installed pipe and joints during construction of pipe supports, backfilling, testing, and other operations.

C. Repair or replace pipe that is damaged or displaced from construction operations.

END OF SECTION

Structural Calculations

EOU Ballfield Complex
Dugout
East Avenue
La Grande, Oregon 97850

Walker Structural Engineering, P.C.



February 7, 2024

Job Number: 23142

2863 NW Crossing Drive Suite 201
Bend, Oregon 97703
541.330.6869
www.walkerse.com

WALKER
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DESIGN CRITERIA **3**

VERTICAL FORCE RESISTING SYSTEM **7**

LATERAL FORCE RESISTING SYSTEM **19**

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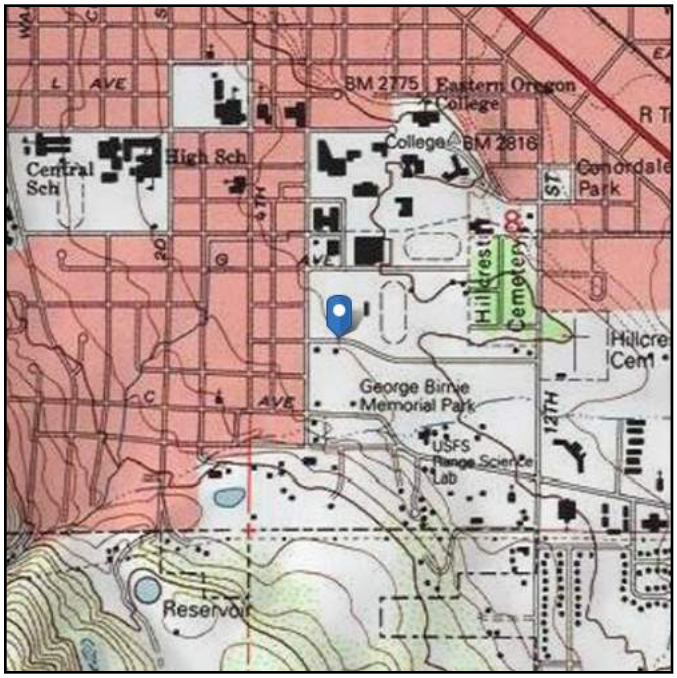
Design Criteria

2863 NW Crossing Drive, #201 Bend, Oregon 97703 | Phone 541.330.6869 | walkerse.com

ASCE 7 Hazards Report

Address:
1299 E Ave
La Grande, Oregon
97850

Standard:	ASCE/SEI 7-16	**Latitude:**	45.315967
Risk Category:	II	**Longitude:**	-118.093282
Soil Class:	D - Default (see Section 11.4.3)	**Elevation:**	2825.888776721089 ft (NAVD 88)





Wind

Results:

Wind Speed	101 Vmph
10-year MRI	70 Vmph
25-year MRI	77 Vmph
50-year MRI	81 Vmph
100-year MRI	86 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Mon Dec 11 2023

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

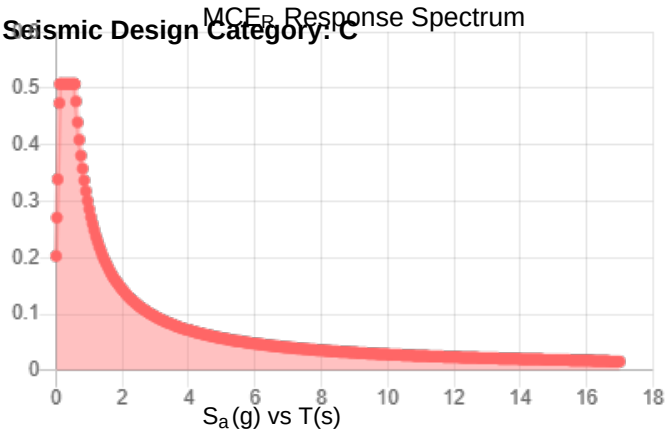
Seismic

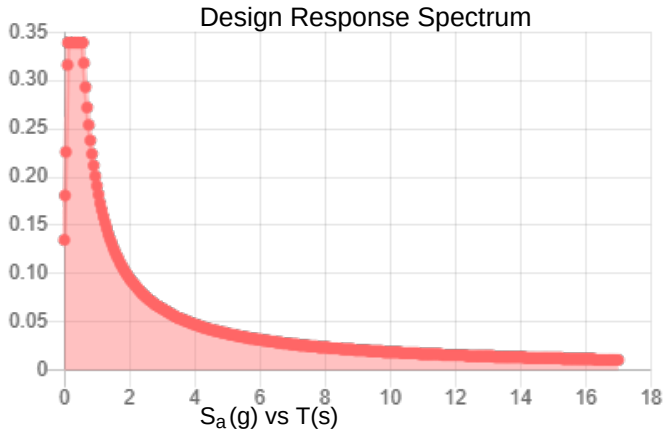
Site Soil Class: D - Default (see Section 11.4.3)

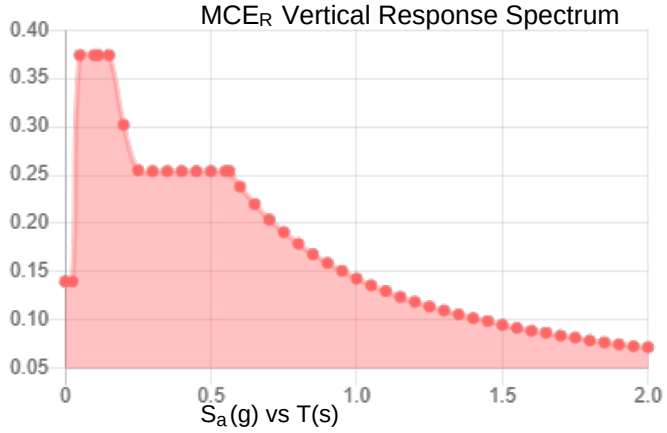
Results:

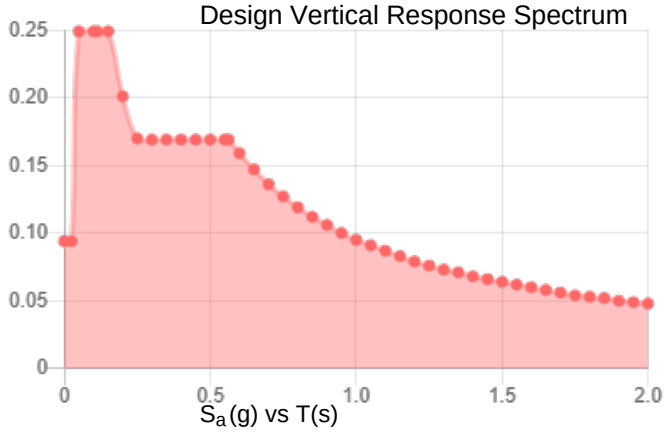
S_S :	0.331	S_{D1} :	0.191
S_1 :	0.121	T_L :	16
F_a :	1.535	PGA :	0.148
F_v :	2.357	PGA_M :	0.223
S_{MS} :	0.508	F_{PGA} :	1.504
S_{M1} :	0.286	I_e :	1
S_{DS} :	0.339	C_v :	0.921

Seismic Design Category: C









Data Accessed: **Mon Dec 11 2023**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Snow

Results:

Ground Snow Load, p_g:	15 lb/ft^2
Mapped Elevation:	2825.9 ft
Data Source:	
Date Accessed:	Mon Dec 11 2023

Statutory requirements of the Authority Having Jurisdiction are not included.

Snow load values are mapped to a 0.5 mile resolution. This resolution can create a mismatch between the mapped elevation and the site-specific elevation in topographically complex areas. Engineers should consult the local authority having jurisdiction in locations where the reported ‘elevation’ and ‘mapped elevation’ differ significantly from each other.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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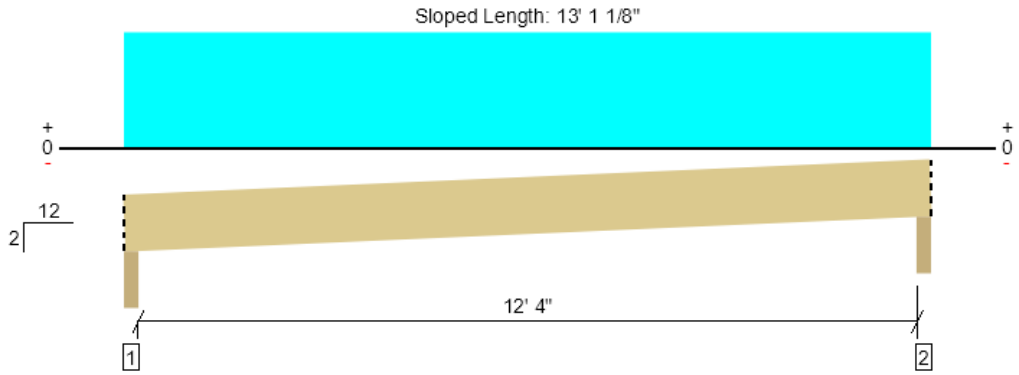
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WALKER
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Vertical Force Resisting System

2863 NW Crossing Drive, #201 Bend, Oregon 97703 | Phone 541.330.6869 | walkerse.com

Foundation/Main Floor, Dugout - Joists
1 piece(s) 2 x 10 DF No.2 @ 16" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Member Length : 13' 2 11/16"

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 2/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	372 @ 2 1/2"	3281 (3.50")	Passed (11%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	312 @ 1' 5/8"	1915	Passed (16%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1126 @ 6' 5 1/2"	2334	Passed (48%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.119 @ 6' 5 1/2"	0.634	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.206 @ 6' 5 1/2"	0.845	Passed (L/739)	--	1.0 D + 1.0 S (All Spans)

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Roof Live	Snow	Factored	
1 - Beveled Plate - DF	3.50"	3.50"	1.50"	157	172	215	372	Blocking
2 - Beveled Plate - DF	3.50"	3.50"	1.50"	157	172	215	372	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	11' 7" o/c	
Bottom Edge (Lu)	13' 1" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Roof Live (non-snow: 1.25)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 12' 11"	16"	18.0	20.0	25.0	Roof

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jesse Shumate Walker Structural Engineering (000) 000-0000 jshumate@walkerse.com	

Weyerhaeuser

Project Title:
Engineer:
Project ID:
Project Descr:

Masonry Beam

Project File: 23142 EOU Ballfields.ec6

LIC# : KW-06014366, Build:20.23.08.30 WALKER STRUCTURAL ENGINEERING LLC (c) ENERCALC INC 1983-2023

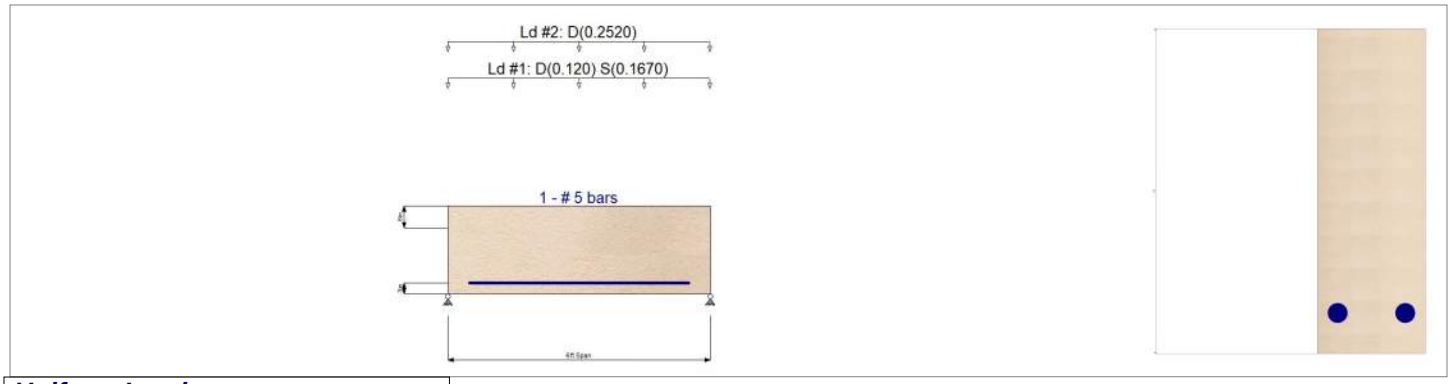
DESCRIPTION: Typical CMU Lintel - Mark 1

Code References

Calculations per TMS 402-16, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2021

General Information

f'm	1,500.0	psi	Clear Span	6.0	ft	Rebar Size	5
Fs	24,000.0	psi	Beam Depth	2.0	ft	# Bars E/F	1
Em = f'm *	900.0		Thickness	8	in	Top Clear	6.0 in
Wall Wt Mult.	1.0		End Fixity	Pin-Pin		Btm Clear	3.0 in
Block Type	Normal Wt		Equiv. Solid Thick	7.60	in	# Bar Sets	1
Lateral Wind Load	25.0	psf	Wall Weight	86.0	psf	Bar Spacing	5.0 in
Beam is Fully Braced ?	No		E	1,350.0	ksi		
Lateral Wall Weight Seismic Factor	0.0680		n	21.481			
Calculate vertical beam weight ?	Yes						



Uniform Loads

	Start X	End X	Dead Load	L : Floor Live	Lr : Roof Live	S : Snow	W : Wind	E : Earthquake
#1	0.0 ft	6.0 ft	0.120			0.1670		k/ft
#2	0.0 ft	6.0 ft	0.2520					k/ft
#3	ft	ft						k/ft
#4	ft	ft						k/ft

DESIGN SUMMARY

Design OK

Maximum Stress Ratios...

	Vertical	Lateral	SRSS Combination
fb/Fb	0.1382	0.0	**0.1382** : 1.00
fv/Fv	0.2240	0.0	**0.2240** : 1.00

Minimum Mn = 1.3 * Fcr * S = 7.930 k-ft

Maximum Moment

	Actual	Allowable
Vertical Loads for Load Combination +D+S	3.199 k-ft	23.149 k-ft
Lateral Loads for Load Combination +D+0.60W	0.1349 k-ft	3.580

Maximum Shear

	Actual	Allowable
Vertical Loads for Load Combination +D+S	11.656 psi	52.043 psi
Lateral Loads for Load Combination +D+0.60W	0.5941 psi	38.730 psi

Vertical Strength

As	0.620 in^2
rho	0.003872
np	0.08318
k : ((np)^2+2np)^.5-np	0.3331
j = 1 - k/3	0.8890
M:mas=Fb k j b d^2/2	28.003 k-ft
M:Stl = Fs As j d	23.149 k-ft

Lateral Strength

(Checking lateral bending for span)

As	0.310 in^2
rho	0.002046
np	0.04396
k : (np^2+2np)^.5-np	0.2558
j = 1 - k/3	0.9147
M:mas=Fb k j b d^2/2	6.293 k-ft
M:Stl = Fs As j d	3.580 k-ft

Project Title:
Engineer:
Project ID:
Project Descr:

Masonry Beam

Project File: 23142 EOU Ballfields.ec6

LIC# : KW-06014366, Build:20.23.08.30 WALKER STRUCTURAL ENGINEERING LLC (c) ENERCALC INC 1983-2023

DESCRIPTION: Typical CMU Lintel - Mark 1

Detailed Load Combination Results

Load Combinatic	Vertical				Lateral			
	Mmax k-ft	Mallow k-ft	fv : Vert psi	Fv : Vert psi	Mactual k-ft	Mallow k-ft	fv psi	Fv psi
D Only	2.45	23.15	8.92	52.04	0.00	3.58	0.00	38.73
+D+S	3.20	23.15	11.66	52.04	0.00	3.58	0.00	38.73
+D+0.750S	3.01	23.15	10.97	52.04	0.00	3.58	0.00	38.73
+D+0.60W	2.45	23.15	8.92	52.04	0.13	3.58	0.59	38.73
+D+0.70E	2.45	23.15	8.92	52.04	0.04	3.58	0.16	38.73
+D+0.450W	2.45	23.15	8.92	52.04	0.10	3.58	0.45	38.73
+D+0.750S+0.450W	3.01	23.15	10.97	52.04	0.10	3.58	0.45	38.73
+D+0.750S+0.5250E	3.01	23.15	10.97	52.04	0.03	3.58	0.12	38.73
+0.60D+0.60W	1.47	23.15	5.35	52.04	0.13	3.58	0.59	38.73
+0.60D+0.70E	1.47	23.15	5.35	52.04	0.04	3.58	0.16	38.73

