



**OREGON INSTITUTE OF TECHNOLOGY
NOTICE OF PUBLIC IMPROVEMENT CONTRACT OPPORTUNITY**

**INVITATION TO BID #2015-02
Tunnel Lid Replacement Project
April 10, 2015**

The Oregon University System ("OUS") by and through the Oregon Institute of Technology ("Oregon Tech") is accepting sealed bids for the Tunnel Lid Replacement Project until **April 29, 2015, 1:00 PM**, Pacific Time, at the following location:

DELIVER BIDS TO
Oregon Institute of Technology
Snell Hall 112
3201 Campus Drive
Klamath Falls, OR 97601

A **Mandatory Pre-Bid Conference** will be conducted on **April 20, 2015** at 1:00 PM. Bidders shall meet with Oregon Tech representatives in the McLoughlin Conference Room of the College Union located at 3201 Campus Drive, Klamath Falls, OR for that purpose. Attendance will be documented through a sign-in sheet prepared by the Oregon Tech representative. Prime bidders who arrive more than 5 minutes after the start time of the meeting (as stated in the solicitation and by the Oregon Tech representative's watch) or after the discussion portion of the meeting (whichever comes first) shall not be permitted to sign in and will not be permitted to submit a bid on the project.

Bids will be opened and publicly read aloud on **April 29, 2015** at 1:15 PM, in Room 112 of Snell Hall, located at 3201 Campus Drive, Klamath Falls, OR 97601, by the Oregon Tech representative.

Bids will be received on a lump-sum basis for all of the Work. Bid packets may be obtained on the **OUS Procurement Website** (<https://secure.ous.edu/bid/>).

Prevailing Wage Rates requirements apply to this Project because the maximum compensation for all Owner-contracted Work is more than \$50,000. Contractor and all subcontractors shall comply with the provisions of ORS 279C.800 through 279C.870, relative to Prevailing Wage Rates and the required public works bond, as outlined in Sections C.1, C.2 and G.2. of the Oregon Tech General Conditions for Public Improvement. The Bureau of Labor and Industries (BOLI) wage rates and requirements set forth in the following BOLI booklet (and any listed amendments to that booklet), which are incorporated herein by reference, apply to the Work authorized under this Agreement:

PREVAILING WAGE RATES for Public Works Contracts in Oregon, January 1, 2015, as amended on April 1, 2015 which can be downloaded at the following web address: http://www.oregon.gov/boli/WHD/PWR/Pages/pwr_state.aspx. The Work will take place in Klamath County, Oregon

Oregon Tech encourages bids from Minority, Women, and Emerging Small Businesses.

By: 
George Marlton
Exec. Dir. Procurement Contracts & Risk
27500 SW Parkway Ave.
Wilsonville, OR 97070
503-821-1277
George.Marlton@oit.edu



**OREGON INSTITUTE OF TECHNOLOGY
PUBLIC IMPROVEMENT CONTRACT
INSTRUCTIONS TO BIDDERS**

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INSTRUCTIONS TO BIDDERS

Oregon Administrative Rules Chapter 580, Divisions 61 and 63 govern this Oregon Tech procurement process.

Article 1. Scope of Work

The work contemplated under this contract with the Oregon State Board of Higher Education, hereinafter referred to as the Owner, includes all labor, materials, transportation, equipment and services necessary for, and reasonably incidental to, the completion of all construction work in connection with the project described in the Project Manual which includes, but is not necessarily limited to, the Notice of Public Improvement Contract Opportunity, Instructions to Bidders, Supplemental Instructions to Bidders, Bid Form, Bid Bond, Public Improvement Agreement Form, Performance Bond, Payment Bond, Oregon Institute of Technology General Conditions for Public Improvement Contracts (2/1/2015), Supplemental General Conditions, Plans, Specifications and Drawings.

Article 2. Examination of Site and Conditions

Before making a bid, the bidder shall examine the site of the work and ascertain all the physical conditions in relation thereto. The bidder shall also make a careful examination of the Project Manual including the plans, specifications, and other contract documents, and shall be fully informed as to the quality and quantity of materials and the sources of supply of the materials. Failure to take these precautions will not release the successful bidder from entering into the contract nor excuse the bidder from performing the work in strict accordance with the terms of the contract.

The Owner will not be responsible for any loss or for any unanticipated costs which may be suffered by the successful bidder as a result of such bidder's failure to be fully informed in advance with regard to all conditions pertaining to the work and the character of the work required. No statement made by an officer, agent, or employee of the Owner in relation to the physical conditions pertaining to the site of the work will be binding on the Owner, unless covered by the Project Manual or an Addendum.

Article 3. Interpretation of Project Manual and Approval of Materials Equal to Those Provided in the Specifications

If any bidder contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any part of the plans, specifications or forms of contract documents, or detects discrepancies or omissions, such bidder may submit to the Architect (read "Engineer" throughout as appropriate) a written request for an interpretation thereof at least 10 calendar days prior to the date set for the bid closing.

When a prospective bidder seeks approval of a particular manufacturer's material, process or item of equal value, utility or merit other than that designated by the Architect in the Project Manual, the bidder may submit to the Architect a written request for approval of such substitute at least 10 calendar days prior to the date set for the bid closing. The prospective bidder submitting the request will be responsible for its prompt delivery.

Requests of approval for a substitution from that specified shall be accompanied by samples, records of performance, certified copies of tests by impartial and recognized laboratories, and such other information as the Architect may request.

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

Any interpretation of the Project Manual or approval of manufacturer's material will be made only by an Addendum duly issued. All Addenda will be posted to the OUS/Public University Procurement Website and will become a part of the Project Manual. The Owner will not be responsible for any other explanation or interpretation of the Project Manual nor for any other approval of a particular

manufacturer's process or item.

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

Article 4. Security to Be Furnished by Each Bidder

Each bid must be accompanied by either 1) a cashier's check or a certified check drawn on a bank authorized to do business in the State of Oregon, or 2) a bid bond described hereinafter, executed in favor of the State of Oregon and the Oregon State Board of Higher Education, for an amount equal to 10 percent of the total amount bid as a guarantee that if awarded the contract the bidder will execute the contract and give a performance bond and payment bond as required. The successful bidder's check or bid bond will be retained until the bidder has entered into a satisfactory contract and furnished a 100 percent performance bond and 100 percent payment bond. The Owner reserves the right to hold the bid security as described in Article 10 hereof. Should the successful bidder fail to execute and deliver the contract as provided for in Article 12, including a satisfactory performance bond and payment bond within 20 calendar days after the bid has been accepted by the Owner, then the contract award made to such bidder may be considered canceled and the bid security may be forfeited as liquidated damages at the option of the Owner. The date of the acceptance of the bid and the award of the contract as contemplated by the Project Manual shall mean the date of acceptance specified in the Notice of Award.

Article 5. Execution of Bid Bond

Should the bidder elect to utilize a bid bond as described in Article 4 in order to satisfy the bid security requirements, such form must be completed in the following manner:

- A. Bid bonds must be executed on the Oregon Institute of Technology forms, which will be provided to all prospective bidders by the Owner.
- B. The bid bond shall be executed on behalf of a bonding company licensed to do business in the State of Oregon.

- C. In the case of a sole individual, the bond need only be executed as principal by the sole individual. In the case of a partnership, the bond must be executed by at least one of the partners. In the case of a corporation, the bond must be executed by stating the official name of the corporation under which is placed the signature of an officer authorized to sign on behalf of the corporation followed by such person's official capacity, such as president, etc. This signature shall be attested by the secretary or assistant secretary of the corporation. The corporation seal should then be affixed to the bond.
- D. The name of the surety must be stated in the execution over the signature of its duly authorized attorney-in-fact and accompanied by the seal of the surety corporation.

Article 6. Execution of the Bid Form

Each bid shall be made in accordance with the sample Bid Form accompanying these instructions; the appropriate signatures for a sole individual, partnership, corporation or limited liability corporation shall be added as noted in Article 5C above; numbers pertaining to base bids shall be stated both in writing and in figures; the bidder's address shall be typed or printed.

The Bid Form relates to bids on a specific Project Manual. Only the amounts and information asked for on the Bid Form furnished will be considered as the bid. Each bidder shall bid upon the work exactly as specified and provided in the Bid Form. The bidder shall include in the bid a sum to cover the cost of all items contemplated by the Contract. The bidder shall bid upon all alternates that may be indicated on the Bid Form. When bidding on an alternate for which there is no charge, the bidder shall write the words "No Charge" in the space provided on the Bid Form. If one or more alternates is shown on the Bid Form, the bidder shall indicate whether each is "add" or "deduct."

Article 7. Prohibition of Alterations to Bid

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

Article 8. Submission of Bid

Each bid shall be sealed in an envelope, properly addressed to the Owner, showing on the outside of the envelope the name of the bidder and the name of the project. Bids will be received at the time and place stated in the Notice of Public Improvement Contract Opportunity.

Article 9. Bid Closing and Opening of Bids

All bids must be received by the Owner at the place and time set for the bid closing. Any bids received after the scheduled closing time for receipt of bids will be rejected.

At the time of opening and reading of bids, each bid received will be publicly opened and read aloud, irrespective of any irregularities or informalities in such bids.

Article 10. Acceptance or Rejection of Bids by Owner

Unless all bids are rejected, the Owner will award a contract based on the lowest responsive bid from a responsible bidder. If that bidder does not execute the contract, it will be awarded to the next lowest responsible bidder or bidders in succession.

The Owner reserves the right to reject all bids and to waive minor informalities. The procedures for contract awards shall be in compliance with the provisions of Oregon Administrative Rules adopted by the Owner.

The Owner reserves the right to hold the bid and bid security of the three lowest bidders for a period of 30 calendar days from and after the time of bid opening pending award of the contract. Following award of the contract the bid security of the three lowest bidders may be held 20 calendar days pending execution of the contract. All other bids will be rejected and bid security will be returned.

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

If such bid has not been accepted within 30 calendar

days after the opening of the bids, each of the three lowest bidders may withdraw the bid submitted and request the return of the bid security.

Article 11. Withdrawal of Bid

At any time prior to the time and place set for the bid closing, a bidder may withdraw the bid. This will not preclude the submission of another bid by such bidder prior to the time set for the bid closing.

After the time set for the bid closing, no bidder will be permitted to withdraw its bid within the time frames specified in Article 10 for award and execution, except as provided for in that Article.

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

The Owner will provide the successful bidder with contract forms within seven (7) calendar days after the completion of the award protest period. The bidder is required to execute the contract forms as provided, including a performance bond and a payment bond from a surety company licensed to do surety business in the State of Oregon, within seven (7) calendar days after receipt of the contract forms. The contract forms shall be delivered to the Owner in the number called for and to the location as instructed by the Owner.

Article 13. Recyclable Products

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

Article 14. Clarification or Protest of the Solicitation Document or Specifications

Any request for clarification or protest of the solicitation document or specifications must be submitted in the manner provided for in OAR 580-061-0100 and 580-061-0145 to:

George Marlton
Exec. Dir. Procurement Contracts & Risk
27500 SW Parkway Ave.
Wilsonville, OR 97070
503-821-1277
Purchasing@oit.edu

A protest of the Solicitation Document must be received within seven (7) business days of the issuance of the bid or within three (3) business days of issuance of an addendum.

Requests for clarification may be submitted no less than five (5) business days prior to the bid Closing Date.

Article 15. Protest of Intent to Award

Owner will name the apparent successful Bidder in a "Notice of Intent to Award" letter. Identification of the apparent successful Bidder is procedural only and creates no right in the named Bidder to award of the contract. Competing Bidders will be notified by publication of the Notice of Intent to Award on the OUS Procurement Gateway of the selection of the apparent successful Bidder(s) and shall be given seven (7) calendar days from the date on the "Notice of Intent to Award" letter to review the file at the Purchasing and Contract Services office and file a written protest of award, pursuant to OAR 580-061-0145. Any award protest must be in writing and must be delivered by hand delivery, mail or email to the address for the Purchasing and Contract Services Office as listed in the Contact Information section of the bid.



**OREGON INSTITUTE OF TECHNOLOGY
PUBLIC IMPROVEMENT CONTRACT**

SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

Project Name: Tunnel Lid Replacement Project

The following modify the Oregon Institute of Technology “Instructions to Bidders” for this Project. Where a portion of the Instructions to Bidders has been modified by these Supplemental Instructions to Bidders, the unaltered portions shall remain in effect.

Good Faith Effort: The Oregon Institute of Technology has implemented a policy to increase participation by Historically Underrepresented Businesses. Historically Underrepresented Businesses are Oregon certified and self-identified minority, women and emerging small business as well as firms that are certified federally or by another state or entity with substantially the similar requirements of the State of Oregon.

Bidders must perform Good Faith Effort and submit **Form 1 and Form 2** for the Bidders Bid to be considered responsive. **Form 1 and Form 2** must be submitted within two (2) hours after the Closing Date and Time. Form 1 and Form 2 may be submitted by hand delivery to the location the Bid was due or may email the completed Forms to Purchasing@oit.edu. Good Faith Effort is a requirement of a prime contractor to reach out to at least three Historically Underrepresented Business Subcontractors for each Division of Work that will be subcontracted out and to complete the required forms. If fewer than three Historically Underrepresented Business Subcontractors are reasonably available for a particular division of work, the Bidder must specifically note the reason for there being fewer than three contacts. The outreach should be performed with sufficient time to give the subcontractors at least 5 calendar days to respond to the opportunity. Compliance with the Good Faith Effort and submission of Forms 1, 2 and 3 is a contractual requirement for final payment.

The sufficiency of the documentation or the performance of Good Faith Effort shall be in the sole determination of Oregon Tech. Only those Bidders that Oregon Tech has determined has not sufficiently performed Good Faith Effort shall have protest rights of the determination. No Bidder shall have protest rights of the sufficiency of any other Bidder completing Good Faith Effort.

Form 3 must be submitted with the project final pay application.

**OREGON INSTITUTE OF TECHNOLOGY
GOOD FAITH EFFORT
SUBCONTRACTOR AND SELF-PERFORM WORK LIST
(FORM 1)**

Prime Contractor Name:

Total Contract Amount:

Project Name: Tunnel Lid Replacement Project

PRIME SELF-PERFORMING: Identify below **ALL** GFE Divisions of Work (DOW) to be self-performed. Good Faith Efforts are otherwise required.

DOW BIDDER WILL SELF-PERFORM (GFE not required)	

PRIME CONTRACTOR SHALL DISCLOSE AND LIST ALL SUBCONTRACTORS, including those M/W/ESBs that you intend to use on the project.

LIST ALL SUBCONTRACTORS BELOW Use <u>correct legal name</u> of Subcontractor	Division of Work (Painting, electrical, landscaping, etc.) List ALL DOW performed by Subcontractors	DOLLAR AMOUNT OF SUBCONTRACT	If Certified or self-reporting MBE/WBE/ESB Subcontractor		
			Check box <input checked="" type="checkbox"/>	MBE	WBE
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

GFE SUBCONTRACTOR AND SELF-PERFORM WORK LIST (FORM 1) cont'd

Prime Contractor Name:

Total Contract Amount:

Project Name:

LIST ALL SUBCONTRACTORS BELOW Use <u>correct legal name</u> of Subcontractor	Division of Work (Painting, electrical, landscaping, etc.) List ALL DOW performed by Subcontractors	DOLLAR AMOUNT OF SUBCONTRACT	If Certified or self-reporting MBE/WBE/ESB Subcontractor Check box <input checked="" type="checkbox"/>		
			MBE	WBE	ESB
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**OREGON INSTITUTE OF TECHNOLOGY
GOOD FAITH EFFORT
M/W/ESB CONTACT / BIDS RECEIVED LOG
(FORM 2)**

Prime Contractor:

Project: Tunnel Lid Replacement Project

Prime Contractor must contact or endeavor to contact at least 3 M/W/ESB Subcontractors for each Division of Work. Prime Contractor shall record its contacts with M/W/ESB Subcontractors through use of this log (or equivalent) entering all required information. All columns shall be completed where applicable. Additional forms may be copied if needed.

NAME OF M/W/ESB SUBCONTRACTOR	Divisions of Work (Painting, electrical, landscaping, etc.)	Date Solicitation Letter / Fax Sent	PHONE CONTACT		BID ACTIVITY Check Yes or No			REJECTED BIDS (if bid received & not used)		Notes
			Date of Call	Person Receiving Call	Will Bid	Bid Received	Bid Used	Bid Amount	Reason Not Used (Price, Scope or Other. If Other, explain in Notes>>>)	
					<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			
					<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			
					<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			
					<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			
					<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			
					<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			
					<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			

**OREGON INSTITUTE OF TECHNOLOGY
GOOD FAITH EFFORT
PROJECT COMPLETION REPORT
(FORM 3)**

Prime Contractor Name:

Total Contract Amount:

Project Name: Tunnel Lid Replacement Project

Complete this form and submit with your request for final payment upon the project completion. Please list all subcontractors used for the project. Use additional sheets as necessary.

LIST ALL SUBCONTRACTORS BELOW Use <u>correct legal name</u> of Subcontractor	Division of Work (Painting, electrical, landscaping, etc.) List ALL DOW performed by Subcontractors	FINAL DOLLAR AMOUNT OF SUBCONTRACT	If Certified or self-reported MBE/WBE/ESB Subcontractor		
			Check box <input checked="" type="checkbox"/>		
			MBE	WBE	ESB
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

BY SIGNING BELOW, I HEREBY CERTIFY THAT THE ABOVE LISTED FIRMS HAVE BEEN UTILIZED BY OUR COMPANY IN THE AMOUNTS REPRESENTED ABOVE AND THAT THE INFORMATION CONTAINED HEREIN IS COMPLETE AND ACCURATE.

Authorized Signature of Contractor Representative

Date



**OREGON INSTITUTE OF TECHNOLOGY
PUBLIC IMPROVEMENT CONTRACT**

BID BOND

Project Name: Tunnel Lid Replacement Project

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

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

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

_____ dollars.

WHEREAS, the condition of the obligation of this bond is that Principal has submitted its proposal or bid to an agency of the Obligee in response to Obligee's procurement document (BID #2015-02) for the project identified above which proposal or bid is made a part of this bond by reference, and Principal is required to furnish bid security in an amount equal to ten (10%) percent of the total amount of the bid pursuant to the procurement document.

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

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

Principal: _____

Surety: _____

By: _____

Signature

Official Capacity

Attest: _____

Corporation Secretary

By: Attorney-In-Fact

Name

Address

City

State

Zip

Phone

Fax



OREGON INSTITUTE OF TECHNOLOGY
PUBLIC IMPROVEMENT CONTRACT

BID FORM

CAMPUS: Oregon Institute of Technology – Klamath Falls Campus
PROJECT: Tunnel Lid Replacement Project
BID CLOSING: April 29, 2015, 1:00 PM, Pacific Time
BID OPENING: April 29, 2015, 1:15 PM, Pacific Time

FROM: _____
Name of Contractor

TO: Oregon State Board of Higher Education
Oregon Institute of Technology
Procurement & Contract Services
Snell Hall Room 112
3201 Campus Drive
Klamath Falls, OR 97601

1. The Undersigned (*check one of the following and insert information requested*):

- ____ a. An individual doing business under an assumed name registered under the laws of the State of _____; or
- ____ b. A partnership registered under the laws of the State of _____; or
- ____ c. A corporation organized under the laws of the State of _____; or
- ____ d. A limited liability corporation organized under the laws of the State of _____;

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

Bidder to complete the attached Bid Schedule which includes Unit Price and Total Price as the Base Bid and one Bid Additive should the additional Work become necessary. The Unit Price shall be utilized for any adjustments (increase or decrease) of the Work.

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

- Notice of Contract Opportunity
- Supplemental Instructions to Bidders
- Public Improvement Agreement Form
- Oregon Tech General Conditions
- Prevailing Wage Rates
- Plans and Specifications
- Instructions to Bidders
- Bid Bond
- Performance Bond and Payment Bond
- Supplemental General Conditions
- Payroll and Certified Statement Form
- Drawings and Details

• ADDENDA numbered _____ through _____, inclusive (*fill in blanks*)

2. The work shall be completed within the time stipulated and specified in the Project Information, Plans, Specifications and Drawings.

3. Accompanying herewith is Bid Security which is equal to ten (10) percent of the total amount of the Basic Bid.

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

(name of surety company - not insurance agency)

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

5. The Undersigned further agrees that the Bid Security accompanying the Bid is left in escrow with the Board; that the amount thereof is the measure of liquidated damages which the Owner will sustain by the failure of the Undersigned to execute and deliver the above-named Agreement Form, Performance Bond and Payment Bond, and that if the Undersigned defaults in either executing the Agreement Form or providing the Performance Bond and Payment Bond within twenty (20) calendar days after receiving the Contract forms, then the Bid Security may become the property of the Owner at the Owner's option; but if the Bid is not accepted within thirty (30) calendar days of the time set for the opening of the Bids, or if the Undersigned executes and timely delivers said Agreement Form, Performance Bond and Payment Bond, the Bid Security shall be returned.

6. The Undersigned certifies that: (1) This Bid has been arrived at independently and is being submitted without collusion with and without any agreement, understanding, or planned common course of action with any other vendor of materials, supplies, equipment or services described in the invitation to bid designed to limit independent bidding or competition; and (2) The contents of the Bid have not been communicated by the Undersigned or its employees or agents to any person not an employee or agent of the Undersigned or its surety on any Bond furnished with the Bid and will not be communicated to such person prior to the official opening of the Bid.

7. The undersigned **HAS, HAS NOT** (circle applicable status) paid unemployment or income taxes in Oregon within the past 12 months and **HAS, HAS NOT** (circle applicable status) a business address in Oregon.

8. The Undersigned agrees, if awarded a contract, to comply with the provisions of ORS 279C.800 through 279C.870 pertaining to the payment of the prevailing rates of wage.

9. Contractor's CCB registration number is _____. As a condition to submitting a bid, a Contractor must be registered with the Oregon Construction Contractors Board in accordance with ORS 701.035 to 701.055, and disclose the registration number. Failure to register and disclose the number will make the bid unresponsive and it will be rejected, unless contrary to federal law.

10. The successful Bidder hereby certifies that all subcontractors who will perform construction work as described in ORS 701.005(2) were registered with the Construction Contractors Board in accordance with ORS 701.035 to 701.055 at the time the subcontractor(s) made a bid to work under the contract.

11. The successful Bidder hereby certifies that, in compliance with the Worker's Compensation Law of the State of Oregon, its Worker's Compensation Insurance provider is _____, Policy No. _____, and that Contractor shall submit Certificates of Insurance as required.

12. Contractor's Key Individuals for this project (supply information as applicable):

Project Executive: _____, Cell Phone: _____,
Project Manager: _____, Cell Phone: _____,
Job Superintendent: _____, Cell Phone: _____,

15. The Undersigned certifies that it has not discriminated against minority, women, or emerging small businesses in obtaining any subcontracts for this project.