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

Project File: 23142 EOU Ballfields.ec6

LIC# : KW-06014366, Build:20.23.08.30 WALKER STRUCTURAL ENGINEERING LLC (c) ENERCALC INC 1983-2023

DESCRIPTION: Dugout - Exterior Beam

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : IBC 2021

Material Properties

Analysis Method : Allowable Stress Design
Load Combination : IBC 2021

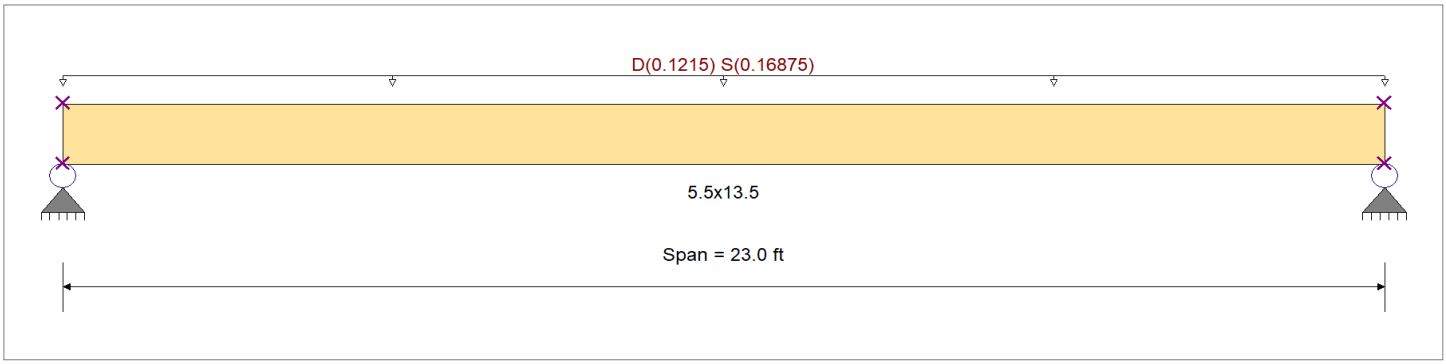
Wood Species : DF/DF
Wood Grade : 24F-V4

Beam Bracing : Completely Unbraced

Fb +	2,400.0 psi
Fb -	1,850.0 psi
Fc - Prll	1,650.0 psi
Fc - Perp	650.0 psi
Fv	265.0 psi
Ft	1,100.0 psi

E : Modulus of Elasticity

Ebend- xx	1,800.0 ksi
Eminbend - xx	950.0 ksi
Ebend- yy	1,600.0 ksi
Eminbend - yy	850.0 ksi
Density	31.210 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
Uniform Load : D = 0.0180, S = 0.0250 ksf, Tributary Width = 6.750 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.545 : 1	Maximum Shear Stress Ratio	=	0.211 : 1
Section used for this span		5.5x13.5	Section used for this span		5.5x13.5
fb: Actual	=	1,455.04 psi	fv: Actual	=	64.42 psi
F'b	=	2,667.76 psi	F'v	=	304.75 psi
Load Combination		+D+S	Load Combination		+D+S
Location of maximum on span	=	11.500 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.527 in	Ratio =	524 >=360	Span: 1 : S Only
Max Upward Transient Deflection	0 in	Ratio =	0 <360	n/a
Max Downward Total Deflection	0.956 in	Ratio =	288 >=180	Span: 1 : +D+S
Max Upward Total Deflection	0 in	Ratio =	0 <180	n/a

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	CD	CM	C_t	CLx	C_V	Cfu	C_i	C_r	Moment Values M	fb	F'b	Shear Values V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 23.0 ft	1	0.311	0.121	0.90	1.00	1.00	0.98	0.972	1.00	1.00	1.00	9.10	653.5	2,100.5	1.43	28.9	238.5
+D+S					1.00	1.00	0.98	0.972	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 23.0 ft	1	0.545	0.211	1.15	1.00	1.00	0.97	0.972	1.00	1.00	1.00	20.26	1,455.0	2,667.8	3.19	64.4	304.8
+D+0.750S					1.00	1.00	0.97	0.972	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 23.0 ft	1	0.470	0.182	1.15	1.00	1.00	0.97	0.972	1.00	1.00	1.00	17.47	1,254.7	2,667.8	2.75	55.5	304.8
+0.60D					1.00	1.00	0.97	0.972	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 23.0 ft	1	0.108	0.041	1.60	1.00	1.00	0.94	0.972	1.00	1.00	1.00	5.46	392.1	3,615.4	0.86	17.4	424.0

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

Project File: 23142 EOU Ballfields.ec6

LIC# : KW-06014366, Build:20.23.08.30 WALKER STRUCTURAL ENGINEERING LLC (c) ENERCALC INC 1983-2023

DESCRIPTION: Dugout - Exterior Beam

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.9558	11.584		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	3.523	3.523
Max Upward from Load Combinations	3.523	3.523
Max Upward from Load Cases	1.941	1.941
D Only	1.582	1.582
+D+S	3.523	3.523
+D+0.750S	3.038	3.038
+0.60D	0.949	0.949
S Only	1.941	1.941

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Column

Project File: 23142 EOU Ballfields.ec6

LIC# : KW-06014366, Build:20.23.08.30 WALKER STRUCTURAL ENGINEERING LLC (c) ENERCALC INC 1983-2023

DESCRIPTION: Dugout - Exterior Column (HSS)

Code References

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2021

General Information

Steel Section Name : **HSS5x5x3/16**

Analysis Method :	Allowable Strength
Steel Stress Grade	
Fy : Steel Yield	46.0 ksi
E : Elastic Bending Modulus	29,000.0 ksi

Overall Column Height	10.0 ft
Top & Bottom Fixity	Top & Bottom Pinned
Brace condition :	

Unbraced Length for buckling ABOUT X-X Axis = 10.0 ft, K = 1.0
Unbraced Length for buckling ABOUT Y-Y Axis = 10.0 ft, K = 1.0

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 119.551 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 10.0 ft, D = 2.489, S = 3.457 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = 0.08639 : 1

Load Combination	+D+S
Location of max.above base	0.0 ft
At maximum location values are . . .	
Pa : Axial	6.066 k
Pn / Omega : Allowabl	70.211 k
Ma-x : Applied	0.0 k-ft
Mn-x / Omega : Allowable	13.520 k-ft
Ma-y : Applied	0.0 k-ft
Mn-y / Omega : Allowable	13.520 k-ft

PASS Maximum Shear Stress Rati 0.0 : 1

Load Combination	0.0
Location of max.above base	0.0 ft
At maximum location values are . . .	
Va : Applied	0.0 k
Vn / Omega : Allowable	0.0 k

Maximum Load Reactions . .

Top along X-X	0.0 k
Bottom along X-X	0.0 k
Top along Y-Y	0.0 k
Bottom along Y-Y	0.0 k

Maximum Load Deflections . . .

Along Y-Y 0.0 in at 0.0ft above base
for load combination :

Along X-X 0.0 in at 0.0ft above base
for load combination :

Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios: Stress Ratio	Status	Location	Cbx	Cby	KxLx/Ry	KyLy/Rx	Maximum Shear Ratios: Stress Ratio	Status	Location
D Only	0.037	PASS	0.00 ft	1.00	1.00	61.22	61.22	0.000	PASS	0.00 ft
+D+S	0.086	PASS	0.00 ft	1.00	1.00	61.22	61.22	0.000	PASS	0.00 ft
+D+0.750S	0.074	PASS	0.00 ft	1.00	1.00	61.22	61.22	0.000	PASS	0.00 ft
+0.60D	0.022	PASS	0.00 ft	1.00	1.00	61.22	61.22	0.000	PASS	0.00 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction @ Base	X-X Axis Reaction (k) @ Base	@ Top	Y-Y Axis Reaction (k) @ Base	@ Top	Mx - End Moments (k-ft) @ Base	@ Top	My - End Moments @ Base	@ Top
D Only	2.609								
+D+S	6.066								
+D+0.750S	5.201								
+0.60D	1.565								
S Only	3.457								

Extreme Reactions

Item	Extreme Value	Axial Reaction @ Base	X-X Axis Reaction (k) @ Base	@ Top	Y-Y Axis Reaction (k) @ Base	@ Top	Mx - End Moments (k-ft) @ Base	@ Top	My - End Moments @ Base	@ Top
Axial @ Base	Maximum	6.066								
"	Minimum	1.565								
Reaction, X-X Axis Base	Maximum	2.609								
"	Minimum	2.609								

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Column

Project File: 23142 EOU Ballfields.ec6

LIC# : KW-06014366, Build:20.23.08.30 WALKER STRUCTURAL ENGINEERING LLC (c) ENERCALC INC 1983-2023

DESCRIPTION: Dugout - Exterior Column (HSS)

Extreme Reactions

Item	Extreme Value	Axial Reaction @ Base	X-X Axis Reaction @ Base	@ Top	k	Y-Y Axis Reaction @ Base	@ Top	Mx - End Moments @ Base	@ Top	k-ft	My - End Moments @ Base	@ Top
Reaction, Y-Y Axis Base	Maximum	2.609										
"	Minimum	2.609										
Reaction, X-X Axis Top	Maximum	2.609										
"	Minimum	2.609										
Reaction, Y-Y Axis Top	Maximum	2.609										
"	Minimum	2.609										
Moment, X-X Axis Base	Maximum	2.609										
"	Minimum	2.609										
Moment, Y-Y Axis Base	Maximum	2.609										
"	Minimum	2.609										
Moment, X-X Axis Top	Maximum	2.609										
"	Minimum	2.609										
Moment, Y-Y Axis Top	Maximum	2.609										
"	Minimum	2.609										

Maximum Deflections for Load Combinations

Load Combination	Max. Deflection in X dir		Distance		Max. Deflection in Y dir		Distance	
D Only	0.0000	in	0.000	ft	0.000	in	0.000	ft
+D+S	0.0000	in	0.000	ft	0.000	in	0.000	ft
+D+0.750S	0.0000	in	0.000	ft	0.000	in	0.000	ft
+0.60D	0.0000	in	0.000	ft	0.000	in	0.000	ft
S Only	0.0000	in	0.000	ft	0.000	in	0.000	ft

Steel Section Properties : HSS5x5x3/16

Depth	=	5.000	in	I xx	=	12.60	in^4	J	= 19.900 in^4
Design Thick	=	0.174	in	S xx	=	5.03	in^3		
Width	=	5.000	in	R xx	=	1.960	in		
Wall Thick	=	0.187	in	Zx	=	5.890	in^3		
Area	=	3.280	in^2	I yy	=	12.600	in^4	C	= 8.080 in^3
Weight	=	11.955	plf	S yy	=	5.030	in^3		
				R yy	=	1.960	in		
Ycg	=	0.000	in						

Project Title:
Engineer:
Project ID:
Project Descr:

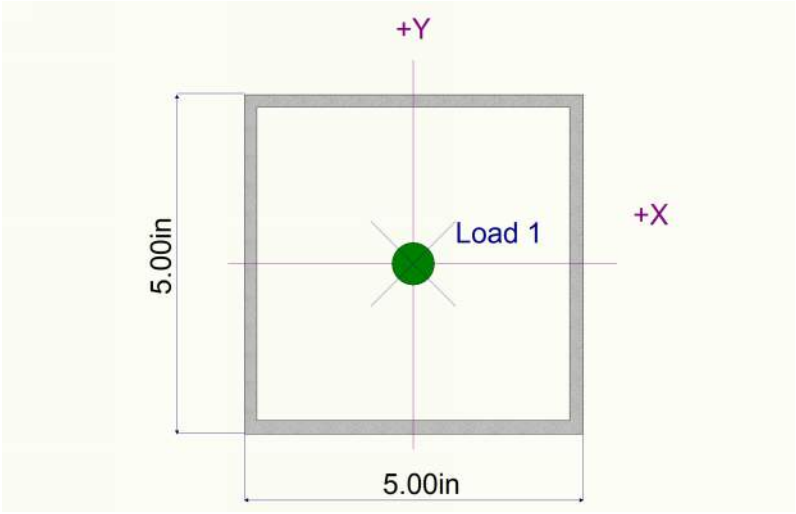
Steel Column

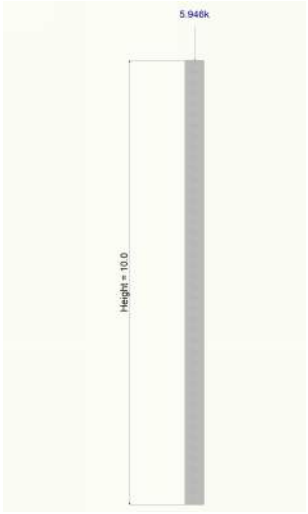
Project File: 23142 EOU Ballfields.ec6

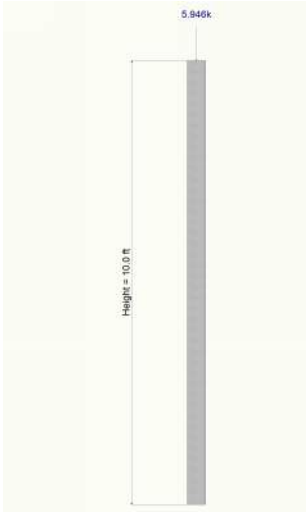
LIC# : KW-06014366, Build:20.23.08.30 WALKER STRUCTURAL ENGINEERING LLC (c) ENERCALC INC 1983-2023

DESCRIPTION: Dugout - Exterior Column (HSS)

Sketches







Project Title:
Engineer:
Project ID:
Project Descr:

General Footing

Project File: 23142 EOU Ballfields.ec6

LIC# : KW-06014366, Build:20.23.08.30 WALKER STRUCTURAL ENGINEERING LLC (c) ENERCALC INC 1983-2023

DESCRIPTION: Dugout - Footing

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2021

General Information

Material Properties

f'c : Concrete 28 day strength	=	3.0	ksi
fy : Rebar Yield	=	60.0	ksi
Ec : Concrete Elastic Modulus	=	3,122.0	ksi
Concrete Density	=	145.0	pcf
φ Values Flexure	=	0.90	
Shear	=	0.750	

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	No
Use Pedestal wt for stability, mom & shear	:	No

Soil Design Values

Allowable Soil Bearing	=	1.50	ksf
Soil Density	=	110.0	pcf
Increase Bearing By Footing Weight	=	No	
Soil Passive Resistance (for Sliding)	=	250.0	pcf
Soil/Concrete Friction Coeff.	=	0.30	

Increases based on footing Depth

Footing base depth below soil surface	=	ft
Allow press. increase per foot of depth	=	ksf
when footing base is below	=	ft

Increases based on footing plan dimension

Allowable pressure increase per foot of depth	=	ksf
when max. length or width is greater than	=	ft

Dimensions

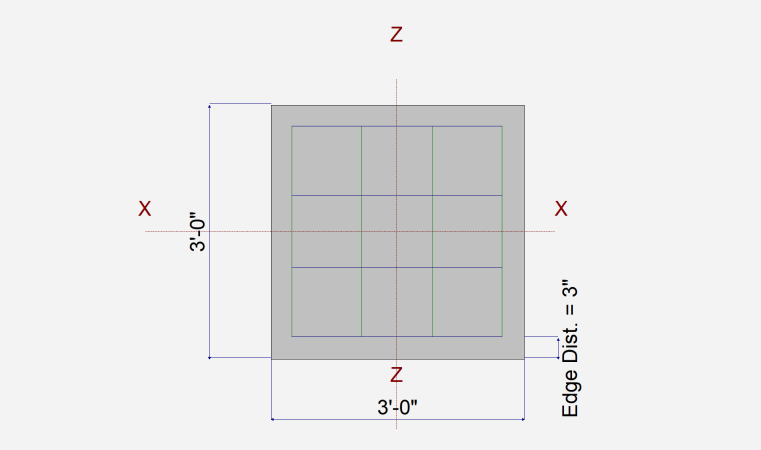
Width parallel to X-X Axis	=	3.0 ft
Length parallel to Z-Z Axis	=	3.0 ft
Footing Thickness	=	10.0 in

Pedestal dimensions...

px : parallel to X-X Axis	=	in
pz : parallel to Z-Z Axis	=	in
Height	=	in

Rebar Centerline to Edge of Concrete...

at Bottom of footing	=	3.0 in



Reinforcing

Bars parallel to X-X Axis			
Number of Bars	=		4.0
Reinforcing Bar Size	=	#	4
Bars parallel to Z-Z Axis			
Number of Bars	=		4
Reinforcing Bar Size	=	#	4

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	n/a
# Bars required within zone	n/a
# Bars required on each side of zone	n/a





Applied Loads

		D	Lr	L	S	W	E	H	
P : Column Load	=	2.609			3.457				k
OB : Overburden	=								ksf
M-xx	=								k-ft
M-zz	=								k-ft
V-x	=								k
V-z	=								k

Project Title:
Engineer:
Project ID:
Project Descr:

General Footing

Project File: 23142 EOU Ballfields.ec6

LIC# : KW-06014366, Build:20.23.08.30 WALKER STRUCTURAL ENGINEERING LLC (c) ENERCALC INC 1983-2023

DESCRIPTION: Dugout - Footing

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.5299	Soil Bearing	0.7948 ksf	1.50 ksf	+D+S about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.1339	Z Flexure (+X)	1.083 k-ft/ft	8.086 k-ft/ft	+1.20D+1.60S
PASS	0.1339	Z Flexure (-X)	1.083 k-ft/ft	8.086 k-ft/ft	+1.20D+1.60S
PASS	0.1339	X Flexure (+Z)	1.083 k-ft/ft	8.086 k-ft/ft	+1.20D+1.60S
PASS	0.1339	X Flexure (-Z)	1.083 k-ft/ft	8.086 k-ft/ft	+1.20D+1.60S
PASS	0.1297	1-way Shear (+X)	10.656 psi	82.158 psi	+1.20D+1.60S
PASS	0.1297	1-way Shear (-X)	10.656 psi	82.158 psi	+1.20D+1.60S
PASS	0.1297	1-way Shear (+Z)	10.656 psi	82.158 psi	+1.20D+1.60S
PASS	0.1297	1-way Shear (-Z)	10.656 psi	82.158 psi	+1.20D+1.60S
PASS	0.2582	2-way Punching	42.426 psi	164.317 psi	+1.20D+1.60S

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc (in)	Zecc (in)	Actual Soil Bearing Stress @ Location Bottom, -Z	Top, +Z	Left, -X	Right, +X	Actual / Allow Ratio
X-X, D Only	1.50	n/a	0.0	0.4107	0.4107	n/a	n/a	0.274
X-X, +D+S	1.50	n/a	0.0	0.7948	0.7948	n/a	n/a	0.530
X-X, +D+0.750S	1.50	n/a	0.0	0.6988	0.6988	n/a	n/a	0.466
X-X, +0.60D	1.50	n/a	0.0	0.2464	0.2464	n/a	n/a	0.164
Z-Z, D Only	1.50	0.0	n/a	n/a	n/a	0.4107	0.4107	0.274
Z-Z, +D+S	1.50	0.0	n/a	n/a	n/a	0.7948	0.7948	0.530
Z-Z, +D+0.750S	1.50	0.0	n/a	n/a	n/a	0.6988	0.6988	0.466
Z-Z, +0.60D	1.50	0.0	n/a	n/a	n/a	0.2464	0.2464	0.164

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
Footing Has NO Overturning				

All units k

Sliding Stability

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Stability Ratio	Status
Footing Has NO Sliding				

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.4566	+Z	Bottom	0.2160	AsMin	0.2667	8.086	OK
X-X, +1.40D	0.4566	-Z	Bottom	0.2160	AsMin	0.2667	8.086	OK
X-X, +1.20D	0.3914	+Z	Bottom	0.2160	AsMin	0.2667	8.086	OK
X-X, +1.20D	0.3914	-Z	Bottom	0.2160	AsMin	0.2667	8.086	OK
X-X, +1.20D+0.50S	0.6074	+Z	Bottom	0.2160	AsMin	0.2667	8.086	OK
X-X, +1.20D+0.50S	0.6074	-Z	Bottom	0.2160	AsMin	0.2667	8.086	OK
X-X, +1.20D+1.60S	1.083	+Z	Bottom	0.2160	AsMin	0.2667	8.086	OK
X-X, +1.20D+1.60S	1.083	-Z	Bottom	0.2160	AsMin	0.2667	8.086	OK
X-X, +1.20D+0.70S	0.6938	+Z	Bottom	0.2160	AsMin	0.2667	8.086	OK
X-X, +1.20D+0.70S	0.6938	-Z	Bottom	0.2160	AsMin	0.2667	8.086	OK
X-X, +0.90D	0.2935	+Z	Bottom	0.2160	AsMin	0.2667	8.086	OK
X-X, +0.90D	0.2935	-Z	Bottom	0.2160	AsMin	0.2667	8.086	OK
Z-Z, +1.40D	0.4566	-X	Bottom	0.2160	AsMin	0.2667	8.086	OK
Z-Z, +1.40D	0.4566	+X	Bottom	0.2160	AsMin	0.2667	8.086	OK
Z-Z, +1.20D	0.3914	-X	Bottom	0.2160	AsMin	0.2667	8.086	OK
Z-Z, +1.20D	0.3914	+X	Bottom	0.2160	AsMin	0.2667	8.086	OK
Z-Z, +1.20D+0.50S	0.6074	-X	Bottom	0.2160	AsMin	0.2667	8.086	OK

Project Title:
Engineer:
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Project Descr:

General Footing

Project File: 23142 EOU Ballfields.ec6

LIC# : KW-06014366, Build:20.23.08.30 WALKER STRUCTURAL ENGINEERING LLC (c) ENERCALC INC 1983-2023

DESCRIPTION: Dugout - Footing

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
Z-Z, +1.20D+0.50S	0.6074	+X	Bottom	0.2160	AsMin	0.2667	8.086	OK
Z-Z, +1.20D+1.60S	1.083	-X	Bottom	0.2160	AsMin	0.2667	8.086	OK
Z-Z, +1.20D+1.60S	1.083	+X	Bottom	0.2160	AsMin	0.2667	8.086	OK
Z-Z, +1.20D+0.70S	0.6938	-X	Bottom	0.2160	AsMin	0.2667	8.086	OK
Z-Z, +1.20D+0.70S	0.6938	+X	Bottom	0.2160	AsMin	0.2667	8.086	OK
Z-Z, +0.90D	0.2935	-X	Bottom	0.2160	AsMin	0.2667	8.086	OK
Z-Z, +0.90D	0.2935	+X	Bottom	0.2160	AsMin	0.2667	8.086	OK

One Way Shear

Load Combination...	Vu @ -X	Vu @ +X	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	4.49 psi	4.49 psi	4.49 psi	4.49 psi	4.49 psi	82.16 psi	0.05	OK
+1.20D	3.85 psi	3.85 psi	3.85 psi	3.85 psi	3.85 psi	82.16 psi	0.05	OK
+1.20D+0.50S	5.98 psi	5.98 psi	5.98 psi	5.98 psi	5.98 psi	82.16 psi	0.07	OK
+1.20D+1.60S	10.66 psi	10.66 psi	10.66 psi	10.66 psi	10.66 psi	82.16 psi	0.13	OK
+1.20D+0.70S	6.83 psi	6.83 psi	6.83 psi	6.83 psi	6.83 psi	82.16 psi	0.08	OK
+0.90D	2.89 psi	2.89 psi	2.89 psi	2.89 psi	2.89 psi	82.16 psi	0.04	OK

Two-Way "Punching" Shear

All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	17.89 psi	164.32 psi	0.1089	OK
+1.20D	15.34 psi	164.32 psi	0.09332	OK
+1.20D+0.50S	23.80 psi	164.32 psi	0.1448	OK
+1.20D+1.60S	42.43 psi	164.32 psi	0.2582	OK
+1.20D+0.70S	27.19 psi	164.32 psi	0.1655	OK
+0.90D	11.50 psi	164.32 psi	0.06999	OK

WALKER
STRUCTURAL ENGINEERING P.C.

Lateral Force Resisting System (Freestanding CMU Wall)

		SHEET	OF
PROJECT	EOU BALLFIELDS	JOB NO	23142
	DUGOUT	DATE	12-27-2023
CLIENT	SAJ ARCHITECTURE	BY	JAS

FREESTANDING CMU WALL

WIND LOAD

FOR WIND ON SOLID FREESTANDING WALL, USE EQN (29.3-1), ASCE 7-16;

$F_{WIND}=q_h(G)(C_f)(A_s)$

WHERE:

q_h = $0.00256(K_z)(K_{zt})(K_d)(Ke)(V^2)$ PER EQN (26.10-1), ASCE 7-16

Kz = VELOCITY PRESSURE COEFFICIENT (0-15 FT, EXPOSURE C)	:	0.85
Kzt = TOPOGRAPHIC FACTOR PER ASCE 7-16, SECTION 26.8	:	1.0
Kd = WIND DIRECTIONALITY FACTOR PER ASCE 7-16 TABLE 26.6	:	0.85
Ke = GROUND ELEVATION FACTOR PER ASCE 7-16, 26.9		1.00
V = BASIC WIND SPEED	:	101 mph
G = GUST EFFECT FACTOR PER ASCE 7-16, SECTION 26.11	:	0.85
C_f = NET FORCE COEFFICIENT PER ASCE 7-16, FIG 29.3-1	:	1.96

NOTE: ASSUMED MAXIMUM ASPECT RATIO, B/s = 10.
REDUCTION FACTOR PER NOTE 4 OF 0.8 FOR s/h = 1.0.
NET EFFECT OF LAST 0-s SECTION CONSIDERED NEGLIGIBLE
ON TOTAL WALL (s-2s VALUE OF 2.45 USED). 2.45(0.8)=1.96

qh = 18.87 psf

@ ULTIMATE

Fwind = 18.87(0.85)(1.96)(As) = 31.43 psf x As

@ WSD

Fwind = 18.87(0.85)(1.96)(As)(.6) = 18.86 psf x As

Fwind = 18.86 psf x As

		SHEET	OF
PROJECT	EOU BALLFIELDS	JOB NO	23142
	DUGOUT	DATE	12-27-2023
CLIENT	SAJ ARCHITECTURE	BY	JAS

FREESTANDING CMU WALL (CONT'D)

SEISMIC LOAD

SEISMIC BASE SHEAR, $V_{SEIS} = C_s(W)$

WHERE:

Cs = SEISMIC RESPONSE COEFFICIENT PER ASCE 7-16 SECTION 12.8.1.1

W = EFFECTIVE SEISMIC WEIGHT : 84.0 psf
(8" NORMAL WEIGHT w/ None)

$$C_s = \frac{S_{DS}}{\left(\frac{R}{I}\right)}$$

WHERE:

S_{DS} = SEISMIC COEFFICIENT (ASSUME SITE CLASS D) : 0.339

R = RESPONSE MODIFICATION FACTOR (TABLE 15.4-2) : 1.25

I = IMPORTANCE FACTOR : 1.0

FOR T < TL, Cs NEED NOT EXCEED $\dfrac{S_{D1}}{T\left(\frac{R}{I}\right)}$

WHERE:

S_{D1} = SPECTRAL RESPONSE ACCELERATION @ PERIOD = 1.0s : 0.191

T = FUNDAMENTAL PERIOD (USE T_a PER 12.8.2.1) : $C_t(h_n^x)$

C_t = APPROXIMATE PERIOD PARAMETER PER TABLE 12.8-2 : 0.02

x = APPROXIMATE PERIOD PARAMETER PER TABLE 12.8.2 : 0.75

h_n = HEIGHT IN FEET OF HIGHEST LEVEL OF STRUCTURE : 8.25 ft

THE VALUE OF C_s SHALL NOT BE LESS THAN 0.17

C_s = 0.271 GOVERNS

C_s MAX = 0.654 (Ta = 0.097 sec)

C_s MIN = 0.17

AT WSD, V = 0.7(0.271)(84 psf) = 15.95 psf

Vseis = 15.95 psf

WIND GOVERNS

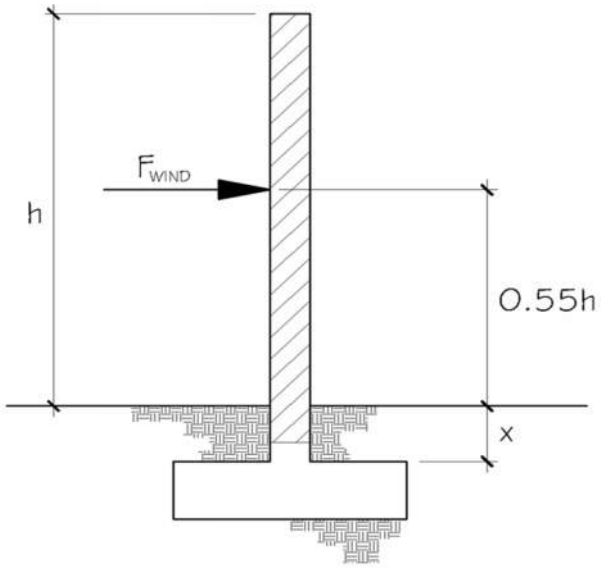
		SHEET	OF
PROJECT	EOU BALLFIELDS	JOB NO	23142
	DUGOUT	DATE	12-27-2023
CLIENT	SAJ ARCHITECTURE	BY	JAS

FREESTANDING CMU WALL (CONT'D)

STEM DESIGN

FOR 8" CMU WALL 8.25 ft ABOVE FINISH GRADE:

WIND LOADING ON STEM:



F_{WIND} = 18.86 psf x A_s @ WSD

FOR 1' STRIP OF WALL, F_{WIND} = 18.86 psf x h

h = 8.25 ft

x = 18 in

MOMENT IN THE STEM = $F_{WIND}(0.55h + x)$

MOMENT = 939 ft-lbs

		SHEET	OF
PROJECT	EOU BALLFIELDS	JOB NO	23142
	DUGOUT	DATE	12-27-2023
CLIENT	SAJ ARCHITECTURE	BY	JAS

FREESTANDING CMU WALL (CONT'D)

STEM DESIGN (CONT'D)

CHECK REINF FOR 8" (f'm = 1500 psi) CMU WALL 8.25 ft ABOVE FINISH GRADE

$$\frac{2}{jk} = \frac{F_b(b)(d^2)}{M}$$

$$n\rho j = \frac{n(M)}{b(d^2)(F_s)}$$

WHERE:

M = MOMENT IN STEM	:	939	ft-lbs
n = MODULAR RATIO OF STEEL TO MASONRY (Es/Em)	:	21.5	
d = DISTANCE FROM COMPRESSION FACE TO STEEL	:	3.8	in
b = WIDTH (ANALYSIS BASED ON 1' STRIP)	:	12	in
F_b = ALLOWABLE BENDING STRESS OF MASONRY (0.45f'm)	:	675	psi
F_s = ALLOWABLE BENDING STRESS OF STEEL	:	32,000	psi

$$\frac{2}{jk} = 10.380$$

$$n\rho j = 0.044$$

USING THE FOLLOWING RELATIONSHIPS BETWEEN j, k AND nρ:

$$j = 1 - \frac{k}{3} \qquad k = \sqrt{2n\rho + (n\rho)^2} - n\rho$$

BASED ON 2/jk, nρ = 0.027 ($\rho_{req'd}$ = 0.00126)

BASED ON nρj, nρ = 0.047 ($\rho_{req'd}$ = 0.00218) GOVERNS

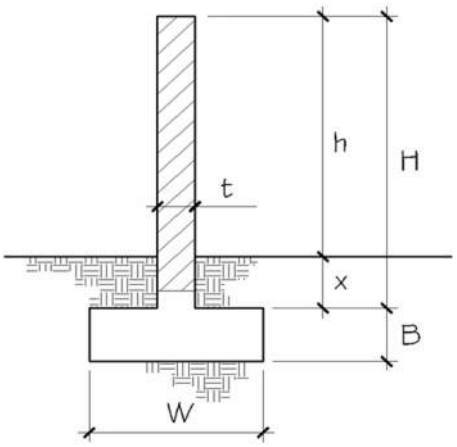
PROVIDE #5@24"o.c. ρ = 0.00340 > 0.00218 OK

PROVIDE 8" (f'm = 1500 psi) CMU WALL
W/ #5@24"o.c. VERTICAL REINFORCING

		SHEET	OF
PROJECT	EOU BALLFIELDS	JOB NO	23142
	DUGOUT	DATE	12-27-2023
CLIENT	SAJ ARCHITECTURE	BY	JAS

FREESTANDING CMU WALL

CHECK FOOTING (H = 9'-9" MAX)



H = 9.75 ft
W = 3.00 ft
B = 10 in
x = 18 in
t = 7.63 in
h = H-x = 8.25 ft

DL = H(84 psf) + (W-t)(x)(110 pcf) + W(B)(150 pcf)
DL = 1584 #

WIND GOVERNS, THEREFORE OTM = Fwind(0.55(h)+x+B)
OTM = 1069 lb-ft

$e = \frac{OTM}{0.6DL}$ =1.12 ft > $\frac{W}{6}$ = 0.50 ft THEREFORE TRIANGULAR DISTRIBUTION

TRAPEZOIDAL SOIL PRESSURE = $\frac{0.6DL}{W} + \frac{6(OTM)}{W^2}$ =N/A

TRIANGULAR SOIL PRESSURE = $\frac{2(0.6DL)}{3\left(\frac{W}{2} - e\right)}$ = 1689 psf

ALLOWABLE SOIL BEARING PRESSURE = 2000 psf > 1689 psf OK

SLIDING FORCE = 156 #
COEFFICIENT OF FRICTION = 0.3
RESISTING FORCE = 0.3(0.6DL) = 285# > 156# OK

		SHEET	OF
PROJECT	EOU BALLFIELDS	JOB NO	23142
	DUGOUT	DATE	12-27-2023
CLIENT	SAJ ARCHITECTURE	BY	JAS

FREESTANDING CMU WALL

CHECK FOOTING (H = 9'-9" MAX)

FOR SEISMIC OVERTURNING CHECK, OTM = [Vseis(h)(h/2+x+B)]
SEISMIC OTM = 850 lb-ft

$e = \frac{OTM}{0.6DL} = 0.89 \text{ ft} > \frac{W}{6} = 0.50 \text{ ft}$ THEREFORE TRIANGULAR DISTRIBUTION

$\text{TRAPEZOIDAL SOIL PRESSURE} = \frac{0.6DL}{W} + \frac{6(OTM)}{W^2} = \text{N/A}$

$\text{TRIANGULAR SOIL PRESSURE} = \frac{2(0.6DL)}{3\left(\frac{W}{2} - e\right)} = 1045 \text{ psf}$

2 x's ALLOWABLE SOIL BEARING PRESSURE = 4000 psf > 1045 psf OK

PROVIDE 3'-0" WIDE x 0'-10" DEEP CONTINUOUS FOOTING

RICE ENGINEERING
105 School Creek Trail | Luxemburg, WI 54217
(P) 920.617.1042 | (F) 920.617.1100

Eastern Oregon University
Barrier Netting Calculations

Project Location:
East Avenue
La Grande, OR
REI Project # R25-12-119

Prepared for:
Sportsfield Specialties
Delhi, NY
January 14, 2026

Design Criteria:

1. Design Loads per IBC 2021 (ASCE 7/16).
2. Deflection to be **2L/60 max** for cantilever members.
3. Steel tubes to be minimum **A500 Gr. C, Fy = 46 ksi.**
4. Concrete rebar shall be **grade 60 (Fy= 60 ksi), stirrups Fy=40 ksi**.
5. Concrete strength to be **f'c = 2,500 normal weight, assumed cracked.**
6. Cables to be galvanized 7x19 **ASTM 641.**
7. Soils allowable vertical bearing capacity assumed to be **1500 psf.** Lateral pressure assumed to be **100 psf/ft** below natural grade.
8. Netting is assumed to be lowered or taken down during offseason/winter months unless otherwise specified. **Design of Ice and Snow not considered in system design.**
9. Design of material separation to prevent reaction between dissimilar materials **not designed by Rice Engineering Inc.**
10. Groundwater is assumed to be below the bottom of the footing for design. Rice Engineering to be notified otherwise.