16. The Undersigned hereby identifies the following type of deck system to be used:

- Full Concrete Lid
- Composite Steel Deck System

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

NAME OF FIRM _____

ADDRESS _____

TELEPHONE NO _____

EMAIL _____

SIGNATURE 1) _____

Sole Individual

or 2) _____

Partner

or 3) _____

Authorized Officer of Corporation

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

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

Project Name: Oregon Institute of Technology – Tunnel Lid Replacement Project

Contractor: _____

All work not specifically included in the bid items shown shall be considered incidental to the work and no separate payment will be made. The work shall constitute a complete project.

The Bidder hereby proposes to accept as full payment for the work proposed herein, the lump sum or unit price amount(s) listed for each proposed item (includes demolition and reconstruction) as follows:

BASE BID SCHEDULE

BID ITEM NO.	ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
1	Mobilization (not to exceed 5% of base bid)	LS	1	_____	_____
2	Temporary Protection and Direction of Pedestrian and Vehicular Traffic	LS	1	_____	_____
3	Owens West, SIDEWALK REMOVAL AND REPLACEMENT with Geothermal Tubing, Complete in Place	Sq Ft	700	_____	_____
4	Owens West, TUNNEL LID REMOVAL AND REPLACEMENT, Complete in Place (10 ft typical pay width, 7 ft under asphalt)	Sq Ft	3,250	_____	_____
5	Owens West, STAIR RECONSTRUCTION with Geothermal Tubing, Handrails, Complete in Place	LS	1	_____	_____
6	Owens West, TUNNEL ACCESS HATCH, Complete in Place	EA	2	_____	_____
7	Owens West, RECONSTRUCT ASPHALT PAVING, Complete in Place (Pavement Marking Incidental)	Sq Ft	1,925	_____	_____
8	Snell Hall/College Union, SIDEWALK REMOVAL AND REPLACEMENT with Geothermal Tubing, Complete in Place	Sq Ft	1,020	_____	_____
9	Snell Hall/College Union, TUNNEL LID REMOVAL AND REPLACEMENT, Complete in Place (7' ft pay width)	Sq Ft	2,650	_____	_____
10	Snell hall/College Union, STAIR RECONSTRUCTION with Geothermal Tubing, Handrails, Complete in Place	LS	1	_____	_____
11	College Union (SE), PARTIAL STAIR RECONSTRUCTION with Geothermal Tubing, Guardrails, Complete in Place	LS	1	_____	_____
12	College Union (SE), SIDEWALK REMOVAL AND REPLACEMENT with Geothermal Tubing, Complete in Place	Sq Ft	480	_____	_____
13	College Union (SE), TUNNEL LID REMOVAL AND REPLACEMENT (7 ft pay width)	Sq Ft	400	_____	_____
14	College Union (SE), TUNNEL ACCESS HATCH, Complete in Place	EA	1	_____	_____
15	College Union (SE), ADA RAMP, CURB, GUTTER, AND PARKING PAVING, Complete in Place	LS	1	_____	_____
16	College Union (SE), TRENCH DRAIN, Complete in Place	LF	60	_____	_____

17	College Union (NE), SIDEWALK REMOVAL AND REPLACEMENT with Geothermal Tubing, Handrails, and Guardrails, Complete in Place	Sq Ft	510		
18	College Union (NE), STAIR RECONSTRUCTION with Geothermal Tubing, Retaining Walls, Handrails, and Guardrails, Complete in Place	LS	1		
19	College Union (NE), TUNNEL LID REMOVAL AND REPLACEMENT, Complete in Place (5 ft typical pay width, 7 ft at building)	SF	225		
20	College Union (S), SIDEWALK REMOVAL AND REPLACEMENT with Geothermal Tubing, Complete in Place	Sq Ft	1,575		
21	College Union (S), LIGHT FOUNDATION & RE-SETTING OF LUMINAIRE, Complete in Place	EA	1		
			TOTAL BASE BID		

Project Name: Oregon Institute of Technology – Tunnel Lid Replacement Project

Contractor: _____

All work not specifically included in the bid items shown shall be considered incidental to the work and no separate payment will be made.

The work shall constitute a complete project.

The Bidder hereby proposes to accept as full payment for the work proposed herein, the lump sum or unit price amount(s) listed for each proposed item (includes demolition and reconstruction) as follows:

ADDITIVE BID SCHEDULE

BID ITEM NO.	ITEM	UNIT	QUANTITY	UNIT PRICE
1	Tunnel Wall Replacement (1 wall, 6 ft pay height) Detail 1/C9 - Lid not included in Unit Price	LF	UNK	_____



**OREGON INSTITUTE OF TECHNOLOGY
PUBLIC IMPROVEMENT AGREEMENT FORM**

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

WITNESSETH:

1. Contract Price, Contract Documents and Work.

The Contractor, in consideration of the sum of _____ (the "Contract Price"), to be paid to the Contractor by Owner in the manner and at the time hereinafter provided, and subject to the terms and conditions provided for in the Instructions to Bidders and other Contract Documents (as defined in the Oregon Institute of Technology General Conditions for Public Improvement Contracts (2/1/2015) referenced within the Instructions to Bidders), all of which are incorporated herein by reference, hereby agrees to perform all Work described and reasonably inferred from the Contract Documents. The Contract Price is the amount contemplated by the Base Bid adjusted for Alternates **[Identify accepted Alternates]**, as indicated in the accepted Bid.

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

<input type="checkbox"/>	Oregon Tech General Conditions (2/1/2015)	<input type="checkbox"/>	Prevailing Wage Rates
<input type="checkbox"/>	Supplemental General Conditions	<input type="checkbox"/>	Performance Bond and Payment Bond
<input type="checkbox"/>	Plans, Specifications and Drawings	<input type="checkbox"/>	Payroll and Certified Statement Form
<input type="checkbox"/>		<input type="checkbox"/>	

2. Representatives.

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

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.

Name of Owner's Authorized Representative shall be submitted by Owner in a separate writing.

3. Key Persons.

The Contractor's personnel identified below shall be considered Key Persons and shall not be replaced during the project without the written permission of Owner, which shall not be unreasonably withheld. If the Contractor intends to substitute personnel, a request must be given to Owner at least 30 days prior to the intended time of substitution. When replacements have been approved by Owner, the Contractor shall provide a transition period of at least 10 working days during which the original and replacement personnel

shall be working on the project concurrently. Once a replacement for any of these staff members is authorized, further replacement shall not occur without the written permission of Owner. The Contractor's project staff shall consist of the following personnel:

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

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

Job Superintendent: _____ shall be the Contractor's on-site job superintendent throughout the project term.

4. Contract Dates.

COMMENCEMENT DATE: **May 4, 2015**
SUBSTANTIAL COMPLETION DATE: **September 25, 2015**
FINAL COMPLETION DATE: **November 20, 2015**

Time is of the essence for this Contract. It is imperative that the Work in this Contract reach Substantial Completion and Final Completion by the above specified dates.

5. Tax Compliance.

By signature on this Agreement, the undersigned hereby certifies under penalty of perjury that the undersigned is authorized to act on behalf of Contractor and that Contractor is, to the best of the undersigned's knowledge, not in violation of any Oregon Tax Laws. For purposes of this certification, "Oregon tax laws" means a state tax imposed by ORS 320.005 to 320.150 and 403.200 to 403.250, ORS Chapters 118, 314, 316, 317, 318, 321 and 323; the elderly rental assistance program under ORS 310.630 to 310.706; and local taxes administered by the Oregon Department of Revenue under ORS 305.620.

6. Confidential Information.

Contractor acknowledges that it and its employees or agents may, in the course of performing their responsibilities under this Agreement, be exposed to or acquire information that is confidential to Owner or the State of Oregon. Any and all information of any form obtained by Contractor or its employees or agents in the performance of this Agreement shall be deemed confidential information of Owner and of State ("Confidential Information"). Contractor agrees to hold Confidential Information in strict confidence, using at least the same degree of care that Contractor uses in maintaining the confidentiality of its own confidential information, and not to copy, reproduce, sell, assign, license, market, transfer or otherwise dispose of, give, or disclose Confidential Information to third parties or use Confidential Information for

7. Counterparts.

This Agreement may be executed in several counterparts, all of which when taken together shall constitute an agreement binding on all Parties, notwithstanding that all Parties are not signatories to the same counterpart. Each copy of the Agreement so executed shall constitute an original.

8. Integration.

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

In witness whereof, the State of Oregon, acting by and through the Oregon State Board of Higher Education on behalf of the Oregon Institute of Technology executes this Contract and the Contractor does execute the same as of the day and year first above written.

Contractor DATA:

(Insert Contractor Name & Address)

Contractor NAME _____

Contractor FEDERAL TAX ID # _____

Contractor CCB # _____ Expiration Date: _____

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

Contractor SIGNATURE

By _____

Signature

Date

Print Name

Title

STATE OF OREGON acting by and through the
OREGON STATE BOARD OF HIGHER EDUCATION
on behalf of the Oregon Institute of Technology

By _____

Name/Title

Date



**OREGON INSTITUTE OF TECHNOLOGY
PUBLIC IMPROVEMENT CONTRACT
SUPPLEMENTAL GENERAL CONDITIONS**

PROJECT: Tunnel Lid Replacement Project

The following modifies the February 1, 2015 Oregon Institute of Technology General Conditions for Public Improvement Contracts (“Oregon Tech General Conditions”) for this Contract. Except as modified below, all other terms and conditions of the Oregon Tech General Conditions shall remain in effect.

Good Faith Effort

As a condition of Contractor being awarded a Contract for this Project, Contractor must complete Good Faith Effort outreach and documentation as described in the Supplemental Instructions to Bidders of the Solicitation Document.

The Contractor may not change who is performing each Division of Work identified in Form 1 of the Good Faith Effort without the express written advance approval of Owner. This includes substituting identified subcontractors, self-performance of a Division of Work that was identified to be performed by a subcontractor, or the Contractor subcontracting a Division of Work that was identified to be self-performed by the Contractor.

Contractor shall be required to submit the completed Form 3 with its final pay application as a condition of final payment.

OREGON INSTITUTE OF TECHNOLOGY GENERAL CONDITIONS FOR PUBLIC IMPROVEMENT CONTRACTS

February 1, 2015

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

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**OREGON INSTITUTE OF TECHNOLOGY
GENERAL CONDITIONS FOR PUBLIC
IMPROVEMENT CONTRACTS
("Oregon Tech General Conditions")**

**SECTION A
GENERAL PROVISIONS**

A.1 DEFINITION OF TERMS

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

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

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

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

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

CONTRACT PRICE, means the total price reflected in the Contract.

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 8.67% 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 Oregon Tech 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, freight embargoes or any other act, event or occurrence that is beyond the control of the party to this Contract who is asserting Force Majeure.

MWESB REPORT, means an accurate report by the Contractor to the Owner identifying all Minority, Women and Emerging Small Business (MWESB) enterprises, as those terms are defined in ORS 200.005, or as self-reporting as otherwise meeting the same requirements of ORS 200.005, receiving contracts throughout the course of the Work. An initial MWESB report is required (see Section E.2.9) and MWESB Reports are required annually (see Section E.2.9) and as a condition of final payment (see Section K.1). The initial report shall include the total number of contracts and subcontracts awarded to MWESB enterprises and the dollar value of their respective contracts and subcontracts. The annual reports shall include the total number of contracts and subcontracts awarded to MWESB enterprises, the dollar value of each, and the expenditure toward each contract and subcontract during the previous twelve (12) months. The final report shall include the total number of contracts and subcontracts awarded to MWESB enterprises and the dollar value of their respective contracts and subcontracts including all 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, until June 30, 2015, the State of Oregon acting by and through the Oregon State Board of Higher Education, in its own right or on behalf of one of the Oregon Institution. On July 1, 2015, OWNER shall mean the Oregon Institute of Technology (Oregon Tech). 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 Oregon Tech General Conditions is intended to abrogate the separate design professional responsibilities of Architects under ORS Chapter 671 or of Engineers under ORS Chapter 672.