Page:	Description:	Date:	Revision:
E1	Elevation & Plan	12-12-25	
1	Wind Loads	12-12-25	
2	Net Loading	12-12-25	
3	Cable Forces	12-12-25	
4	Deflection	12-12-25	
5 – 6	Cable Strength	12-12-25	
A1	Backstop Foundation	12-12-25	

Bradley J Kuehl
2026.01.21 08:30:53-06'00'

Disclaimer:

This Certification is limited to the structural design of structural components of this Barrier Netting system.
It does NOT include responsibility for:

- Structural design of hardware, gaskets, and sealants.
- Design of material separation to prevent reaction between dissimilar materials.
- Design of air and water infiltration prevention.
- The manufacture, assembly, or installation of the system.
- Quantities of materials or dimensional accuracy of drawings.

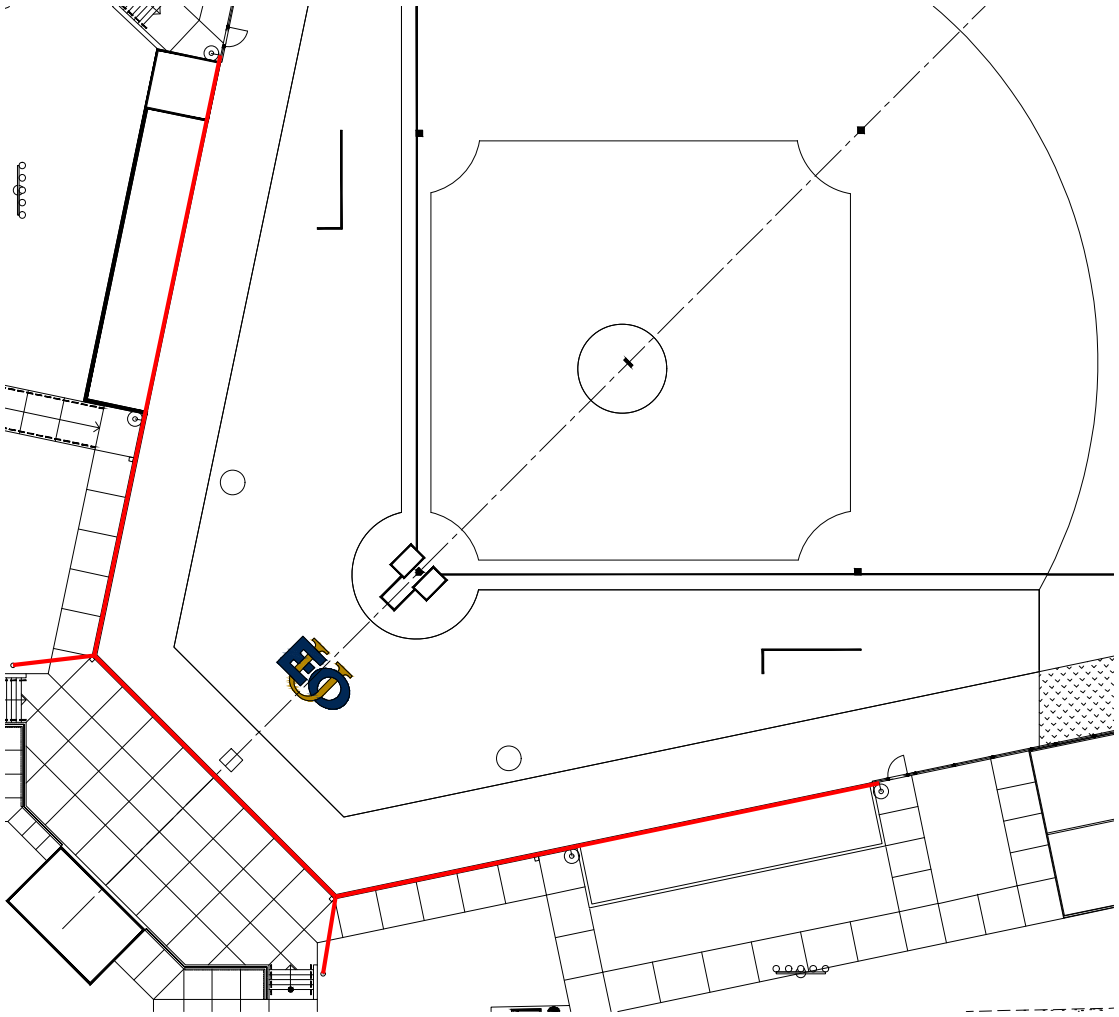
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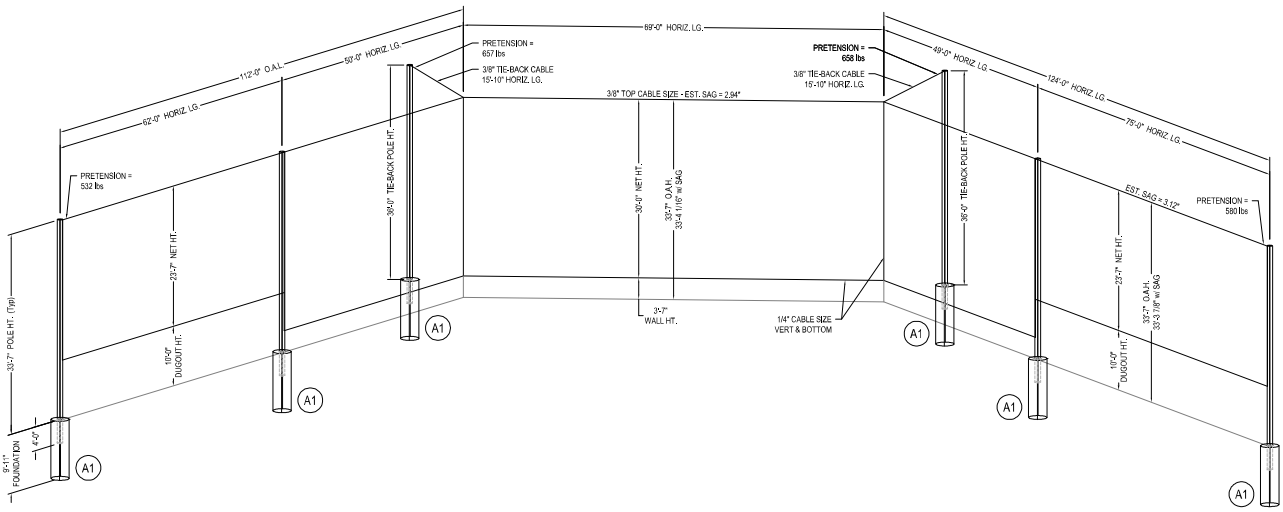
STRUCTURAL
REGISTERED PROFESSIONAL
ENGINEER
85382 PE

OREGON
MAY 10, 2011
BRADLEY J. KUEHL

01/21/2026
EXPIRES: 6/30/25

Elevation	Detail Ref.	Sheet No: E1





RICE ENGINEERING

Template:

105 School Creek Trail
Luxemburg, WI 54217
Phone: (920) 617-1042
Fax: (920) 617-1100
www.rice-inc.com

Project Description:

Eastern Oregon University

Job No:	R25-12-119		
Engineer:	MPB	Sheet No:	E1
Date:	12/12/2025	Rev:	
Chk By:		Date:	

ASCE 7-16 Net Wind Loads	Detail Ref.	Sheet No: 1

Inputs:

Risk Category	I	Table 1.5-1
Element Height	$z := 33.58$ ft	Table-30.3-1
Exposure	$E := "C"$	
Wind Velocity	$V := 95$ mph	Figure 26.5-1A, Figure 26.5-1B Figure 26.5-1C
Topographic Factor	$K_{zt} := 1.0$	Figure 26.8-1
Directionality Factor	$K_d := 0.85$	Table 26.6-1
Gust Factor:	$G := 0.85$	*per 26.9.1*
Force Coefficient:	$C_f := 1.2$	Figure 29.5-2

Calculations:

All Calculations Below This Line Are Automatic

Velocity pressure Coefficients:

$K_{zz} = 0.87$ psf

Velocity pressures:

$$q_z := 0.00256 \cdot K_{zz} \cdot K_{zt} \cdot K_d \cdot V^2 = 17.04$$

Calculated Pressures (ASD):

$\Phi := 0.6$ *ASD Conversion Factor*

$$W := -\Phi \cdot q_z \cdot G \cdot C_f = -10.43 \text{ psf}$$

Other Structures		All Heights
Figure 29.5-2	Force Coefficients, C_f	Open Signs & Lattice Frameworks

ϵ	Flat-Sided Members	Rounded Members	
		$D\sqrt{q_z} \le 2.5$ ($D\sqrt{q_z} \le 5.3$)	$D\sqrt{q_z} > 2.5$ ($D\sqrt{q_z} > 5.3$)
< 0.1	2.0	1.2	0.8
0.1 to 0.29	1.8	1.3	0.9
0.3 to 0.7	1.6	1.5	1.1

Notes:

1. Signs with openings comprising 30% or more of the gross area are classified as open signs.
2. The calculation of the design wind forces shall be based on the area of all exposed members and elements projected on a plane normal to the wind direction. Forces shall be assumed to act parallel to the wind direction.
3. The area A_f consistent with these force coefficients is the solid area projected normal to the wind direction.
4. Notation:

   ϵ: ratio of solid area to gross area;

   D: diameter of a typical round member, in feet (meters);

   q_z: velocity pressure evaluated at height z above ground in pounds per square foot (N/m^2).

Net Loading	Detail Ref.	Sheet No: 2

Inputs:

Net Properties: Ultra Cross Knotless Dyneema, 1.75"

$WT_{net} := 0.009$ psf — *Net weight per ft. sq.*

$\%Solid := 0.055$ — *Ratio of solid to total area*

$F_{max} := 530$ lb — *max. breaking strength*

$Net_{spa} := 1.75$ in — *o.c. spacing of strands*

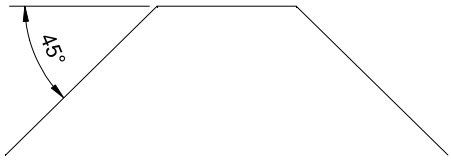
Design Wind Load:

$WL_1 := 10.43$ psf

Net Geometry:

$Angle_C := 0$deg

$Angle_1 := 57$deg



Calculations: *All Calculations Below This Line Are Automatic*

Model Load Calculations:

$WL_{n1} := WL_1 \cdot \%Solid = 0.004 \cdot psi$

$Coef_C := \cos(Angle_C) = 1$

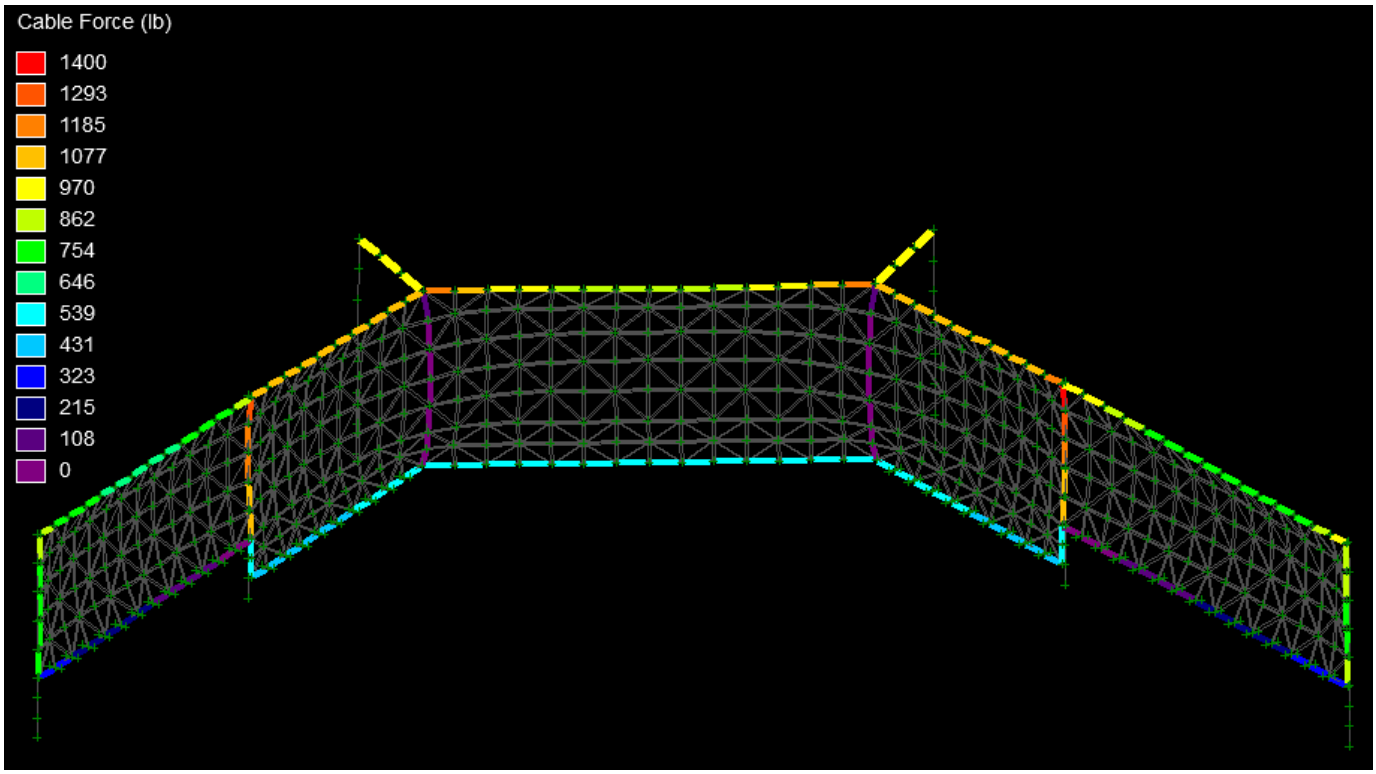
$Coef_S := \cos(Angle_1) = 0.545$

NDN Load Coef.

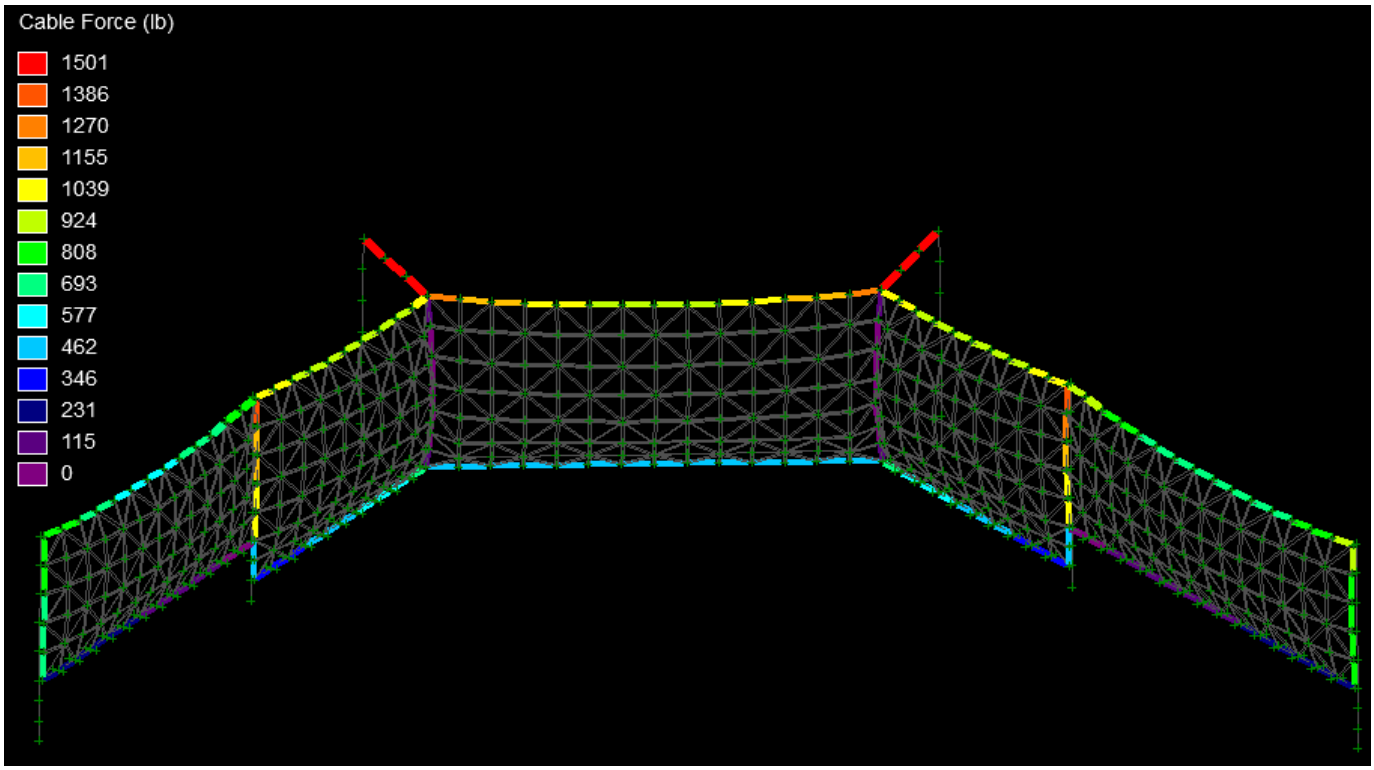
RICE ENGINEERING Template: REI-MC-4716	105 School Creek Trail Luxemburg, WI 54217 Phone: (920)845-1042 Fax: (920)845-1048 www.rice-inc.com	Project Description: **Eastern Oregon University**	Job No: R25-12-119 Engineer: MPB — Sheet No: 2 Date: 12/12/2025 — Rev: Chk By: — Date:

Cable Forces	Detail Ref.	Sheet No: 3

+Y:



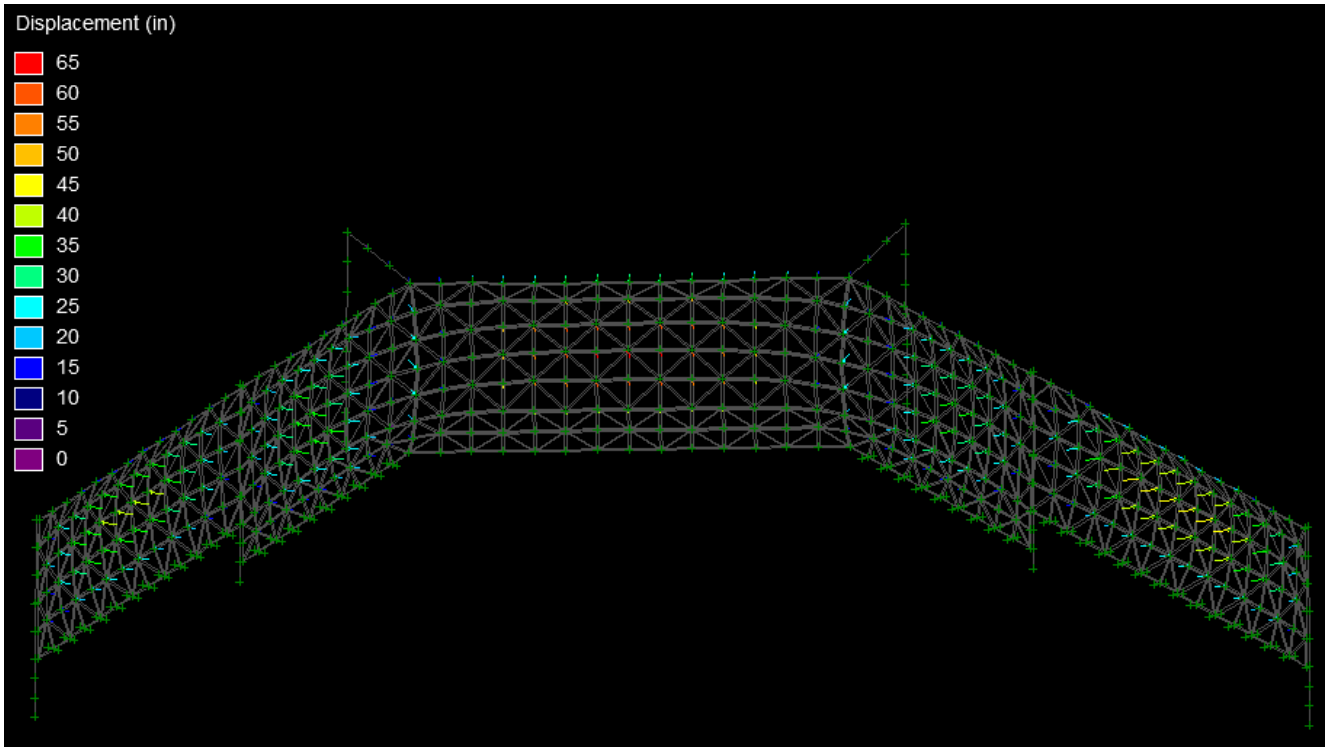
-Y:



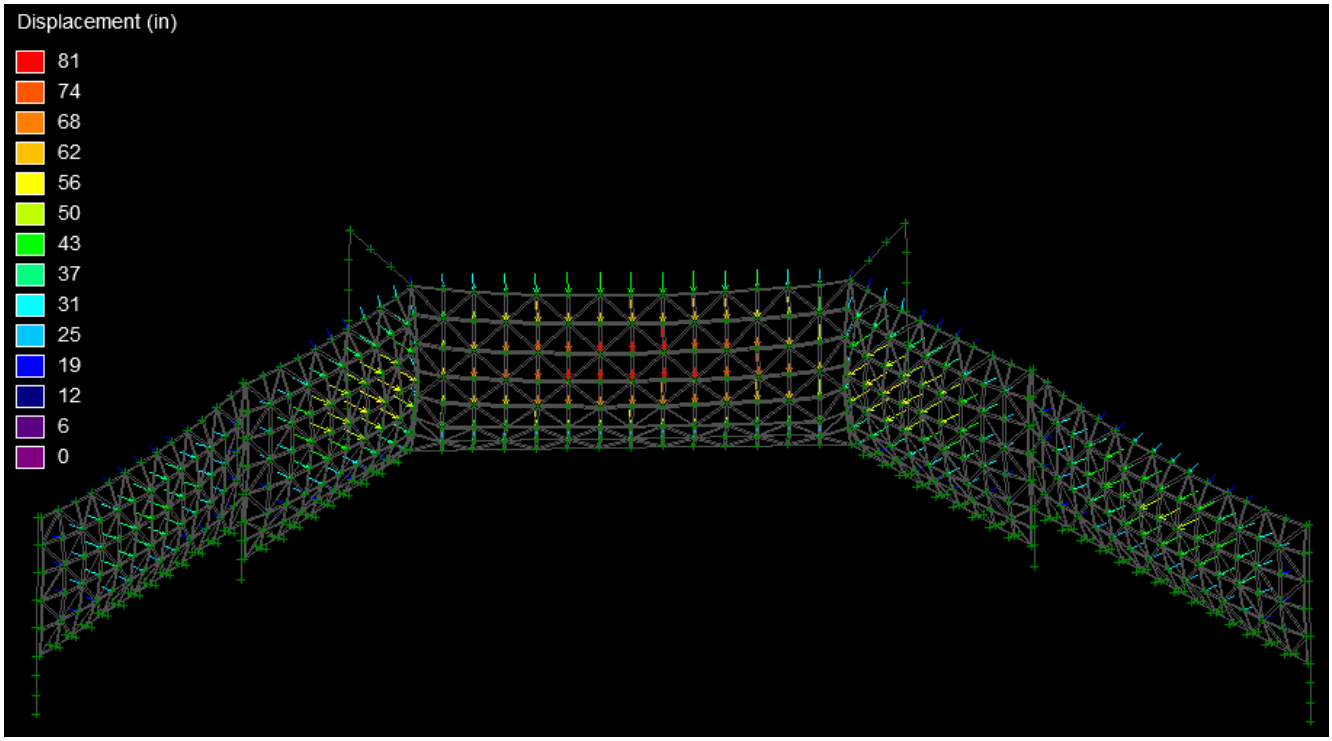
$F_{max} := 1501lbf$

RICE ENGINEERING Template: REI-MC-5854	105 School Creek Trail Luxemburg, WI 54217 Phone: (920)845-1042 Fax: (920)845-1048 www.rice-inc.com	Project Description: **Eastern Oregon University**	Job No: R25-12-119 Engineer: MPB / Sheet No: 3 Date: 12/12/2025 / Rev: Chk By: / Date:

+Y:


Displacement (in)
65
60
55
50
45
40
35
30
25
20
15
10
5
0

-Y:


Displacement (in)
81
74
68
62
56
50
43
37
31
25
19
12
6
0

Cable Strength	Detail Ref. Bottom	Sheet No: 5

ASCE 19-10: Structural Applications Of Steel Cables for Buildings

Inputs:

$T_n := 1501 \cdot lbf$ *Maximum Cable Tension*

$l := 75 \cdot ft$ *Length of Cable*

$N_f \equiv 0.8$ *Fitting Reduction Factor (Table 3-1)*

$N_d \equiv 1.0$ *Deflector Reduction Factor (Table 3-2)*

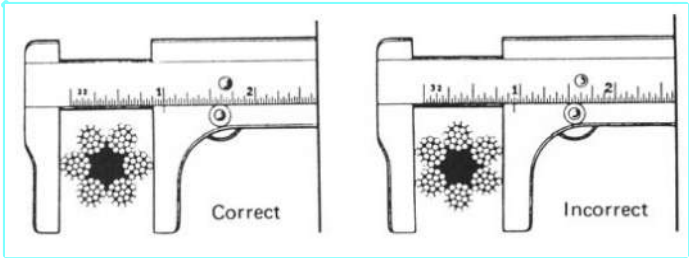
TYPE OF CABLE

cboMaterial = Galvanized Cable

cboType = 7x19

D_{r_str} = 1/4" = 0.25 in *Diameter of Cable*

MEASURING WIRE ROPE



Calculations:

All Calculations Below This Line Are Automatic

$FS \equiv 2.2$ *Factor of Safety per ASCE 19-10; 3.3.1 Design Strength*

$D_r = 0.25 \cdot in$ *Diameter of Wire Rope*

$WT_r = 0.54 \cdot plf$ *Weight*

$F_{br} = 7000\ lbf$ *Breaking Strength*

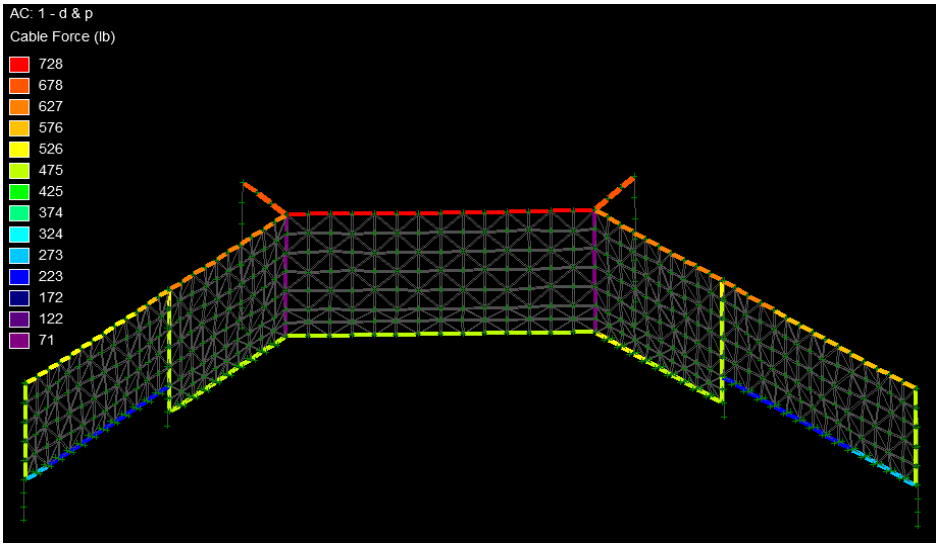
$A_r := 0.25 \cdot \pi \cdot D_r^2 = 0.05 \cdot in^2$ *Area of Cable (Approx)*

$S_d := \frac{F_{br} \cdot \min(N_f, N_d)}{FS} = 2545 \cdot lbf$ *Allowable Tension*

$I_{cable} := \left(\frac{T_n}{S_d}\right) =$ "0.59 < 1.00 PASS"



Req. Pretension



Generic Material Properties

"Material"	"Modulus of Elasticity"	"Density"
"Steel"	20000000 psi	0.284 pci
"Dyneema"	16000000 psi	0.035 pci

Use Min 1/4" (6 mm) Diameter 7x19 Galvanized Steel Wire Rope

Nominal Breaking Strength = 7,000 lb

Pretension Cable As Shown

RICE ENGINEERING

Template: REI-MC-4719

105 School Creek Trail
Luxemburg, WI 54217
Phone: (920)845-1042
Fax: (920)845-1048
www.rice-inc.com

Project Description: **Eastern Oregon University**

Job No:	R25-12-119		
Engineer:	MPB	Sheet No:	5
Date:	12/12/2025	Rev:	
Chk By:		Date:	

Cable Strength Check	Detail Ref. Top	Sheet No: 6

Inputs:

$T_n := 1501 \cdot lbf$ *Maximum Cable Tension*

$l := 75 \cdot ft$ *Length of Cable*

$N_f \equiv 0.8$ *Fitting Reduction Factor (Table 3-1)*

$N_d \equiv 1.0$ *Deflector Reduction Factor (Table 3-2)*

[ASCE 19-10: Structural Applications Of Steel Cables for Buildings]

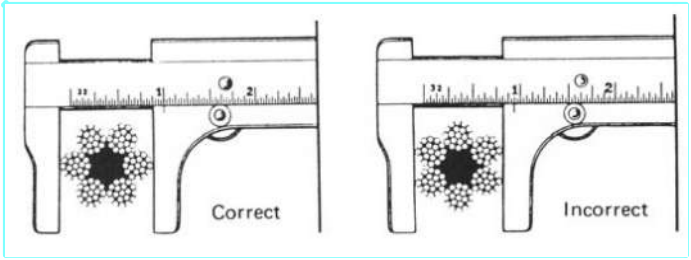
TYPE OF CABLE

cboMaterial = Galvanized Cable

cboType = 7x19

D_{r_str} = 3/8" = 0.38 in *Diameter of Cable*

MEASURING WIRE ROPE



Calculations:

All Calculations Below This Line Are Automatic

$FS \equiv 2.2$ *Factor of Safety per ASCE 19-10; 3.3.1 Design Strength*

$D_r = 0.38 \cdot in$ *Diameter of Wire Rope*

$WT_r = 0.87 \cdot plf$ *Weight*

$F_{br} = 14400\ lbf$ *Breaking Strength*

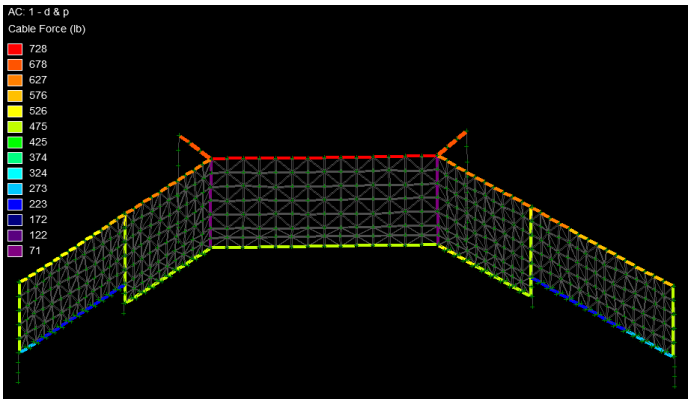
$A_r := 0.25 \cdot \pi \cdot D_r^2 = 0.11 \cdot in^2$ *Area of Cable (Approx)*