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

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

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

RECORD DOCUMENT, means the as-built Plans, Specifications, testing and inspection records, product data, samples, manufacturer and distributor/supplier warranties evidencing transfer of ownership to Owner, operational and maintenance manuals, shop drawings, Construction Change Directives, MWESB Reports, correspondence, certificate(s) of occupancy, and other documents listed in Subsection B.9.1 of these Oregon Tech 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 contract with the Contractor, or another Subcontractor of any tier, to perform one or more items of the Work.

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

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

A.2 SCOPE OF WORK

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

A.3 INTERPRETATION OF CONTRACT DOCUMENTS

A.3.1 Unless otherwise specifically defined in the Contract Documents, words which have well-known technical meanings or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings. Contract Documents are intended to be complementary. Whatever is called for in one, is interpreted to be called for in all. However, in the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following descending order of precedence:

- (a) 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) Oregon Tech General Conditions;
- (d) The Public Improvement Contract;
- (e) Construction Change Directive;
- (f) Division One (General Requirements) of the Specifications;
- (g) Detailed Schedules of finishes, equipment and other items included in the Specifications;
- (h) Plans and Specifications (other than Division One and the Detailed Schedules to the Specifications);
- (i) Large-scale drawings on Plans;
- (j) Small-scale drawings on Plans;
- (k) Dimension numbers written on Plans which shall prevail and take precedence over dimensions scaled from Plans;
- (l) 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.

A.4.2 Should the Plans or Specifications fail to particularly describe the materials, kind of goods, or details of construction of any aspect of the Work, Contractor shall have the duty to make inquiry of the Owner and Architect/Engineer as to what is required prior to performance of the Work. Absent Specifications to the contrary, the materials or processes that would normally be used to produce first quality finished Work shall be considered a part of the Contract requirements.

A.4.3 Any design errors or omissions noted by the Contractor shall be reported promptly to the Owner, including without limitation, any nonconformity with Applicable Laws.

A.4.4 If the Contractor believes that adjustments to cost or Contract Time is involved because of clarifications or instructions issued by the Owner (or Architect/Engineer) in response to the Contractor's notices or requests for information, the Contractor must submit a written request to the Owner, setting forth the nature and specific extent of the request, including all time and cost impacts against the Contract as soon as possible, but no later than thirty (30) Days after receipt by Contractor of the clarifications or instructions issued. If the Owner denies Contractor's request for additional compensation, additional Contract Time, or other relief that Contractor believes results from the clarifications or instructions, the Contractor may proceed to file a Claim under Section D.3, Claims Review Process. If the Contractor fails to perform the obligations of Sections A.4.1 to A.4.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations.

A.5 INDEPENDENT CONTRACTOR STATUS

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

A.6 RETIREMENT SYSTEM STATUS AND TAXES

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

withholding, Owner will not withhold from such payments any amount(s) to cover Contractor's federal or state tax obligations.

A.7 GOVERNMENT EMPLOYMENT STATUS

A.7.1 If this payment is to be charged against federal funds, Contractor represents and warrants that it is not currently employed by the Federal Government. This does not preclude the Contractor from holding another contract with the Federal Government.

A.7.2 Contractor represents and warrants that Contractor is not an employee of the State of Oregon for purposes of performing Work under this Contract.

SECTION B ADMINISTRATION OF THE CONTRACT

B.1 OWNER'S ADMINISTRATION OF THE CONTRACT

B.1.1 The Owner shall administer the Contract as described in the Contract Documents (1) during construction (2) until final payment is due and (3) during the one-year period for correction of Work. The Owner will act as provided in the Contract Documents, unless modified in writing in accordance with other provisions of the Contract. In performing these tasks, the Owner may rely on the Architect/Engineer or other consultants to perform some or all of these tasks.

B.1.2 The Owner will visit the site at intervals appropriate to the stage of the Contractor's operations (1) to become generally familiar with and to keep the Owner informed about the progress and quality of the portion of the Work completed, (2) to endeavor to guard the Owner against defects and deficiencies in the Work, and (3) to determine in general if Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. The Owner will not make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Owner will neither have control over or charge of, nor be responsible for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work.

B.1.3 Except as otherwise provided in the Contract Documents or when direct communications have been specifically authorized, the Owner and Contractor shall communicate with each other about matters arising out of or relating to the Contract. Communications by and with the Architect/Engineer's consultants shall be through the Architect/Engineer. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

B.1.4 Based upon the Architect/Engineer's evaluations of the Contractor's Application for Payment, or unless otherwise stipulated by the Owner, the Architect/Engineer will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

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

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

responsible for the jobsite safety of such means, methods, techniques, sequences or procedures.

- B.2.2 The Contractor is responsible to protect and maintain the Work during the course of construction and to mitigate any adverse impacts to the project, including those caused by authorized changes, which may affect cost, schedule, or quality.
- B.2.3 The Contractor is responsible for the actions of all its personnel, laborers, suppliers, and Subcontractors on the project. The Contractor shall enforce strict discipline and good order among Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of persons who are unfit or unskilled for the tasks assigned to them.

B.3 MATERIALS AND WORKMANSHIP

- B.3.1 The intent of the Contract Documents is to provide for the construction and completion in every detail of the Work described. All Work shall be performed in a professional manner and unless the means or methods of performing a task are specified elsewhere in the Contract Documents, Contractor shall employ methods that are generally accepted and used by the industry, in accordance with industry standards.
- B.3.2 The Contractor is responsible to perform the Work as required by the Contract Documents. Defective Work shall be corrected at the Contractor's expense.
- B.3.3 Work done and materials furnished 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 REGULATIONS

- B.5.1 Contractor shall comply with Applicable Laws pertaining to the Work and the Contract. Failure to comply with such requirements shall constitute a breach of Contract and shall be grounds for Contract termination. Without limiting the generality of the foregoing, Contractor expressly agrees to comply with the following, as applicable:
 - (i) Title VI and VII of Civil Rights Act of 1964, as amended;
 - (ii) Section 503 and 504 of the Rehabilitation Act of 1973, as amended;
 - (iii) the Health Insurance Portability and Accountability Act of 1996;
 - (iv) the Americans with Disabilities Act of 1990, as amended;
 - (v) ORS Chapter 659A; as amended;
 - (vi) all regulations and administrative rules established pursuant to the foregoing laws; and
 - (vii) all other applicable requirements of federal and state civil rights and rehabilitation statutes, rules and regulations.

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

- (a) Contractor shall not discriminate against Disadvantaged, Minority, Women or Emerging Small Business enterprises, as those terms are defined in ORS 200.005, or a business enterprise that is owned or controlled by or that employs a disabled veteran, as that term is defined in ORS 408.225, in the awarding of subcontracts.
- (b) Contractor shall maintain, in current and valid form, all licenses and certificates required by Applicable Laws or this Contract when performing the Work.

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

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

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

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

B.6 SUPERINTENDENCE

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

B.7 INSPECTION

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

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

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

by the Contract Documents, be secured by the Contractor and promptly delivered to the Owner.

- B.7.4 As required by the Contract Documents, Work done or material used without required inspection or testing and/or without providing timely notice to the Owner may be ordered removed at the Contractor's expense.
- B.7.5 If directed to do so any time before the Work is accepted, the Contractor shall uncover portions of the completed Work for inspection. After inspection, the Contractor shall restore such portions of Work to the standard required by the Contract. If the Work uncovered is unacceptable or was done without required testing or inspection or sufficient notice to the Owner, the uncovering and restoration shall be done at the Contractor's expense. If the Work uncovered is acceptable and was done with sufficient notice to the Owner, the uncovering and restoration will be paid for pursuant to a Change Order.
- B.7.6 If any testing or inspection reveals failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Owner's and Architect/Engineer's services and expenses, shall be at the Contractor's expense.
- B.7.7 When the United States government participates in the cost of the Work, or the Owner has an agreement with other public or private organizations, or if any portion of the Work is being performed for a third party or in close proximity to third party facilities, representatives of these organizations shall have the right to inspect the Work affecting their interests or property. Their right to inspect shall not make them a party to the Contract and shall not interfere with the rights of the parties of the Contract. Instructions or orders of such parties shall be transmitted to the Contractor, through the Owner.

B.8 SEVERABILITY

If any provision of this Contract is declared by a court to be 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, Construction Change Directives and addenda, in good order and marked currently to record field changes and selections made during construction, and one record copy of Shop Drawings, Product Data, Samples and similar submittals, and shall at all times give the Owner access thereto.
- B.9.2 Contractor shall retain and the Owner and its duly authorized representatives shall have access, for a period not less than ten (10) years, to all Record Documents, financial and accounting records, and other books, documents, papers and records of Contractor which are pertinent to the Contract, including records pertaining to Overhead and indirect costs, for the purpose of making audit, examination, excerpts and transcripts. If for any reason, any part of the Work or this Contract shall be subject to litigation, Contractor shall retain all such records until all litigation is resolved and Contractor shall continue to provide Owner and/or its agents with full access to such records until such time as all litigation is complete and all periods for appeal have expired and full and final satisfaction of any judgment, order or decree is recorded and Owner receives a record copy of documentation from Contractor.

B.10 WAIVER

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

B.11 SUBCONTRACTS AND ASSIGNMENT

- B.11.1 Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound by the terms and conditions of these Oregon Tech General Conditions, and to assume toward the Contractor all of the obligations and responsibilities which the Contractor assumes toward the Owner thereunder, unless (1) the same are clearly inapplicable to the subcontract at issue because of legal requirements or industry practices, or (2) specific exceptions are requested by Contractor and approved in writing by Owner. Where appropriate, Contractor shall require each Subcontractor to enter into similar agreements with sub-subcontractors at any level.
- B.11.2 At Owner's request, Contractor shall submit to Owner prior to their execution either Contractor's form of subcontract, or the subcontract to be executed with any particular Subcontractor. If Owner disapproves such form, Contractor shall not execute the form until the matters disapproved are resolved to Owner's satisfaction. Owner's review, comment upon or approval of any such form shall not relieve Contractor of its obligations under this Agreement or be deemed a waiver of such obligations of Contractor.
- B.11.3 Contractor shall not assign, sell, or transfer its rights, or delegate its responsibilities under this Contract, in whole or in part, without the prior written approval of the Owner. No such written approval shall relieve Contractor of any obligations of this Contract, and any transferee shall be considered the agent of the Contractor and bound to perform in accordance with the Contract Documents. Contractor shall remain liable as between the original parties to the Contract as if no assignment had occurred.

B.12 SUCCESSORS IN INTEREST

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

B.13 OWNER'S RIGHT TO DO WORK

Owner reserves the right to perform other or additional work at or near the project site with other forces than those of the Contractor. If such work takes place within or next to the project site, Contractor shall coordinate work with the other contractors or forces, cooperate with all other contractors or forces, carry out the Work in a way that will minimize interference and delay for all forces involved, place and dispose of materials being used so as not to interfere with the operations of another, and join the Work with the work of the others in an acceptable manner and perform it in proper sequence to that of the others. The Owner will resolve any disagreements that may arise between or among Contractor and the other contractors over the method or order of doing all work (including the Work). In case of unavoidable interference, the Owner will establish work priority (including the Work) which generally will be in the sequence that the contracts were awarded.

B.14 OTHER CONTRACTS

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

B.15 GOVERNING LAW

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

B.16 LITIGATION

Any Claim between Owner and Contractor that arises from or relates to this Contract and that is not resolved through the Claims Review Process in Section D.3 shall be brought and conducted solely and exclusively within the Circuit Court of Marion County for the State of Oregon; provided, however, if a Claim must be brought in a federal forum, then it shall be brought and conducted solely and exclusively within the United States District Court for the District of Oregon. In no event shall this section be construed as a waiver by the State of Oregon 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.

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 subcontractor),

manufacturer, supplier or distributor to illustrate some portion of the Work.

- (b) Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.
- (c) Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

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

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

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

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

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

responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect/Engineer's review or approval thereof.

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

B.19 SUBSTITUTIONS

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

B.20 USE OF PLANS AND SPECIFICATIONS

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

B.21 FUNDS AVAILABLE AND AUTHORIZED

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. If the Work is subject to both the state prevailing wage rate law and the federal Davis-Bacon Act, Contractor shall pay the higher of the applicable state or

federal prevailing rate of wage. Contractor shall provide written notice to all workers of the number of hours per day and days per week such workers may be required to work.

C.2 PAYROLL CERTIFICATION AND FEE REQUIREMENTS

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

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

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

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

C.3 PROMPT PAYMENT AND CONTRACT CONDITIONS

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

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

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

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

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

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

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

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

C.4 PAYMENT FOR MEDICAL CARE

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

C.5 HOURS OF LABOR

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

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

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

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

SECTION D *CHANGES IN THE WORK*

D.1 CHANGES IN WORK

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

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

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

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

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

- (a) Unit Pricing: 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
1 st Tier Sub Contractor	5%	\$1,000.00
2 nd Tier Sub Contractor	10%	\$22,000.00

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

D.1.4 Any necessary adjustment of Contract Time that may be required as a result of adjustments to or deletions from the Work must be agreed upon by the parties before the start of the revised Work unless Owner authorizes Contractor to start the revised Work before agreement on Contract Time adjustment.

Contractor shall submit any request for additional compensation (and additional Contract Time if Contractor was authorized to start Work before an adjustment of Contract Time was approved) as soon as possible but no later than thirty (30) Days after receipt of Owner's request for additional Work. If Contractor's request for additional compensation or adjustment of Contract Time is not made within the thirty (30) Day time limit, Contractor's requests pertaining to that additional Work shall be barred. The thirty (30) Day time limit for making requests shall not be extended for any reason, including without limitation Contractor's claimed inability to determine the amount of additional compensation or adjustment of Contract Time, unless an extension is granted in writing by Owner. If the Owner denies Contractor's request for additional compensation or adjustment of Contract Time, Contractor may proceed to file a Claim under Section D.3, Claims Review Process. No other reimbursement, compensation, or payment will be made, except as provided in Section D.1.5 for impact claims.

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

The thirty (30) Day time limit applies to claims of Subcontractors, suppliers, or manufacturers who may be affected by Owner's request for adjustments to or deletions from the Work and who

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

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

D.1.6 No request or Claim by the Contractor for additional costs or an adjustment of Contract Time shall be allowed if made after receipt of final payment application under this Contract. Final payment application must be made by Contractor within the time required under Section E.6.4.

D.1.7 It is understood that changes in the Work are inherent in construction of this type. The number of changes, the scope of those changes, and the effect they have on the progress of the original Work cannot be defined at this time. The Contractor is notified that numerous changes may be required and that there will be no compensation made, unless and only to the extent otherwise provided in the Contract Documents, to the Contractor directly related to the number of changes. Each change will be evaluated for extension of Contract Time and increase or decrease in compensation based on its own merit.

D.2 DELAYS

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

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

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

prevent the completion of the whole Work within the Contract Time.

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

- (a) To the extent caused by any actions of the Owner, or any other employee or agent of the Owner, or by separate contractor employed by the Owner.
- (b) To the extent caused by any site conditions which differ materially from what was represented in the Contract Documents or from conditions that would normally be expected to exist and be inherent to the construction activities defined in the Contract Documents. The Contractor shall notify the Owner immediately of differing site conditions before the area has been disturbed. The Owner will investigate the area and make a determination as to whether or not the conditions differ materially from either the conditions stated in the Contract Documents or those which could reasonably be expected in execution of this particular Contract. If Contractor and the Owner 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) To the extent caused by Force Majeure acts, events or occurrences that could not have been avoided by the exercise of care, prudence, foresight, and diligence on the part of the Contractor or its Subcontractors.
- (d) To the extent caused by adverse weather conditions. Any adverse weather conditions must be substantiated by documentary evidence that weather conditions were abnormal for the specific time period claimed, could not have been anticipated by the Contractor, and adversely impacted the project in a manner that could not be avoided by rescheduling the Work or by implementing measures to protect against the weather so that the Work could proceed. A rain, windstorm, high water, or other natural phenomenon for the specific locality of the Work, which might reasonably have been anticipated from the previous 10-year historical records of the general locality of the Work, shall not be construed as abnormal. The parties agree that rainfall greater than the following levels cannot be reasonably anticipated:
 - (i) Daily rainfall equal to, or greater than, 0.50 inch during a month when the monthly rainfall exceeds the normal monthly average by twenty-five percent (25%) or more.
 - (ii) daily rainfall equal to, or greater than, 0.75 inch at any time.

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

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

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

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

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

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

D.3 CLAIMS REVIEW PROCESS

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

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

D.3.3 The Owner will review all Claims and take one or more of the following preliminary actions within ten (10) Days of receipt of the Detailed Notice of a Claim: (1) request additional supporting information from the Contractor; (2) inform the Contractor and Owner in writing of the time required for adequate review and response; (3) reject the Claim in whole or in part and identify the

reasons for rejection; (4) based on principles of equitable adjustment, recommend approval of all or part of the Claim; or (5) propose an alternate resolution.

SECTION E PAYMENTS

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.

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 forty five (45) days from the latest of:

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

Notwithstanding the foregoing, in instances when an application for payment is filled out incorrectly, or when there is any defect or impropriety in any submitted application or when there is a good faith dispute, Owner shall so notify the Contractor within fifteen (15) Days stating the reason or reasons the application for payment is defective or improper or the reasons for the dispute. A defective or improper application for payment, if corrected by the Contractor within seven (7) Days of being notified by the Owner, shall not cause a payment to be made later than specified in this section unless interest is also paid. Payment of interest will be postponed when payment on the principal is delayed because of disagreement between the Owner and the Contractor.

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

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

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

face of each copy thereof, a certificate in substantially the following form:

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

Signed: _____
Dated: _____"

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

- (a) The request for stored material shall be submitted at least thirty (30) Days in advance of the application for payment on which it appears. Applications for payment shall be entertained for major equipment, components or expenditures only.
- (b) The Contractor shall submit applications for payment showing the quantity and cost of the material stored.
- (c) The material shall be stored in a bonded warehouse and Owner shall be granted the right to access the material for the purpose of removal or inspection at any time during the Contract Period.
- (d) The Contractor shall name the Owner as co-insured on the insurance policy covering the full value of the property while in the care and custody of the Contractor until it is installed. A certificate noting this coverage shall be issued to the Owner.
- (e) Payments shall be made for materials and equipment only. The submitted amount in the application for payment shall be reduced by the cost of transportation from the storage site to the project site and for the cost of an inspector to verify delivery and condition of the goods at the storage site. The cost of storage and inspection shall be borne solely by the Contractor.
- (f) Within sixty (60) Days of the application for payment, the Contractor shall submit evidence of payment covering the material and/or equipment stored and of payment for the storage site.
- (g) Payment for stored materials and/or equipment shall in no way indicate acceptance of the materials and/or equipment or waive any rights under this Contract for the rejection of the Work or materials and/or equipment not in conformance with the Contract Documents.
- (h) All required documentation shall be submitted with the respective application for payment.

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

- (a) Work that is defective and not remedied, or that has been demonstrated or identified as failing to conform with Applicable Laws or the Contract Documents,
- (b) third party claims filed or evidence reasonably indicating that such claims will likely be filed unless security acceptable to the Owner is provided by the Contractor;
- (c) failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment (in which case Owner may issue checks made payable jointly to Contractor and such unpaid persons under this provision, or

directly to Subcontractors and suppliers at any level under Section C.3.2.1);

- (d) reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Price;
- (e) damage to the Work, Owner or another contractor;
- (f) reasonable evidence that the Work will not be completed within the Contract Time required by the Contract, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
- (g) failure to carry out the Work in accordance with the Contract Documents; or
- (h) assessment of liquidated damages, when withholding is made for offset purposes.

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

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

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

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

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

E.2.9 Contractor shall submit its initial MWESB Report within ten (10) Days of Contractor's execution of the Contract, 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 MWESB 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 MWESB Report otherwise due on that June 30. The final MWESB Report shall be filed with the application for final payment. Timely receipt of MWESB Reports by Owner shall be a condition precedent to Owner's obligation to pay any progress payments or final payment otherwise due.

E.3 PAYROLL CERTIFICATION REQUIREMENT

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

E.4 DUAL PAYMENT SOURCES

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

E.5 RETAINAGE

E.5.1 Retainage shall be withheld and released in accordance with the requirements set forth in OAR 580-063-0045, or the applicable Oregon Tech 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 Contractor may request in writing:

- (a) to be paid amounts which would otherwise have been retained from progress payments where Contractor has deposited acceptable bonds and securities of equal value with Owner or in a custodial account or other mutually agreed account satisfactory to Owner, with an approved bank or trust company to be held in lieu of the cash retainage for the benefit of Owner;
- (b) for construction projects over \$1,000,000, that retainage be deposited in an interest bearing account, established through the State Treasurer for state agencies, in a bank, savings bank, trust company or savings association for the benefit of Owner, with earnings from such account accruing to the Contractor; or
- (c) that the Owner allow Contractor to deposit a surety bond for the benefit of Owner, in a form acceptable to Owner, in lieu of all or a portion of funds retained, or to be retained. Such bond and any proceeds therefrom shall be made subject to all claims in the manner and priority as set forth for retainage.

When the Owner has accepted the Contractor's election of option (a) or (b), Owner may recover from Contractor any additional costs incurred through such election by reducing Contractor's final payment. Where the Owner has agreed to Contractor's request for option (c), Contractor shall

accept like bonds from Subcontractors and suppliers on the project from which Contractor has required retainages.

E. 5.1.3 The retainage held by Owner shall be included in and paid to the Contractor as part of the final payment of the Contract Price. The Owner shall pay to Contractor interest at the rate of two thirds of one percent per month on the final payment due Contractor, interest to commence forty five (45) Days after the date which Owner receives Contractor's final approved application for payment and Work under the Contract has been completed and accepted and to run until the date when final payment is tendered to Contractor. The Contractor shall notify Owner in writing when the Contractor considers the Work complete and deliver to Owner its final application for payment and Owner shall, within 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 forty five (45) Days after the end of the 15 Day period.

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

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

E.6 FINAL PAYMENT

E.6.1 Upon completion of all the Work under this Contract, the Contractor shall notify the Owner, in writing, that Contractor has completed Contractor's obligations under the Contract and shall prepare its application requesting final payment. Upon receipt of such notice and application for payment, the Owner will inspect the Work, and, if acceptable, submit to Contractor a recommendation as to acceptance of the completed Work and the final estimate of the amount due the Contractor. If the Work is not acceptable, Owner will notify Contractor within fifteen (15) Days of Contractor's request for final payment. Upon approval of this final application for payment by the Owner and compliance by the Contractor with provisions in Section K, and Contractor's satisfaction of other provisions of the Contract Documents as may be applicable, the Owner shall pay to the Contractor all monies due under the provisions of these Contract Documents.

E.6.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Owner (1) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least thirty (30) Days' prior written notice has been given to the Owner, (2) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (3) consent of surety, if any, to final payment and (4), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to

indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

E.6.3 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final application for payment.