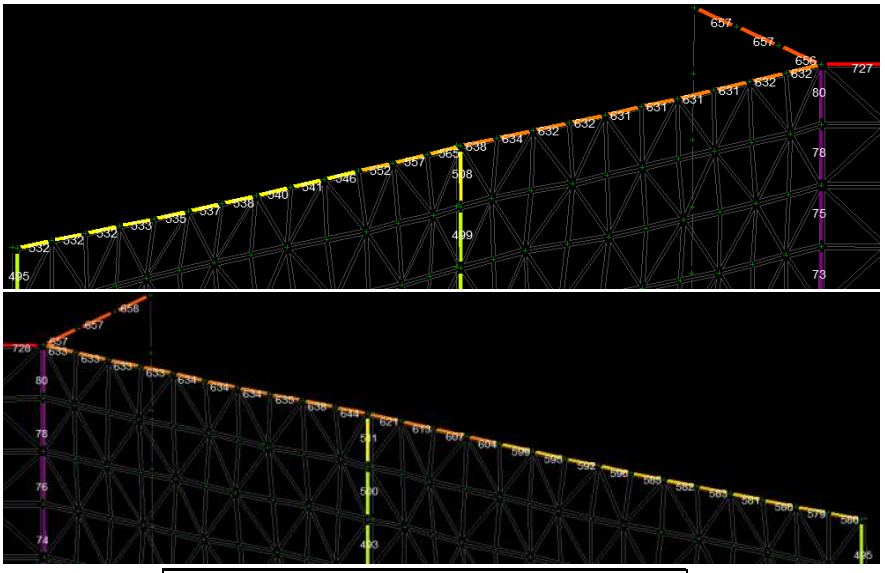
$\Delta AllowableSag := 3.12\ in$ *Allowable Deflection*

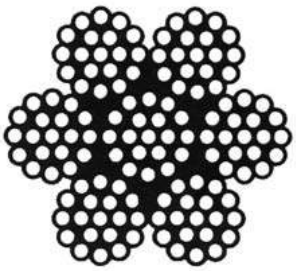
$S_d := \frac{F_{br} \cdot \min(N_f, N_d)}{FS} = 5236 \cdot lbf$ *Allowable Tension*

$I_{cable} := \left(\frac{T_n}{S_d}\right) =$ "0.29 < 1.00 PASS"

Req. Pretension







"Material"	"Modulus of Elasticity"	"Density"
"Steel"	20000000 psi	0.284 pci
"Dyneema"	16000000 psi	0.035 pci

Use Min 3/8" (9.52 mm) Diameter 7x19 Galvanized Steel Wire Rope

Nominal Breaking Strength = 14,400 lb

Pretension Cable As Shown

RICE ENGINEERING

105 School Creek Trail
Luxemburg, WI 54217
Phone: (920)845-1042
Fax: (920)845-1048
www.rice-inc.com

Project Description: **Eastern Oregon University**

Job No:	R25-12-119		
Engineer:	MPB	Sheet No:	6
Date:	12/12/2025	Rev:	
Chk By:		Date:	

Template: REI-MC-4719

Pole Foundation	Detail Ref.	Sheet No: A1

Input Variables:

Pole:

$H := 36$ ft *(height)*

$w := \frac{10.43}{144} \cdot 10.75 = 0.78$ pli

$F := 1454 + w \cdot H \cdot 12 = 1790$ lb *(reaction force)*

$M := 635914 + \frac{w \cdot (H \cdot 12)^2}{2} = 708569$ in·lb

Embedment $:= 4$ ft

Steel:

$F_y := 46000$ psi *(Steel yield strength)*

Soils:

$S := 1500$ psi *(Soil Bearing Capacity)*

$P := 100$ psi *(Passive Soil Pressure)*

Pier Foundations:

$f_c := 2500$ psi *(concrete compressive strength)*

$d := 9.92$ ft *(initial pier depth)*

$D := 3$ ft *(pier diameter)*

$I_{pole} := 151$ in^4

$S_{pole} := 28.1$ in^3

$Z_{pole} := 36.9$ in^3

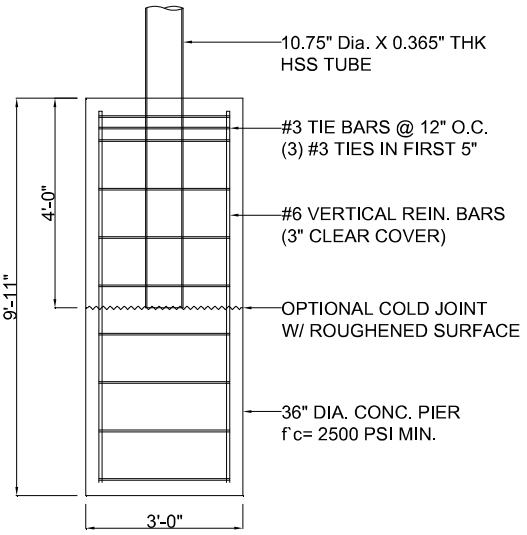
$A_{pole} := 11.1$ in^2

$D_{pole} := 10.8$ in

$t_{pole} := .34$ in

$E := 29 \cdot 10^6$ psi

$\Omega := 1.67$



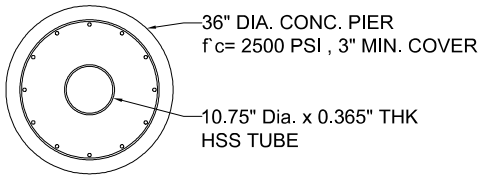
Calculations:

$\lambda_p := \frac{0.07 \cdot E}{F_y} = 44.13$ $\lambda_r := \frac{0.31 \cdot E}{F_y} = 195.43$

$\lambda := \frac{D_{pole}}{t_{pole}} = 31.76$ $M_n := F_y \cdot Z_{pole} \cdot \frac{1}{\Omega} = 1016407$ in·lb

USE 10.75" Dia. x 0.365" THK HSS Tube
A500 Gr. C, Round, Fy = 46ksi Min.

$I := \frac{M}{M_n} = 0.7$



Chk Rebar:

$A_{smin} := \left[0.005\pi \cdot \left(\frac{D \cdot 12}{2}\right)^2\right]$ $A_{smin} = 5.09$ in^2

$A_{sprov} := N_r \cdot 0.44 = 5.28$ in^2 $N_r := 12$

Chk Post Embedment:

$V_{ua} = 19157$ lbf **Applied Load** (D.7.2)

$\phi V_n := V_n \cdot \phi_v \cdot \alpha = 27403$ lbf **Unreinforced Concrete Shear Capacity**

POSTEMBEDMENT = "OK"

Pier Foundation Design:

$S_c := \left(\frac{P \cdot 2 \cdot d}{3}\right)$ $S_c = 661$

$A_c := \frac{2.34 F}{S_c \cdot D}$ $A_c = 2.11$

$h_1 := \frac{M}{F \cdot 12}$ $h_1 = 32.98$

$d_{reqd} := \left(\frac{A_c}{2}\right) \cdot \left[1 + \sqrt{1 + 4.36\left(\frac{h_1}{A_c}\right)}\right]$ $d_{reqd} = 9.83$ ft

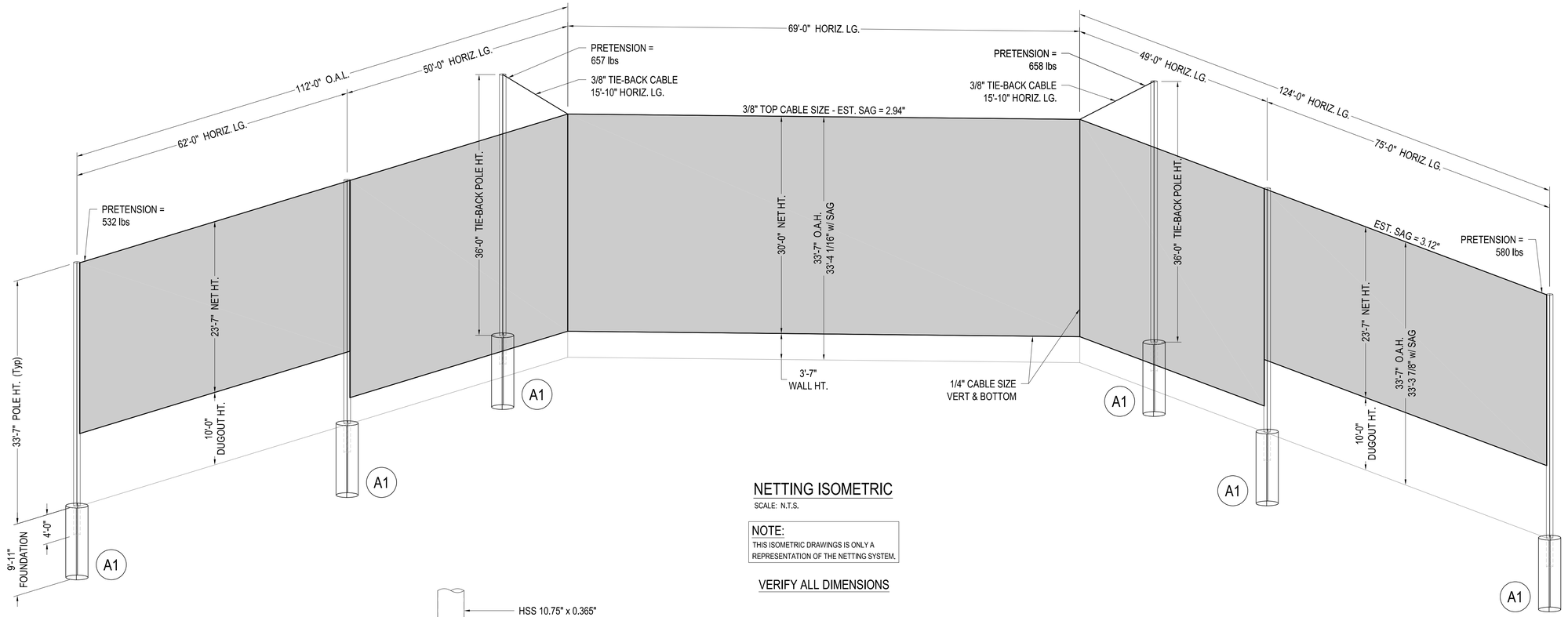
Use 36" Dia. Conc. Piers, 9'-11" Deep Min.
f'c = 2,500 psi min.
with (12) #6 Grade 60 rebar

IBC Table 1806.2 Presumptive Load Bearing Values

Class of Materials	Vertical Foundation Pressure (psf)	Lateral Bearing Pressure (psf/f below natural grade)	Lateral Sliding Resistance	
			Coefficient of Friction	Cohesion (psf)
1. Crystline Bedrock	12000	1200	0.7	—
2. Sedimentary and foilated rock	4000	400	0.35	—
3. Sandy Gravel and/ or gravel (GW and GP)	3000	200	0.35	—
4. Sand, silty sand, clayey sand, silty gravel (SW, SP, SM, SC, GM, and GC)	2000	150	0.25	—
5. Clay, sandy clay, silty clay, clayey silt, silt and sandy silt (CL, ML, MH and CH)	1500	100	—	130

RICE ENGINEERING Template:	105 School Creek Trail Luxemburg, WI 54217 Phone: (920)845-1042 Fax: (920)845-1048 www.rice-inc.com	Project Description: **Eastern Oregon University**	Job No:	R25-12-119	
			Engineer: MPB	Sheet No: A1	
			Date: 12/12/2025	Rev:	
			Chk By:	Date:	

TABLE 1				
CLIP SIZE (INCHES)	ROPE SIZE (INCHES)	MINIMUM NO. OF CLIPS	AMOUNT OF ROPE TO TURN BACK (INCHES)	TORQUE (FT-LB)
1/8	1/8	2	3 1/4	4.5
3/16	3/16	2	3 3/4	7.5
1/4	1/4	2	4 3/4	15
5/16	5/16	2	5 1/4	30
3/8	3/8	2	6 1/2	45
7/16	7/16	2	7	65
1/2	1/2	3	11 1/2	65
9/16	9/16	3	12	95
5/8	5/8	3	12	95
3/4	3/4	4	18	130

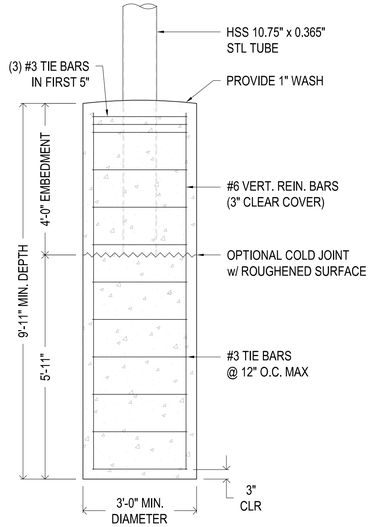


NETTING ISOMETRIC

SCALE: N.T.S.

NOTE:
THIS ISOMETRIC DRAWINGS IS ONLY A REPRESENTATION OF THE NETTING SYSTEM.

VERIFY ALL DIMENSIONS



A1 FOUNDATION DETAIL

SCALE: 1/2" = 1'-0"

GENERAL NOTES:

1. DESIGN PER ASCE 7-16 (IBC 2021)
   RISK CATEGORY - I
   WIND VELOCITY - 95 mph
   EXPOSURE - C
2. NETTING IS NOT DESIGNED FOR SNOW AND/OR ICE.
3. STEEL TUBES TO BE A MINIMUM A500 Gr. C, Fy = 46 ksi
4. CONCRETE SHALL MEET THE FOLLOWING:
   28 DAY STRENGTH = 2,500psi, CONCRETE MIX DESIGNED BY OTHERS
5. REINFORCING BAR TO BE GRADE 60, STIRRUPS Fy = 40 ksi
6. ASSUMED SOIL VERTICAL BEARING CAPACITY: 1,500 psf
   ASSUMED SOIL LATERAL PRESSURE: 100 psf/ft BELOW NATURAL GRADE
7. MAX POLE HEIGHT = 36' ABOVE GRADE
8. MAX NET LENGTH = 75' SPAN
9. MAX CABLE LENGTH = 305'-0"
10. WATER TABLE ASSUMED TO BE BELOW BOTTOM OF FOOTING FOR DESIGN.
11. COMPACT SOIL SURROUNDING FOOTING TO 95% MODIFIED PROCTOR.

SYSTEM NOTES:

1. FOOTING FOR USE w/ ULTRA CROSS KNOTLESS DYNEEMA
   1-3/4" SQUARE MESH NETTING
2. TOP CABLE SIZE = 3/8" (9.5mm) Ø 7x19
   ESTIMATED SAG = 3.12"
3. TIE-BACK CABLE SIZE = 3/8" (9.5mm Ø 7x19
4. BOTTOM CABLE SIZE = 1/4" (6mm) Ø 7x19
5. PRETENSION VALUES ARE AFTER INSTALL AT FINAL RESTING POSITION.
6. POLES CAN BE DIRECTLY EMBEDDED IN LIEU OF USING SLEEVES.

Bradley J Kuehl
2026.01.21 08:31:02-06'00'

STRUCTURAL REGISTERED PROFESSIONAL ENGINEER
85382 PE
OREGON
MAY 10, 2011
BRADLEY J. KUEHL

01/21/2026
EXPIRES: 6/30/25

DISCLAIMER:
THIS CERTIFICATION IS LIMITED TO THE STRUCTURAL DESIGN OF STRUCTURAL COMPONENTS OF THIS BARRIER NETTING SYSTEM. IT DOES NOT INCLUDE RESPONSIBILITY FOR:

- STRUCTURAL DESIGN OF HARDWARE, CLEVISES AND TURNBUCKLES.
- MISC. PLATES, TIES AND HARDWARE.
- DESIGN OF AIR AND WATER INFILTRATION PREVENTION.
- THE MANUFACTURE, ASSEMBLY OR INSTALLATION OF THE SYSTEM.
- QUANTITIES OF MATERIALS OR DIMENSIONAL ACCURACY OF DRAWINGS.

RICE ENGINEERING
105 School Creek Trail
Luxemburg, WI 54217
Phone : 920.617.1042
Fax: 920.617.1100
www.rice-inc.com linkedin facebook

PROJECT: Eastern Oregon University
East Avenue
La Grande, OR 97850

CUSTOMER: SPORTSFIELD SPECIALTIES

DATE: 01-14-2026

DRAFTED BY: MPB

SHEET TITLE: BARRIER NETTING

SHEET: 01

EASTERN OREGON UNIVERSITY
TREE CAMPUS HIGHER EDUCATION
CAMPUS TREE CARE PLAN

Facilities Management & Planning
Campus Landscape & Grounds Management











The best time to plant a tree is twenty years ago.
The second-best time is now. - Lao-tse

EASTERN OREGON UNIVERSITY CAMPUS TREE CARE PLAN 2016 REVISED 2021

TABLE OF CONTENTS

1. Tree Campus Higher Education
2. Tree Care Plan Purpose
3. Responsible Department / Enforcement Authority
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Appendix I
Campus Standard Specifications; Section 01 5320 Tree & Plant Protection
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EASTERN OREGON UNIVERSITY
CAMPUS TREE CARE PLAN
2016 REVISED 2021

1. Tree Campus Higher Education



Congratulations!

Eastern Oregon University Received 2016 Tree Campus USA Recognition

Dear Tree Campus USA Contact,

Congratulations to Eastern Oregon University for earning 2016 Tree Campus USA® recognition. Tree Campus USA, a national program launched in 2008 by the Arbor Day Foundation, honors colleges and universities and their leaders for promoting healthy trees and engaging students and staff in the spirit of conservation.