E.6.4 Contractor agrees to submit its final payment application within ninety (90) Days after Substantial Completion, unless written extension is granted by Owner. Contractor shall not delay final payment application for any reason, including without limitation nonpayment of Subcontractors, suppliers, manufacturers or others not a party to this Contract, or lack of resolution of a dispute with Owner or any other person of matters arising out of or relating to the Contract. If Contractor fails to submit its final payment application within ninety (90) Days after Substantial Completion, and Contractor has not obtained written extension by Owner, all requests or Claims for additional costs or an extension of Contract Time shall be waived.

SECTION F JOB SITE CONDITIONS

F.1 USE OF PREMISES

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

F.2 PROTECTION OF WORKERS, PROPERTY AND THE PUBLIC

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

F.2.2 Contractor shall take all necessary precautions for the safety of all personnel on the job site or otherwise engaged in the undertaking of the Work and shall comply with the Contract Documents, best practices and all applicable provisions of federal, state and municipal safety laws and building 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 Contractor shall be held responsible for and shall indemnify, defend (with counsel of Owner's choice), and hold harmless Owner from and against any costs, expenses, damages, claims, and causes of action, (including attorney fees), or any of them, resulting from all spills, releases, discharges, leaks and disposal of environmental pollution, including storage, transportation, and handling during the performance of the Work or Contractor's obligations under the Contract which occur as a result of, or are contributed by, the negligence or actions of Contractor or its personnel, agents, or Subcontractors or any failure to perform in accordance with the Contract Documents (except to the extent otherwise void under ORS 30.140). Nothing in this section F.5.1 shall limit Contractor's responsibility for obtaining insurance coverages required under Section G.3 of this Contract, and Contractor shall take no action that would void or impair such coverages.

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

shall be performed by properly qualified and, if applicable, licensed personnel.

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

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

F.5.2 Contractor shall report all reportable quantity releases, as such releases are defined in Applicable Laws, including but not limited to 40 CFR Part 302, Table 302.4 and in OAR 340-1420050, 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 that may be caused by, or result from, the carrying out of the Work to be done under this Contract, or from any act, omission or neglect of the Contractor, its Subcontractors, employees, guests, visitors, invitees and agents.

G.1.2 To the fullest extent permitted by law, Contractor shall indemnify, defend (with counsel approved by Owner) and hold harmless the Owner, Architect/Engineer, Architect/Engineer's consultants, and their respective officers, directors, agents, employees, partners, members, stockholders and affiliated companies (collectively "Indemnitees") from and against all liabilities, damages, losses, claims, expenses (including reasonable attorney fees), demands and actions of any nature whatsoever which arise out of, result from or are related to, (a) any damage, injury, loss, expense, inconvenience or delay described in this Section G.1., (b) any accident or occurrence which happens or is alleged to have happened in or about the project site or any place where the Work is being performed, or in the vicinity of either, at any time prior to the time the Work is fully completed in all respects, (c) any failure of the Contractor to observe or perform any duty or obligation under the Contract Documents which is to be observed or performed by the Contractor, or any breach of any agreement, representation or warranty of the Contractor contained in the Contract Documents or in any subcontract, (d) the negligent acts or omissions of the Contractor, a Subcontractor or anyone directly or indirectly employed by them or any one of them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder (except to the extent otherwise void under ORS 30.140), and (e) any lien filed upon the project or bond claim in connection with the Work. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section G.1.2.

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

workers' compensation acts, disability benefit acts or other employee benefit acts.

G.2 PERFORMANCE AND PAYMENT SECURITY; PUBLIC WORKS BOND

- G.2.1 When the Contract Price is \$100,000 or more (or \$50,000 or more in the case of Contracts for highways, bridges and other transportation projects), the Contractor shall furnish and maintain in effect at all times during the Contract Period a performance bond in a sum equal to the Contract Price and a separate payment bond also in a sum equal to the Contract Price. Contractor shall furnish such bonds even if the Contract Price is less than the above thresholds if otherwise required by the Contract Documents.
- G.2.2 Bond forms furnished by the Owner and notarized by awarded Contractor's surety company authorized to do business in Oregon are the only acceptable forms of performance and payment security, unless otherwise specified in the Contract Documents.
- G.2.3 Before execution of the Contract the Contractor shall file with the Construction Contractors Board, and maintain in full force and effect, the separate public works bond required by Oregon Laws 2005, Chapter 360, and OAR 839-025-0015, unless otherwise exempt under those provisions. The Contractor shall also include in every subcontract a provision requiring the Subcontractor to have a public works bond filed with the Construction Contractors Board before starting Work, unless otherwise exempt, and shall verify that the Subcontractor has filed a public works bond before permitting any Subcontractor to start Work.

G.3 INSURANCE

- G.3.1 Primary Coverage: Insurance carried by Contractor under this Contract shall be the primary coverage. The coverages indicated are minimums unless otherwise specified in the Contract Documents.
- G.3.2 Workers' Compensation: All employers, including Contractor, that employ subject workers who work under this Contract in the State of Oregon shall comply with ORS 656.017 and provide the required Workers' Compensation coverage, unless such employers are exempt under ORS 656.126. This shall include Employer's Liability Insurance with coverage limits of not less than the minimum amount required by statute for each accident. Contractors who perform the Work without the assistance or labor of any employee need not obtain such coverage if the Contractor certifies so in writing. Contractor shall ensure that each of its Subcontractors complies with these requirements. The Contractor shall require proof of such Workers' Compensation coverage by receiving and keeping on file a certificate of insurance from each Subcontractor or anyone else directly employed by either the Contractor or its Subcontractors.
- G.3.3 Builder's Risk Insurance:
- G.3.3.1 Builder's Risk: During the term of this Contract, for new construction the Contractor shall obtain and keep in effect Builder's Risk insurance on an all risk forms, including earthquake and flood, for an amount equal to the full amount of the Contract, plus any changes in values due to modifications, Change Orders and loss of materials added. Such Builder's Risk shall include, in addition to earthquake and flood, theft, vandalism, mischief, collapse, transit, debris removal, and architect's fees "soft costs" associated with delay of project due to insured peril. Any deductible shall not exceed \$50,000 for each loss, except the earthquake and flood deductible which shall not exceed 2 percent of each loss or \$50,000, whichever is greater. The deductible shall be paid by Contractor if Contractor is negligent. The policy will include as loss payees Owner, the Contractor and its Subcontractors as their interests may appear.
- G.3.3.2 Builder's Risk Installation Floater: For Work other than new construction, Contractor shall obtain and keep in effect during the term of this Contract, a Builder's Risk Installation Floater for coverage of the Contractor's labor, materials and equipment to be used for completion of the Work performed under this Contract. The minimum amount of coverage to be carried shall be equal to the full amount of the Contract. The policy will include as loss payees Owner, the Contractor and its Subcontractors as their interests may appear. Owner may waive this requirement at its sole and absolute discretion.
- G.3.3.3 Such insurance shall be maintained until Owner has occupied the facility.
- G.3.3.4 A loss insured under the Builder's Risk insurance shall be adjusted by the Owner and made payable to the Owner as loss payee. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner. The Owner shall have power to adjust and settle a loss with insurers.
- G.3.4 General Liability Insurance:
- G.3.4.1 Commercial General Liability: Upon execution of a Contract, Contractor shall obtain, and keep in effect at Contractor's expense for the term of the Contract, Commercial General Liability Insurance ("CGL") covering bodily injury and property damage in the amount of not less than \$1,000,000 per claim and \$2,000,000 per occurrence in a form satisfactory to Owner. This insurance shall include personal injury liability, products and completed operations, and contractual liability coverage for the indemnities provided under this Contract (to the extent contractual liability coverage for the indemnity is available in the marketplace), and shall be issued on an occurrence basis written on ISO Form GC 00 01 (12 04 or later) or an equivalent form approved in advance by Owner. The CGL shall provide separation of insured language.
- G.3.4.2 Automobile Liability: Contractor shall obtain, at Contractor's expense, and keep in effect during the term of this Contract, Automobile Liability Insurance covering owned, and/or hired vehicles, as applicable. The coverage may be written in combination with the Commercial General Liability Insurance. Contractor shall provide proof of insurance of not less than \$1,000,000 per claim and \$2,000,000 per occurrence. Contractor and its Subcontractors shall be responsible for ensuring that all non-owned vehicles maintain adequate Automobile Liability insurance while on site.
- G.3.4.3 Owner may adjust the insurance amounts required in Section G.3.4.1 and G.3.4.2 based upon institution specific risk assessments through the issuance of Supplemental General Conditions and a Contract.
- G.3.4.4 To the extent that the Contract Documents require the Contractor to provide professional design services, design-build, or certifications related to systems, materials, or equipment, the Contractor shall (1) purchase and maintain professional liability/errors-and-omissions insurance with limits of not less than \$1,000,000 for each claim and (2) cause those Subcontractors (of any tier) who are providing professional design services including any design-build services to procure and maintain professional liability/errors-and-omissions insurance with limits of not less than \$1,000,000 for each claim.
- G.3.4.5 "Tail" Coverage: If any of the required liability insurance is arranged on a "claims made" basis, "tail" coverage will be required at the completion of this Contract for a duration of 36 months or the maximum time period available in the marketplace

if less than 36 months. Contractor shall furnish certification of "tail" coverage as described or continuous "claims made" liability coverage for 36 months following Final Completion. Continuous "claims made" coverage will be acceptable in lieu of "tail" coverage, provided its retroactive date is on or before the effective date of this Contract. Owner's receipt of the policy endorsement evidencing such coverage shall be a condition precedent to Owner's obligation to make final payment and to Owner's final acceptance of Work or services and related warranty (if any).

G.3.4.6 Umbrella Liability (if required by Owner through issuance of Supplemental General Conditions): Contractor shall obtain, at Contractor's expense, and keep in effect during the term of the Contract, Umbrella liability Insurance over and above the general liability, automobile liability and workers' compensation coverage if required by Owner in specified limits at time of requirement.

G.3.4.6 Pollution Liability (if required by Owner through issuance of Supplemental General Conditions): Contractor shall obtain, at Contractor's expense, and keep in effect during the term of the Contract, Pollution liability Insurance in minimum amounts of \$3,000,000 naming Owner as "additional insured," as noted in the "additional insured section below.

G.3.5 Additional Insured: The general liability insurance coverage, automobile liability, umbrella, and pollution liability if required, shall include the Owner as additional insureds but only with respect to the Contractor's activities to be performed under this Contract. The additional-insured endorsement for CGL insurance must be written on ISO Form CG 20 10 (10 01) and CG 20 37 (10 01), or their equivalent, but shall not use either of the following forms: CG 20 10 (10 93) or CG 20 10 (03 94).

If Contractor cannot obtain an insurer to name the Owner as additional insureds, Contractor shall obtain at Contractor's expense, and keep in effect during the term of this Contract, Owners and Contractors Protective Liability Insurance, naming the Owner as additional insureds with not less than a \$2,000,000 limit per occurrence. This policy must be kept in effect for 36 months following Final Completion. As evidence of coverage, Contractor shall furnish the actual policy to Owner prior to execution of the Contract.

G.3.6 Notice of Cancellation or Change: If the Contractor receives a non-renewal or cancellation notice from an insurance carrier affording coverage required herein, or receives notice that coverage no longer complies with the insurance requirements herein, Contractor agrees to notify Owner by fax within five (5) business days with a copy of the non-renewal or cancellation notice, or written specifics as to which coverage is no longer in compliance. When notified by Owner, the Contractor agrees to stop Work pursuant to this Contract, unless all required insurance remain in effect. Any failure to comply with the reporting provisions of this insurance, except for the potential exhaustion of aggregate limits, shall not affect the coverages provided to the Owner and its institutions, divisions, officers, and employees.

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

G.3.7 Certificate(s) of Insurance: As evidence of the insurance coverage required by the Contract, the Contractor shall furnish certificate(s) of insurance to the Owner prior to execution of the Contract. The certificate(s) will specify all of the parties who are additional insureds or loss payees for the contract. Insurance coverage required under this Contract shall be obtained from

insurance companies or entities acceptable to the Owner and that are eligible to provide such insurance under Oregon law. Eligible insurers include admitted insurers that have been issued a certificate of authority from the Oregon Department of Consumer and Business Services authorizing them to conduct an insurance business and issue policies of insurance in the state of Oregon, and certain non-admitted surplus lines insurers that satisfy the requirements of applicable Oregon law and which are subject to approval by the Owner. The Contractor shall be financially responsible for all deductibles, self-insured retentions and/or self-insurance included hereunder. Any deductible, self-insured retention and/or self-insurance in excess of \$50,000 shall be subject to approval by the Owner in writing and shall be a condition precedent to the effectiveness of any Contract.

SECTION H SCHEDULE OF WORK

H.1 CONTRACT PERIOD

H.1.1 Time is of the essence. The Contractor shall at all times carry on the Work diligently, without delay and punctually fulfill all requirements herein. If required by the Contract Documents, Contractor shall commence Work on the site within fifteen (15) Days of Notice to Proceed, unless directed otherwise.

H.1.2 Unless specifically extended by 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. Contractor shall promptly remove from the premises and replace all defective materials and equipment as determined by the Owner, whether incorporated in the Work or not. Removal and replacement shall be without loss or expense to the Owner, and Contractor shall bear the cost of repairing all Work destroyed or damaged by such removal or replacement. Contractor shall be allowed a period of no longer than thirty (30) Days after Substantial Completion for completion of defective (Punch List) work. At the end of the thirty-day period, or earlier if requested by the Contractor, Owner shall arrange for inspection of the Work by the Architect/Engineer. Should the work not be complete, and all corrections made, the costs for all subsequent reinspections shall be borne by the Contractor. If Contractor fails to complete the Punch List work within the thirty (30) Day period, Owner may perform such work and Contractor shall reimburse Owner all costs of the same within ten (10) Days after demand without affecting Contractor's obligations.

I.2 WARRANTY WORK

I.2.1 Neither the final certificate of payment nor any provision of the Contract Documents shall relieve the Contractor from responsibility for defective Work and, unless a longer period is specified, Contractor shall correct all defects that appear in the

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

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

SECTION J
SUSPENSION AND/OR TERMINATION OF THE WORK

J.1 OWNER'S RIGHT TO SUSPEND THE WORK

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

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

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

J.2 CONTRACTOR'S RESPONSIBILITIES

J.2.1 During the period of the suspension, Contractor is responsible to continue maintenance at the project just as if the Work were in progress. This includes, but is not limited to, protection of completed Work, maintenance of access, protection of stored materials, temporary facilities, and clean-up.

J.2.2 When the Work is recommenced after the suspension, the Contractor shall replace or renew any Work damaged during the suspension, remove any materials or facilities used as part of temporary maintenance, and complete the Work in every respect as though its prosecution had been continuous and without suspension.

J.3 COMPENSATION FOR SUSPENSION

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

J.4 OWNER'S RIGHT TO TERMINATE CONTRACT

J.4.1 The Owner may, without prejudice to any other right or remedy, and after giving Contractor seven (7) Days' written notice and an opportunity to cure, terminate the Contract in whole or in part under the following conditions:

- (a) If Contractor should, voluntarily or involuntarily, seek protection under the United States Bankruptcy Code and Contractor as debtor-in-possession or the Trustee for the estate fails to assume the Contract within a reasonable time;
- (b) If Contractor should make a general assignment for the benefit of Contractor's creditors;

- (c) If a receiver should be appointed on account of Contractor's insolvency;
- (d) If Contractor should repeatedly refuse or fail to supply an adequate number of skilled workers or proper materials to carry on the Work as required by the Contract Documents, or otherwise fail to perform the Work in a timely manner;
- (e) If Contractor should repeatedly fail to make prompt payment to Subcontractors or for material or labor, or should disregard laws, ordinances or the instructions of the Owner; or
- (f) If Contractor is otherwise in breach of any part of the Contract.
- (g) If Contractor is in violation of Applicable Laws, either in the conduct of its business or in its performance of the Work.

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

J.5 TERMINATION FOR CONVENIENCE

J.5.1 Owner may terminate the Contract in whole or in part whenever Owner determines that termination of the Contract is in the best interest of Owner or the public.

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

J.6 ACTION UPON TERMINATION

J.6.1 Upon receiving a notice of termination, and except as directed otherwise by the Owner, Contractor shall immediately cease placing further subcontracts or orders for materials, services, or facilities. In addition, Contractor shall terminate all subcontracts or orders to the extent they relate to the Work terminated and, with the prior written approval of the Owner, settle all outstanding liabilities and termination settlement proposals arising from the termination of subcontracts and orders.

J.6.2 As directed by the Owner, Contractor shall, upon termination, transfer title and deliver to the Owner all Record Documents, information, and other property that, if the Contract had been completed, would have been required to be furnished to the Owner.

J.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 MWESB Reports.

K.2 OPERATION AND MAINTENANCE MANUALS

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

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



OREGON INSTITUTE OF TECHNOLOGY
PUBLIC IMPROVEMENT CONTRACT

PERFORMANCE BOND

Bond No.: _____

Solicitation: **BID #2015-02**

Project Name: **Tunnel Lid Replacement Project**

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

** If using multiple sureties*

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

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

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

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

NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH that if the Principal herein shall faithfully and truly observe and comply with the terms, conditions and provisions of the Contract, in all respects, and shall well and truly and fully do and perform all matters and things undertaken by Contractor to be performed under the Contract, upon the terms set forth therein, and within the time prescribed therein, or as extended as provided in the Contract, with or without notice to the Sureties, and shall indemnify and save harmless the State of Oregon,

OSBHE, and the Oregon Institute of Technology, and members thereof, its officers, employees and agents, against any direct or indirect damages or claim of every kind and description that shall be suffered or claimed to be suffered in connection with or arising out of the performance of the Contract by the Principal or its subcontractors, and shall in all respects perform said contract according to law, then this obligation is to be void; otherwise, it shall remain in full force and effect.

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

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

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

Dated this _____ day of _____, 20__.

PRINCIPAL: _____

By _____

Signature

Official Capacity

Attest: _____

Corporation Secretary

SURETY: _____

[Add signatures for each surety if using multiple bonds]

BY ATTORNEY-IN-FACT:

[Power-of-Attorney must accompany each surety bond]

Name

Signature

Address

City State Zip

Phone Fax



OREGON INSTITUTE OF TECHNOLOGY
PUBLIC IMPROVEMENT CONTRACT

PAYMENT BOND

Bond No.: _____

Solicitation: BID #2015-02

Project Name: Tunnel Lid Replacement Project

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

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

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

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

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

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

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

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

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

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

Dated this _____ day of _____, 20__.

PRINCIPAL: _____

By _____
Signature

Official Capacity

Attest: _____
Corporation Secretary

SURETY: _____

[Add signatures for each if using multiple bonds]

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

Name

Signature

Address

City State Zip

Phone Fax



OREGON INSTITUTE OF TECHNOLOGY
PUBLIC IMPROVEMENT CONTRACT
PROJECT INFORMATION, PLANS, SPECIFICATIONS AND DRAWINGS

PROJECT: Tunnel Lid Replacement Project

Project Summary: Briefly and without force and effect on requirements of the Contract Documents, the description of the Work of the Contract can be summarized as follows: To furnish all labor, materials and equipment necessary to complete the utility Tunnel Lid Replacement work including removal and replacement of existing concrete tunnel lid, walkways, stairways, planters, and appurtenances as specified in the construction drawings and specifications. The works shall be performed under a single prime contract.

Contacts: Contractors or Subcontractors interested in this Project may only contact the below referenced individuals for project information.

Design Team: Adkins Consulting Engineering is the engineer of record for this Project. Questions may be submitted to:

Mike Zarosinski, mzarosinski@adkinsengineering.com 541-690-1680
Jonathan Moritz, jmoritz@adkinsengineering.com, 541-884-4666

Bid Process/Contract Questions: George Marlton, George.Marlton@oit.edu, 503-821-1277
Owner's Project Manager: Scott Pigman, Scott.Pigman@oit.edu, 541-885-1225

Project Completion: Contractor may mobilize upon issuance of the Notice to Proceed, however no on-site Work may begin until the Critical Date listed below for the different Areas. All Work must be substantially complete prior to **September 25, 2015**. Oregon Tech will be closed on May 25, July 3, and September 7, 2015 and no Work may be performed on those dates. Time is of the essence for this Project.

Critical Dates: Work may be performed in the Work Areas identified on the drawings as follows:

Areas C3 & C6:

- On-site Work may begin at these areas after May 10, 2015.
- Work along the North side of Snell Hall (C3) shall be performed as expeditiously as possible within normal business hours on contiguous work days until completed.
- Walkway intersection at the Northeast corner of Snell Hall shall be open to foot traffic during commencement weekend (June 12, 13, 14). New concrete in place at this location must have a minimum of 14 day cure time and be open to receive foot traffic. Concrete in place at other locations not requiring foot traffic and not achieving 14 day cure may be blocked from access as directed by owner.

Areas C2, C4 & C5

- On-site Work may begin on or after June 15, 2015.

Project Coordination: The Construction Schedule must be carefully coordinated with the Oregon Tech staff and community. The preliminary schedule below indicates the anticipated order of Work. Contractor shall submit proposed construction schedule for review and approval at least 3 business days prior to the pre-construction meeting.

Preliminary Schedule	
Item	Date
Pre-Construction Meeting	May 12, 2015
Area C3 West (North of Snell Hall)	May 18 to June 26
Area C3 East & C6 (South of College Union)	May 13 to July 10
Area C4	June 29 to July 24
Area C5	July 13 to Aug 8
Area C2	July 27 to Sept 18
Substantial Completion	September 25, 2015

- Project Meetings:
 - Pre-Construction Meeting: Meeting shall be held May 12, 2015, or as otherwise rescheduled by Oregon Tech. The meeting shall be held on the Klamath Falls campus at a location to be determined. Owner shall furnish the agenda.
 - Weekly Progress and Specially Called Meetings: Contractor shall schedule meetings and prepare meeting agenda; distribute notice to required attendees; make physical arrangements for meetings; preside at meetings; record meeting minutes and distribute to attendees, engineer and Owner's representative.

Alternate Steel Deck System: The composite Steel Deck System Alternate shown in Detail 2/C9 may be used in lieu of the full concrete lid indicated elsewhere provided:

- The contractor provides all related submittals, including shop drawings and sealed engineered calculations, to engineer for review and approval prior to construction.
- The contractor shall include in the Base Bid all cost associated with providing submittals as well as cost to reimburse owner for engineer's review and approval of submittals.

Owner's Use of Premises: Owner will occupy adjacent premises during the construction period for the conduct of their normal operations. Cooperate with Owner during construction operations to minimize conflicts and to facilitate Owner's use of facilities. Schedule work to maintain owner's continuous operations. No additional payment to the Contractor will be authorized because of Contractor's failure to anticipate this requirement.