To obtain this distinction, Eastern Oregon University has met the five core standards for sustainable campus forestry required by

Tree Campus USA including establishment of a tree advisory committee, evidence of a campus tree care plan, dedicated annual expenditures for its campus tree program, an Arbor Day observance and the sponsorship of student service learning projects. Your entire campus community should be proud of this sustained commitment to environmental stewardship

Two promotional items are being prepared for your campus to help publicize your new recognition. These include a customized press release for your communications contact and a ceremonial letter for your president/chancellor (or the contact you listed in your application). Your press release will be sent out to your communications contact in the next few days and the ceremonial letter should be received by the end of April. Your recognition materials will be shipped to your state coordinator to be distributed to you on or before your state's Arbor Day.

Again, congratulations! Your diligence in improving the environment and quality of life at Eastern Oregon University contributes to a healthier, more sustainable world for us all.

Sincerely,

Mary Sweeney
Program Manager
Arbor Day Foundation

The Arbor Day Foundation
211 N. 12th St.
Lincoln NE 68508

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2. PURPOSE Summary

Eastern Oregon University is nestled into the unique environment of the Grande Ronde Valley. At 3,000 feet, cradled between the Blue Mountains to the west and the Eagle Cap area of the Wallowa Mountains to the east, the influence of our borrowed landscape is unmistakable. Inspired by the forests and grasslands that surround us, EOU is focused on restoring and reinvigorating our historic landscape with native flora. Also taking inspiration from our home town of La Grande with its Arbor Day Foundation designation as a Tree City USA, the EOU Campus Tree Plan plays a central role in our overall strategic and master planning efforts.

The purpose of the Eastern Oregon University Campus Tree Plan is to create guidance for protecting our urban tree canopy and our landscape heritage, ensuring a safe, attractive and sustainable campus urban forest. This document shall serve as a source for designers, contractors and Eastern Oregon University Faculty and Staff to reference when planning and implementing activities that may impact our tree assets. To that end, we are working to document the policies, procedures and practices that are used in establishing, protecting, maintaining, and removing trees on the campus and other associated University properties. The specific objectives of the plan are to:

A. Plan Objectives

I. Ensure proper species selection, high-quality nursery stock acquisition, and industry consensus planting procedures.

II. Promote species diversity and proper age structure in the tree population. Protect high-value campus trees during construction and renovation projects.

III. Promote tree health and safety by utilizing ISA's best management practices when maintaining campus trees.

IV. Ensure that trees are reasonably replaced when there is mortality due to weather, pest infestations, injury, or construction displacement.

V. Encourage campus community members to respect and value the campus urban forest.

Note: This plan has been promulgated in partial fulfillment of Arbor Day Foundation's standards for Tree Campus Higher Education designation and accurately reflects policies and procedures followed and enforced by EOU's Department of Facilities Management & Campus Planning. Eastern Oregon University has officially adopted and incorporated this document into the University's shared governance protocol.

3. RESPONSIBLE DEPARTMENT

I. Department of Facilities Management & Planning
II. Campus Grounds & Landscape Management Unit

4. CAMPUS TREE ADVISORY COMMITTEE

I. The tree advisory committee is formally known as the Arboretum Committee. The committee is comprised of faculty and staff from numerous plant related programs throughout the university. The committee meets biannually, and provides important input into the care and improvement of the campus landscape.
II. Current committee membership includes two assigned members without term expirations in the Campus Arborist and the Director of Facilities Management & Campus Planning; serving volunteer laissez-faire terms are a faculty representative from the College of Business and a Consulting Arborist from our region; serving a one-year volunteer term is a representative from our on-campus students.

5. CAMPUS TREE CARE POLICIES & ARBORICULTURE PRACTICES

A. Planting

I. Tree planting may occur to enhance the campus landscape and tree canopy, as part of new construction, and to replace removed or declining trees. Planting is most often performed by EOU's Facilities Management, Campus Grounds & Landscape Maintenance Unit, but may also be performed by landscape contractors or campus community volunteers working under the direction of Grounds & Landscape personnel.

B. Tree Removal

II. All tree removals shall conform to ANSI Z133 and A300 standards
III. Generally live trees may be removed to mitigate risk to the public, University property or if they inhibit services.
IV. Trees may be removed after assessment by the University Arborist who will consult with the Campus Tree Committee where the Committee reaches a consensus.
V. When the University Arborist and the Campus Tree Committee cannot reach a consensus, an independent assessment by a Consulting Arborist may be required and a report created for submittal to the Committee for review.

C. Tree Selection

I. Selection of planting locations as well as tree and other plant species will be in compliance with EOU's Campus Standard Specifications (see Appendix III) and with the approval of the Landscape & Grounds Manager. The goals of the Standard Specifications and the Landscape & Grounds Manager in selecting locations and species are to encourage species diversity, prevent infrastructure conflicts and maximize benefits to the landscape and urban canopy. EOU strives to select plants that are native to the region or the climate to ensure a healthy and sustainable campus canopy.

D. Site Considerations

I. Choosing tree and plant species appropriate to the selected site in scale, growth and appearance is critical to ensuring the long-term health of the tree and a manageable and sustainable landscape. Among the qualities assessed in selecting tree and plant species are the initial and eventual overall scale, canopy size and form, habitat requirements and impacts of leaf, seed and fruit drops.

E. Planting Protocol (See Appendix I)

I. ANSI A-300 Standard Practices are followed for plantings. Trees may be planted in the fall after October 1st and until the ground is frozen and in the spring from March 1st to May 31st. No or limited planting shall occur during the summer months, any offseason planting should be reviewed by the campus arborist.

INSTALLATION

Remove all materials from the planting hole for the full width and depth of the tree root ball. Excavate an area at least three (3) times the diameter of the root ball. Care must be taken to avoid excavating to a depth greater than required. The subgrade below the root ball shall be tamped slightly to prevent settlement. All rope, twines and debris shall be removed from the planting hole before back fillings.

Place balled and burlapped tree in the prepared planting hole by lifting and carrying it by the root ball so that the ball will not fracture or loosen. Set the tree upright in the center of the hole. All trees shall sit at an elevation after settlement with the base of the trunk and the beginning of the roots known as the trunk flair level with the site grade.

Cut and remove rope and wire from the root ball. All rope, twine, wire, burlap and other materials shall be removed and not back filled into the planting hole. Back fill shall be loose and friable, this reduces air pockets issues. Soil shall be firmed as the hole is filled but not compacted. At no time should soil/mulch be mounded to cover the trunk of the tree. Final soil level shall be flush with the surrounding soil grade.

No tree trunks shall be wrapped. Remove all nursery tags and protective wrapping. No material shall be left that may girdle the stem. Some of the general planting guidelines for campus trees include:

a. Planting hole to be three times the size of the root ball whenever possible, or at least two times the size of the root ball.

b. Trees positioned with top of the root flare at the same level as the soil, with compost or mulch at least 4 inches back from the stem.

c. Stake trees only as needed for support during early establishment.

d. Soil volume should be based on the mature size of the canopy.

e. Tree planting will generally occur in early October through late November and in late March through May.

f. Pruning at planting should only be performed to remove broken branches.

F. Pruning Schedule

I. The maintenance pruning schedule shall be dictated by tree species, age, function, and placement.

II. Trees less than 7 years old may receive structural pruning on an annual or biennial basis.

III. Trees 7-20 years old shall be inspected and assessed by the Campus Arborist annually for defects and pruning requirements and generally may receive structural pruning every two to five years.

IV. Trees 20 years old and older shall be inspected and assessed by the Campus Arborist annually for defects and pruning requirements and will receive maintenance pruning as needed, and generally every five to seven years to clean dead, diseased, dying, and defective branches from the crown.

V. Trees adjacent to roadways, walkways, signs, and street lights are annually inspected for safety and clearance issues and maintenance pruned as necessary.

G. Pruning Practices

To encourage the development of a strong, healthy tree, the following guidelines shall be followed when pruning:

I. General

a. Pruning shall not be conducted without a clear objective or outcome.
b. Prune first for safety, next for health, and finally for aesthetics.

c. When removing branches, the pruning cut shall not damage the branch bark ridge and branch collar.
d. Internode (heading) cuts should not be used except in storm response and crown restoration procedures.
e. Branch reduction or thinning should be used to achieve pruning objectives rather than making large (>8" diameter) branch removal cuts.

II. Cleaning
a. Thinning shall be performed to remove dead, diseased, dying, and defective branches, which reduces hazards, promotes, health, and improves appearance.
b. Large branches should be removed with the aid of ropes and rigging equipment to minimize the risk of tree injury from falling debris.

III. Thinning
a. Thinning shall be performed to reduce the density of branches, which increases light penetration, improves visibility, and decreases wind load.
b. Thinning assesses how a tree will be pruned from the top down.
c. Favor branches with strong, U- shaped angles of attachment.
d. Remove branches with weak, V-shaped angles of attachment and/or included bark.
e. Ideally, lateral branches should be evenly spaced on the main stem of young trees.
f. Remove any branches that rub or cross another branch.
g. Make certain that lateral branches are no more than one-half to threequarters of the diameter of the main stem to discourage the development of co-dominant stems.
h. Do not remove more than one-quarter of the living crown of a tree at one time. If it is necessary to remove more, do it over successive years.

IV. Raising
a. Raising shall be performed to provide vertical clearance from thoroughfares, signs, street lights, and structures.
b. Always maintain live branches on at least two- thirds of angiosperm tree's total height. Removing too many lower branches will hinder development.
c. Remove basal sprouts and vigorous epicormic sprouts.

V. Reduction

a. Reduction shall be performed to decrease the overall height of a tree or to decrease the length of an individual branch.
b. Use reduction pruning only when absolutely necessary. Make the pruning cut at a lateral branch that is a least one-third the diameter of the stem to be removed.
c. If it is necessary to remove more than half of the foliage from a branch, remove the entire branch.

VI. Cultural Practices

a. Mulching and Irrigation
    i. Tree mulching every two years for trees up to approximately 6".
    ii. Periodically, drip lines of larger trees and tree groupings may be mulched extensively with composted landscape debris.
b. Fertilization and Pest Management
    i. Trees are managed for pest problems as needed.
    ii. There is no regular tree fertilization beyond treatment received as a result of spring lawn fertilization.
    iii. Specimen or high-value trees may receive prescription fertilization when severe nutrient deficiencies are diagnosed.

VII. Other Practices

a. Tree Removals
    i. Live trees are generally removed only when required to protect the public safety or are detracting from the quality of the landscape.
    ii. Trees may only be removed with approval from the Director of Facilities Management & Campus Planning after consultation with the Campus Arborist. Under regular planning procedures, consultation with the Arboretum Committee will also take place.
    iii. If the committee cannot reach a consensus, tree removal decisions will be based upon the assessment of the Campus Arborist.
b. Planting and Tree Diversity
    i. As the campus may be used as a teaching lab, increasing the diversity of tree species is extremely important. However, species selection must be dictated by site conditions.
    ii. A complete species list for campus planting does not exist, but landscape design guidelines and general concept can be found in the EOU Campus Master Plan (Appendix III), and general plant selection guidelines can be found in the EOU Campus Standards (Appendix I).

iii. Arboretum Committee members will be consulted to recommend species for specific site conditions.
iv. Committee members may request use of new cultivars and species that are absent or underrepresented on campus.
v. Based on the vernacular of the site, some landscapes will be planted in native species while others may include exotics.
vi. Known invasive woody plants are consciously avoided in tree planting plans.

c. Storm Response and Recovery
i. Storm response and recovery are generally accomplished in-house.
ii. In a crisis, the first priority is to remove tree debris that blocks campus thoroughfares, disrupts campus operations, or poses hazards to the campus community.
iii. Once these critical needs are addressed, a prioritized recovery plan is implemented during which unsalvageable trees are systematically removed and salvageable trees are pruned to restore their health and structure.
iv. As the tree planting budget permits, lost trees are strategically replaced to restore the structure and function of the campus urban forest in a reasonable time frame.
v. During storm response and recovery, trees requiring specialized equipment not available in-house will be addressed by an outside contractor.

6.PROTECTION AND PRESERVATION PROCEDURES & PRACTICES

Due to the quantity, quality and importance of trees on the EOU campus, special Tree and Plant Protection Standards have been developed and published in the EOU Campus Standards (Appendix I). The EOU Tree and Plant Protection Standards reference ANSI A300 (Part 1), "Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices" and generally direct all contractors, service providers and other entities undertaking any activities that may potentially affect the health of campus trees and other plant materials to contact the EOU Department of Facilities Management & Campus Planning, Campus Grounds & Landscape Management Unit, before any such activities are planned or performed. After making such contact and having plans reviewed, all work and/or activities shall be performed in full compliance with the policies and procedures called out in the EOU Campus Standards document.

A. Preservation During Construction Project Design Phase

I. On the site survey map, identify all trees whose root systems are likely to be impacted by construction equipment, cut and fill activities, utility corridors, proposed walks and roads, and potential construction staging areas; and whose branches may be damaged by construction equipment.

II. If trees are grouped in a forest or woodlot, then only the location of the woodlot and any trees greater than 12 inches diameter at 4.5 feet above the ground (DBH) need to be identified.

III. Not Salvageable

a. All trees that are within the footprint or in close proximity to the footprint of a proposed building. (Note: alternative footprints to save large, valuable trees should be considered, provided that the alternatives maintain the desired features and costs of the proposed building).

b. Trees of undesirable species or in very poor health. Examples include, but are not limited to species that have low landscape and educational value, and heavily diseased or damaged trees that have little chance of recovering desirable form and function, even if protected from construction damage.

IV. Low Priority for Protection

a. Small trees in poor health or otherwise undesirable that fall outside of the building footprint, but are likely to be impacted by construction activities.

b. Larger trees outside of the building footprint with relatively low landscape value. Examples include but are not limited to, trees with poor form, species of relatively low landscape and educational value, or trees with inadequate space to accommodate current or future growth even if the site is ameliorated.

V. High Priority for Protecting

a. Trees of desirable species with good form, good health, and room to continue to grow.

VI. Avoid locating the general construction site around both low and high priority trees where possible by:

a. Planning all construction activities including new utility corridors, staging areas, new sidewalks and new roads for a minimum clearance of 15 feet away from the base of trees, and not within the edge of the canopy drip line. Greater distances are desirable.

b. High priority trees should receive more consideration than low priority trees in planning corridors, staging areas, walks, and roads.

7. GOALS AND TARGETS

A. Tree Inventory

I. A tree inventory covering the academic core of campus is under development. When the data is complete and has been included in campus survey documents, it will be available on the campus website (read only access).

II. Updates to the Campus Tree Inventory – including the addition of all trees outside of the academic core – will be performed by the Campus Arborist. The inventory may be used for campus planning purposes, tree management, academic exercises, and for use by the general public.

B. Tree Canopy and Campus Master Plan

I. Increasing the campus tree canopy and developing the campus native forestation plan are key elements of the landscape master plan and are important components of the 2012 Campus Master Plan and the draft University Sustainability and Climate Action Commitment plans.

II. Evidence of successful progress with these elements will be documented in updates to the Campus Tree Inventory and in project updates posted on EOU's website.

C. Arbor Day Events

I. EOU hosted its first annual Arbor Day celebration in 2016 (see Appendix IV), involving over 75 members of our community that included students, faculty & staff, and neighboring community members. Activities in the event included planting 32 trees on our campus.

D. Tree Damage Assessment, Enforcement and Penalties

I. Inspection and assessment of damage and condition of campus trees is performed by the Campus Arborist.

II. Enforcement of protection measures is performed by the Office of Facilities Management & Campus Planning, under consultation with the Campus Arborist (see Appendix I).

8. TREE DAMAGE ASSESSMENT, ENFORCEMENT, PENALTIES & APPEALS

A. Assessment

I. Grounds Department staff will perform initial general damage assessment to trees on campus and will notify the on-staff ISA certified arborist for further assessment.

II. Campus Arborist will inspect the tree(s) and notify Director of Facilities Management & Planning to report severity of the damage. In some cases, the director may elect to contract with a consulting arborist regarding the severity of the damage.

a. Depending on the severity and nature of the damage the campus tree committee may be notified.

B. Enforcement

I. Director of Facilities Management & Planning holds authority for enforcement of tree damage policies and assignment of penalties.

C. Penalties & Appeals

I. A list of penalties can be found in Appendix 1, section 1.04 PENALTIES.

a. A minimum fine of $1,000 will be levied against the responsible firm for each violation of the provisions of this specification.

b. In addition, trees between 3-inch and 11-inch in caliper at breast height are worth $500.00 per caliper inch and 12-inch to 24-inch in caliper are worth $1,000.00 per caliper inch.

c. Associated with some projects or activities, the University may create tree protection plan with integrated values as part of the bid documents. Industry standards for valuation may be utilized to adjust valuation.

II. The appeals process will follow EOU standard appeals review procedures.

9. PROHIBITED PRACTICES

A. Destruction of Trees

I. EOU policy prohibits digging, digging up, cutting, breaking, injuring, burning, destroying or defacing, any tree or shrub found growing or being upon the EOU campus, or upon any land reserved, set aside or maintained by Eastern Oregon University, without having previously obtained the permission of the Office of Facilities Management & Campus Planning.

B. Topping of Trees

I. Topping, heading, hat-racking, or any other form of inappropriate crown/branch reduction pruning shall not be permitted except in emergency situations or in executing a crown restoration procedure under the direction of the Campus Arborist.

10. DEFINITIONS

A. **Arboriculture** The cultivation, management and study of individual trees, shrubs, vines and other perennial woody plans. An arborist or arbor culturist is one who generally focuses on the health and safety of individual plants and trees as a part of a canopy in an urban or populated area rather than managing forest.

B. **Campus Tree Canopy** The arbor or the entirety of the campus canopy, made up of many species of trees.

C. **Campus tree care standards** The Governing documents regarding care, establishment, maintenance, damage to and risk mitigation to trees are The American National Standards Institute (ANSI A 300). ANSI is a private non-profit organization that administers and coordinates the U.S. voluntary standardization and conformity assessment system. These standards include tree-care operations for trees, shrubs and other woody plants. ANSI standards documents are available for review at the facilities ground's office.

D. **Campus Tree Plan** A document created by members of the tree advisory committee, the campus ISA certified arborist the Director of facilities and planning in conjunction with ISA, (International Association of Arboriculture) best practices standards.

E. **Tree**, Woody perennial plants with single or multiple stems or trunk often growing to a considerable height, generally having a branching structure.

F. **Urban Forestry** The careful management of a tree population in an urban setting for the purpose of improving the environment. The role of trees as a critical part of the campus infrastructure, in a campus setting the cultured or urban forest functions relative to the human environment. The functional benefits provided by trees have been studied and observed in relation to positive human outcomes.

11. COMMUNICATION STRATEGY

Currently, the tree and plant protection guidelines listed in Appendix I are provided to project design consultants and project contractors for inclusion in Division 1 project specifications. The tree preservation categorizing process is used by the Office of Facilities Management & Campus Planning for building and construction project siting and campus strategic and master planning. The entire EOU Campus Standard Specifications document is available on the EOU website.

12. Tree List

Armstrong Gold Maple, Acer rubrum,	**45'**
Bowhall Maple, Acer rubrum 'Bowhall'	**40'**
Crimson Sunset Maple, Acer truncatumx 'platanoides	**35'**
Fireburst Paperbark Maple, Acer griseum 'JFS KW8AGRI'	**25'**
Pacific Sunset Maple, Acer truncatumx 'warrenred'	**30'**
Paperbark Maple, Acer griseum	**25'**
Red Pointe Maple, Acer rubrum 'Frank Jr'	**45'**
Red Rocket Maple, Acer rubrum 'red rocket'	**38'**
Ruby Slippers Maple, Acer ginnala 'Ruby Slippers'	**20'**
Ruby Sunset Maple, Acer truncatumx A platanoides	**25'**
Rugged Charm Maple, Acer tartaricum 'JFS-KW2	**25'**
Urban Sunset Maple, Acer truncatumx JFK-KW1	**30''**
Urban Sunset Maple, Acer truncatumx platanodies	**35'**
Renaissance Reflection Birch, Betula nigra 'Cully improv'	**45'**
Emerald Ave Hornbeam, Carpinus betulus JFS	**40'**
Frans Fortaine Hornbeam, Carpinus betulus	**40'**
Native Flame American Hornbeam, Carpinus carolinian	**30'**
Palisade American Hornbeam, Carpinus carolinian	**30'**
Rising Fire American Hornbeam, Carpinus carolinan	**30'**
Golden Colonnade Ginkgo, Ginkgo biloba JFS	**45'**
Presidential Gold Ginkgo, Ginkgo biloba "President'	**45'**
Princeton Sentry Ginkgo, Ginkgo biloba	**40'**
Autumn Gold Ginkgo, Gingko biloba 'Golden	**45''**
Skyrocket Juniper, Juniperus virginiance 'skyrocket'	**25'**
Spartan Juniper, Juniperus chinensis	**18'**
Wichita Blue Juniper, Juniperus scopulorum	**25'**
Royal Raindrop Crabapple, Malus 'Royal Raindrop'	**20'**
Dawn Redwood, Metasequoia glyptostroboides	**45'**
Golden Raindrop Crabapple, Malus 'Golden Raindrop	**20'**
Snowdrift Crabapple, Malus, 'Snowdrift'	**29'**
Quaking Aspen, Populus tremuloides	**30'**
Chief Joseph Pine, Pinus contorta 'Chief Joseph'	**12'**
Colorado Blue Spruce, Picea pungens	**45'**
Douglas Fir, Pseudotsuga menziesii	**120'**
Engelmann Spruce, Picea engelmannii	**85'**
First Blush Cherry, Prunus sargentii JFS	**25**

Jeffrey Pine, Pinus jeffreyi	**60'**
Lodge pole Pine, Pinus contorta var latifolia	**40'**
Oregon Green Pine, Pinus nigra	**20'**
Pink Flair Cherry, 'Prunus sargentii' JFS	**25'**
Ponderosa Pine, Pinus ponderosa	**120'**
Western white Pine, Pinus monticola	**45'**
Crimson Spire Oak, Quercus robur 'Crimschmidt'	**45'**
English Oak, Quercus robur	**50'**
Forest King Oak, Quercus robur x alba	**50'**
Lobe Oak, Quercus lobbii	**40'**
Pin Oak, Quercus palustris	**50'**
Red Oak, Quercus rubra	**60'**
Skyrocket Oak, Quercus robur 'fastigiate'	**45'**
Street Spire Oak, Quercus robur 'alba' JFS	**45'**
Swamp White Oak, Quercus bicolor	**45'**
Urban Pinnacle Oak, Quercus macrocarparcus	**55'**
White Oak, Quercus alba	**60'**
Giant Sequoia, Sequoiadendron giganteum	**100'**
American Sentry Linden, Tilia americana 'Mcksentry"	**45'**
Boulevard Linden, Tilia americana 'Boulivard'	**50'**
Redmond Linden, Tilia americana Redmond	**35'**
Sterling Linden, Tilia tomentosa 'Sterling'	**45'**
Accolade elm, Ulmus japponicax wilsonsonia 'Morton'	**70'**
Emerald Elm, Ulmus propinqua	**35'**
Frontier Elm, Ulmus frontier	**49'**
Lewis and Clark Elm, Ulmas americana	**55'**
Princeton Elm, Ulmus americana 'Princeton'	**65'**

13. Tree Tour

Tree Walk Map



A WALKING TOUR OF

TREE CAMPUS USA®

EASTERN OREGON UNIVERSITY



La Grande OR 97850

The Tour

Welcome to Eastern Oregon University, home of an official Tree Campus USA.

Tree Campus USA is a program sponsored by the Arbor Day Foundation, which recognizes college and university campuses across the nation that manage their campus trees effectively, develop connectivity with the community beyond campus borders to foster healthy, urban forests, and utilize service learning opportunities centered on campus, and community, forestry efforts.

A committee was formed consisting of students, faculty, staff and members of the surrounding community to develop the Tree Campus Plan and complete the application for entrance into the program.



The best time to plant a tree is twenty years ago. The second best time is now. ~Lao-tse

1. **Oregon ladder leaf ash (Fraxinus latifolia)**



Location: S.E. of Inlow Hall near Inlow parking area. This ash tree is one of 16 species of ash found all across the United States. Native to the pacific NW and a member of the olive family these trees grow to a mature height of 60 to 80 feet and often display sweeping limb structure that can be prone to breakage. Oregon ladder leaf ash can live up to 250 years and even though vigorous may show signs of leaf spot and brown rot on otherwise healthy plants.

2. **Engelmann spruce (Picea engelmannii)** Location: N.E. corner of Inlow Hall



A native to our local mountains, this species is suited to higher elevations, preferring moist creek bottoms or north facing slopes. Even so, the native Engelmann spruce is very adaptable to an urban or suburban setting. Green to bluish in color it can be easily mistaken for a Douglas fir or a blue spruce. Scaly grey bark is an easy tell when identifying this tree even when the foliage is at some height.

3. **American sycamore (Platanus Occidentalis)** Location: either side of the front of Inlow Hall



A large maple like leaf with a fuzzy (pubescence) back help identify this beautiful tree, but perhaps the easiest identifier is the mottled bark that flakes off in irregular patters leaving a slick almost wet looking grey-green surface. A fast grower that is easy to establish makes these trees a favorite of designers and arborists alike. The rounded crown leaf's out early in the spring and provides dense shade. Anthracnose and aphid are common problems but rarely inhibit this handsome tree that can live up to 500 yrs.

4. **Norway maple (Acer platanoides)** Location: 8th street hill both sides A common deciduous shade tree that was propagated and sold widely throughout the western United States. Rapid growth rates and ease of establishment made this tree a favorite over the last 50 to 60 years. The rounded crown and dense foliage provide deep shade and the fall colors are beautiful. Elegant in form and structure the Norway maple has a bad habit of becoming invasive and has been added to several not recommended lists because of its aggressive seeding traits. Much study and research has concluded that though beautiful these trees should be used in a limited fashion.



5. **Western white pine (Pinus monticola)** Location: along north side of University Blvd near west Badgley Hall parking A large conifer that frequently grows to over 100 feet and, in some cases, can reach nearly 200 feet. Needle bundles are clustered in fives and are long (6 to 8 inches) soft and finely serrated. Cones are remarkable in size and may lead to misidentification as Sugar pine (Pinus Lambertiana). The cones are long and slender 8 to 12 inches in length and 1 ½ inches in diameter. Closely related to the eastern white pine (pinus strobus) differentiated by the length of cone , longer lasting needles dense and narrower growth habit and of course native range.



6. **Armstrong maple (Acer freemanii)** Location: Quad along east side of Loso loop drive A fast-growing deciduous shade tree with upright fastigiate growth habits, reaching a maximum height of 50 to 60 feet. The columnar form provides a narrow spread of 15 to 25 feet, The Armstrong maple is well suited as a street tree where its attractive foliage softens hard urban scape forms and provides beautiful fall coloration. Leaf type is similar to the more common silver maple (Acer saccharinum) and rightly so due to its close relationship.



7. **Tamarack (Larix laricina)** Location: Site of the old radio station N.W. corner of Pierce Library American larch are medium sized deciduous conifer that is native to the inter mountain west of the USA and Canada. It is amongst the few conifers that shed their leaves in the fall, doing so only after a brilliant show of golden coloration. Tamaracks prefer cool damp north facing slopes cold, winters are required for natural propagation. A member of the pine family, these trees are well suited to our region.



8. **Black locust (robinia pseudoacasia)** Location: N.E. of the flag circle on University Blvd This deciduous tree is widely known for its ability to grow in almost any soil type. Weak and brittle in structure it is subject to server storm damage. Black locust can produce colonies of suckers, late spring flowering attracts pollinators to their white 5 to 7 in flowers. One of the interesting features of this tree is that it is in the pea or legume family and as such it produces nitrogen for surrounding plantings. In our region the black locust tree has been ravaged by boring insects and the fact that many heavily infested trees have survived is a testimony to their vigor.



9. **English oak (Quercus robur)** Location: west side of Quinn colosseum This rounded crown large deciduous tree can stand the test of time. English oak trees are a majestic species. A long lived tree with rugged structure commonly living several hundred years, they have been known to sustain longer than 1000 years. Beautiful in form and prodigious in production of acorns these trees are a favorite of both people and wildlife. A European native, the English oak has taken ahold in America as one of our favorite oaks.



10. **Giant redwood (Sequoiadendron gigantium)**



Location: N. E. corner of Quinn colosseum Massive is an understatement these are truly gigantic trees. Arguably the world's largest living organism growing to over 280 feet with a life expected to span centuries if not militia. One of two redwoods native to north America, these iconic trees are an excellent example of ex-current conifers, often having a nearly perfect Christmas tree form. Hardy and well suited to a variety of soil types and moisture levels these well insulated thick barked trees fend off many pests as well as occasional medium and low intensity fires. The mighty Redwood is truly a survivor.

11. **Red oak (Quercus rubra)** Location: N.E. corner of Zabel Hall Several Red oak trees are located around campus. Commonly called northern or champion oak it is a native to central and eastern United States. This stout branched, broad crowned hardwood can grow up to 90 feet or more and with a diameter at breast height of 40 inches or greater. A very adaptable species, the Red oak can tolerate many soil types and moisture levels. The Red oak is a deciduous tree with beautiful fall colors prove out its name. Similar to other oaks it is late to leaf out in spring and holds its foliage well into fall.



12. **American linden (Tilia Americana)** Location: Near south entrance to Ackerman Hall Commonly called basswood, the American linden is a premiere shade tree. American Lindens occur naturally in the mid-Atlantic states to the eastern edge of the great plains. This deciduous tree can grow to an impressive height of over 125 feet, its dark green foliage provides deep shade in the summer months that fade to yellow in the fall. An aromatic spring flowering attracts pollinators to its beautiful rounded crown of heart shaped leaves.



13. **Ponderosa pine (Pinus ponderosa)**



Location: N.E. corner of Hoke Union Bldg Commonly known as bull pine, western yellow and blackjack pine, the mighty ponderosa is one of the largest pine trees. It's erect form can reach heights of nearly 200 feet and is native to more than a dozen western states. David Douglas initially documented this species in 1826 near what is now Spokane Washington. An important tree to the lumber industry, there are 5 sub species or geographic races of ponderosa. This tree is likely a northern variant.

14. **American elm (Ulmus Americana)**



Location: 8th street corridor along architectural concrete seating blocks A handsome and hardy deciduous tree that can withstand temperatures as cold as -45 this north American native naturally occurs from Nova Scotia west to Alberta Canada and from Montana south to norther Florida. American elm trees can and often do live for hundreds of years and reach heights of 12 to 140 feet. The Achilles heel for this species is the devastating Dutch elm disease (DED) which has devastated many urban forests in small and large cities throughout the Midwest. Fortunately, we have been able to select resistant varieties for our campus site.

Thank you for taking the tour.

Text by David Yoder

Layout by Amanda Schlegel

THE EASTERN EDGE

CAMPAIGN CREATIVE GUIDELINES

EASTERN OREGON UNIVERSITY

TYPOGRAPHY

GOTHAM BLACK

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m
n o p q r s t u v w x y z

TUNGSTEN MEDIUM

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m
n o p q r s t u v w x y z

Gotham Black is the primary headline typeface for the Eastern Edge Campaign, while Tungsten Medium is reserved for calls to action and tagline text. See example below.

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COLORS

EASTERN NAVY
PANTONE: 295C
HEX: 002856
CMYK: 100, 84, 36, 39
RGB: 0, 40, 86

EASTERN GOLD
PANTONE: 125C
HEX: B68400
CMYK: 27, 46, 100, 6
RGB: 182, 132, 0

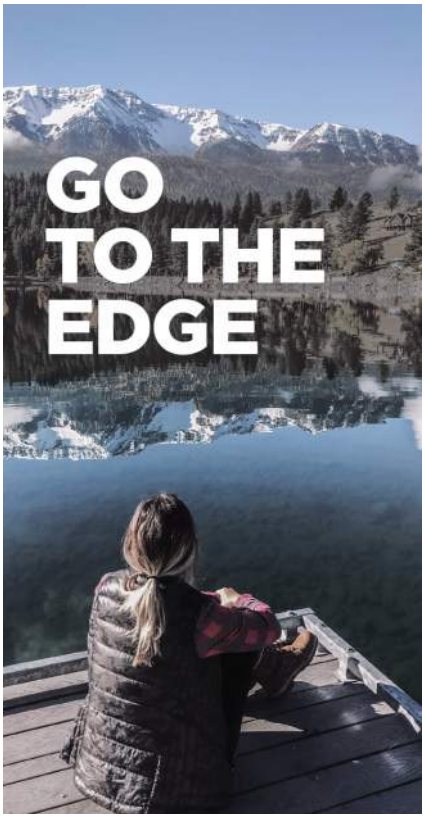
EASTERN RED
PANTONE: 7427C
HEX: 9C182F
CMYK: 25, 100, 81, 22
RGB: 156, 24, 47

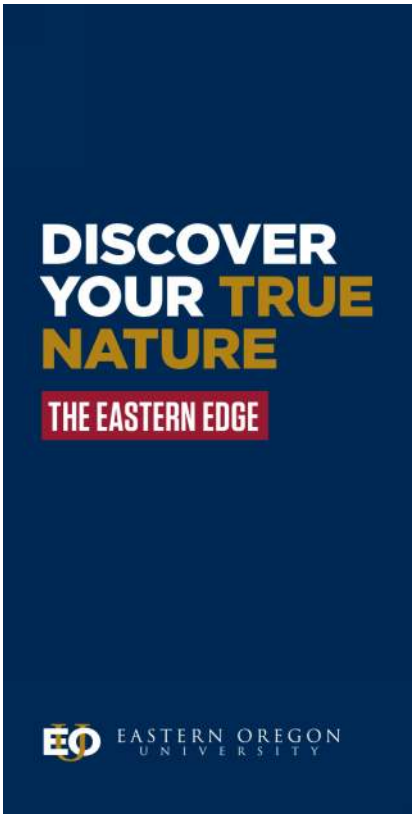


Most pieces will rely primarily on a balance of navy blue and white, while gold and red are used to call attention to certain design elements and messages.


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