Contractor's Use of Premises: Except as otherwise stipulated, Contractor shall have complete and exclusive use of the work areas for the execution of the Work. Contractor shall limit use of the premises to the work areas identified on the drawings. If and where necessary and when directed by the Owner, move any stored Products, Equipment, or Vehicles which are under Contractor's control, and which interfere with Owners operations. Contractor shall conduct his operations as to insure the least reasonable inconvenience to the General Public.

Temporary Construction Facilities to be Provided by Contractor:

- **Field Office:** Contractor must furnish its own field office/trailer on the premises, at a location approved by the Owner. The office/trailer must be safe for use, serviceable, and adequate for intended use and well lit. Minimum furnishings include (1) table large enough to hold open plan set of construction drawings, (1) rack to store all Contract Drawings, (1) shelf large enough to store Project Manuals and other similar Documents, (1) metal file cabinet to store Shop Drawings and other Project Correspondence.
- **Utilities:** Owner shall make available electrical and non-potable water connections (if necessary). Contractor shall be responsible for extending services to necessary locations. Contractor shall provide and maintain structurally and electrically sound, code-approved, Temporary Power Distribution System. Contractor shall provide Drinking Water. Contractor shall provide Temporary Toilet facilities in accordance with governing regulations and locate where directed by Owner. Contractor may NOT USE Owner's Existing Toilet Facilities.
- **Temporary Enclosures:** All Tunnels shall be fully enclosed and secure when no workers are present. Provide sufficient traffic plates or other tunnel enclosures to prevent unauthorized entry into tunnels and adjacent premises; and to prevent infiltration of Rainwater, dirt and other elements.
- **Temporary Fencing:** Provide 4ft high, high visibility perforated plastic netting around all work areas and where necessary or directed by owner to provide clear detour for pedestrian and vehicular pathways. Provide as necessary, chain link fencing to secure stored materials.
- **Temporary Barricades:** Provide all necessary to protect the Public and Workers against injury and to protect project against damage and unauthorized intrusion. Maintain physical separation between Work areas and adjacent premises.
- **Remove Temporary Facilities at Project completion or sooner, if directed. Repair damage, if any, resulting from Temporary Facilities.**
- **Park vehicles and equipment not in use where directed by owner.**

Surveying Existing Conditions: Prior to commencement of Work of each area, Contractor and Owner shall jointly survey existing conditions, noting and recording any existing damage. Contractor shall prepare Record of Findings, and before Work begins, Owner and Contractor shall both sign Record. Record will serve as a basis for determining any subsequent damage to existing facilities caused by Contract Work.

Protecting Existing Utilities: Multiple Utility Lines are located throughout the tunnels. **Caution ** the Utility Lines contain high voltage and high temperature water lines (+195° F).** Before starting work, Contractor shall determine exact location of any of these Utility Lines that could be damaged by Contract Work. Contractor shall take extreme care to protect all visible and known utility lines from damage. 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 Owner. Additional compensation and/or extensions of time, if any, caused by removing, repairing, or replacing unknown Utility Lines will be determined in accordance with General Conditions. Request locates from all Utilities prior to excavation.

Correction Period for Non-Complying Work: Contractor's response to Notice of Non-Complying Work to be corrected shall be accomplished during the following time periods:

- Emergency Work:
 - Failures or deficiencies constituting immediate danger or health hazard to people or likely damage to Property
 - Response Time: 24 hours per day, 7 days per week
- Urgent Work:
 - Failures or deficiencies which do not immediately endanger Persons or Property, but would soon do so if not corrected.
 - Response Time: Between 7:00 AM & 5:00 PM on Mondays thru Fridays and within 3 calendar days following receipt of Notice.
- Routine Work:
 - Failures or Deficiencies of less importance that do not meet criteria of Emergency or Urgent Work.
 - Response Time: Within normal work schedule hours on Mondays thru Fridays and within 5 business days following receipt of Notice.

Quality Control Program: Contractor shall implement and maintain aggressive Quality Control Program to monitor quality of work, including that of Subcontractors and Service Providers, to ensure that work complies with contract documents, receives all required testing and inspections, and is in compliance with currently approved Progress Schedule.

Bid Additive: In the event it becomes necessary to have the tunnel walls replaced, Contractor will replace the tunnel walls as described in the Plans, Specifications and Drawings at the Additive Unit Price as bid by Contractor. For any applicable change order, the Additive Unit Price will be used in accordance with Section D of the General Conditions Section D.1.3.(a).

Project Scope: The Scope further includes the following Documents, Technical Specifications and Drawings:

- B-1 Invitation to Bid
- B-2 Instruction to Bidders
- B-3 Supplemental Instruction to Bidders
- B-4 Bid Bond
- B-5 Bid Form
- B-6 Public Improvement Agreement Form
- B-7 Supplemental General Conditions
General Conditions for Public Improvement Contract
- B-9 Performance Bond
- B-10 Payment Bond
Good Faith Effort Forms
Plans, Specifications and Drawings
Technical Specifications for Project No. 1090-30 dated March 2015
Drawing CS dated May 5, 2014
Drawing C1 dated May 5, 2014
Drawing C2 dated May 5, 2014
Drawing C2.A dated May 5, 2014

Drawing C2.B dated May 5, 2014
Drawing C2.C dated May 5, 2014
Drawing C3 dated May 5, 2014
Drawing C3.A dated May 5, 2014
Drawing C3.B dated May 5, 2014
Drawing C4 dated May 5, 2014
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Drawing C6 dated May 5, 2014
Drawing C7 dated May 28, 2014
Drawing C8 dated May 5, 2014
Drawing C9 dated March 20, 2015

TECHNICAL SPECIFICATIONS

OREGON INSTITUTE OF TECHNOLOGY
Tunnel Lid Replacement Project

KLAMATH FALLS, OREGON



Project No. 1090-30
March 2015



Engineers ▲ Planners ▲ Surveyors

2950 Shasta Way • Klamath Falls, OR 97603 • (541) 884-4666 • FAX (541) 884-5335

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SUMMARY OF WORK

SECTION 01110

PART 1 GENERAL

1.1 SUMMARY

- A. Adkins Consulting Engineering, LLP has prepared Contract Documents for the Oregon Institute of Technology, Tunnel Lid Replacement Project. Work of the Contract can be summarized by reference to the Contract Documents which include the Agreement, Contract Conditions, Project Manual (General Requirements and Specifications), Drawings, documents referenced by any of these, and addenda and modifications issued in accordance with the Agreement.
- B. Time to Complete the Work: Contractor shall achieve Substantial Completion as certified by the Owner within the time stipulated in Article 4 of the Oregon University System Public Improvement Agreement Form.

1.2 PROJECT CONDITIONS

- A. Premises Available to the Contractor: Work area is restricted to the immediate construction site locations indicated on the Drawings and as necessary to allow for Owner occupancy and use by the public. Areas outside of these will not be available without Owner's prior approval. Do not disturb portions of the premises outside the Work limit areas.
- B. Owner Occupancy: The Owner will occupy the Campus during the entire period of construction. Normal operation and occupancy of the Campus shall continue uninterrupted throughout all construction activities. Cooperate fully with the Owner and their representative during construction operations to minimize conflicts and to facilitate Owner use and occupancy. Perform the Work so as not to interfere with the Owner's operations. Allow convenient and unobstructed use of building facilities, including barrier free access and pedestrian and vehicular entrances, exits and parking areas.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

WORK RESTRICTIONS

SECTION 01140

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes restriction on Contractor access and use of the premises for Work of the Contract. These requirements are in addition to requirements for Owner occupancy in Section 01110 and requirements contained in technical Sections of the Project Manual.

1. Do not disturb portions of the premises outside the Work Areas.
2. Do not encumber the site with materials or equipment. Stockpiling and storage of materials, recycling and debris shall be contained within the areas designated by Owner.

1.2 CONTRACTOR USE OF PREMISES

- A. The Contractor shall include all expenses, fees and costs directly and indirectly associated with limitations on access and traffic routes, delivery, storage and loading areas, traffic planning and control, after-hours and premium time and off-site storage resulting from Contract requirements and restrictions.

1. Where Owner's facilities and services made available for the Contractor's use are not adequate to fulfill Contract requirements and facilitate efficient and timely execution of the Work the Contractor shall provide supplemental facilities and services as necessary to ensure efficient and timely execution of the Work at no change in Contract amount.

- B. Throughout the Contract time use and maintain the site in a safe condition, secured against damage due to weather exposure and other potential sources of damage. Damage occurring during construction operations shall be repaired at no additional cost to the Owner.

1. Keep public areas such as sidewalks and stairs free from accumulation of waste material, rubbish or construction debris.
2. Use of existing toilets by contractor personnel is not permitted. Provide temporary facilities.
3. Perform the Work without disruption to traffic routes, building exists and areas outside the Work Areas. Maintain barrier free routes.

- C. Work requiring access to areas outside of the Work Areas: Request access 7 days prior to date schedule for the work affected. Include in the request the exact location, general nature of the work and security and safety measures to be provided in association with the work.

Utility Services: Maintain continuity of service, and prevent damage due to the Work. Damages and loss occurring due to unscheduled service interruption resulting from the Work and failure of temporary service shall be the Contractor's responsibility. Service interruptions required for the Work shall be scheduled with the Owner in advance of the interruption.

1. Interruption: Advance scheduling and written authorization required.
2. Provide temporary services during interruptions to existing utilities as acceptable to Owner and governing authorities.

1.3 TRAFFIC, ACCESS AND PARKING

- A. Contractor's Access to Project: Limited to designated approaches and shall not interfere with the Owner's occupancy.
 - 1. Keep existing driveways, parking areas, public transportation stops, walkways and entrances clear and available to the Owner and the public at all times; do not use for parking or storage of materials.
 - 2. Conduct the Work to allow uninterrupted access for emergency vehicles and services to the Project, and all adjacent areas.
 - 3. Promptly clean up debris and construction material dropped on traffic and loading areas maintain service access ways and streets to the satisfaction of the Owner's Representative.
- B. When alternative routing and scheduling to avoid interference with routine street and sidewalk traffic would prevent proper performance of the Work, provide a satisfactory detour affording safe passage of traffic around or over the interference.
 - 1. Provide advance notice to the Owner where traffic interference and detours may impact Owner occupancy.
- C. Protect finished surfaces and assemblies and facilities on permanent access routes from damage due to Contractor activities.
- D. Parking For Contractor's Personnel: Contractor's responsibility, the Owner will not pay for Contractor parking. Parking on public streets, at public parking garages and public transportation may be available at the Contractor's expense.
 - 1. Unauthorized Parking in Owner-reserved spaces will result in towing or impoundment without prior notice at the Contractor's risk and expense.
- E. Do not park trucks, store materials or cross over landscaped areas. Any plant materials damaged as a result of the performance of this work will either be replaced with new plant materials equal in size to those damaged or by payment of an amount representing the value of the damaged material as determined by the Owner.
- F. Permission for access to the site may be revoked for any and all persons who violate the Owner's traffic regulations, including speed limits, parking restrictions and permit requirements.
 - 1. Compliance with Owner Vehicular Access Requirements: The Contractor's responsibility for Contractor personnel, operating forces and deliveries.
 - 2. Lock automotive type vehicles such as passenger cars and trucks and other mechanized and motorized construction equipment, when parked and unattended, prevent unauthorized use. Do not leave vehicles or equipment unattended with the motor running or the ignition key in place.

1.4 ADVANCE NOTICE REQUIREMENTS

- A. Provide advance notice to the Owner for activities that could affect the Owner's normal occupancy; scheduling of such activities is subject to Owner approval. The Owner shall have the right to require alternative scheduling or sequencing of Work with neither penalty nor modification to Contract Time and Sum when necessary to prevent disruption of Owner's

occupancy. All costs and damages incurred by the Owner due to Contractor's failure to comply with advance notice and scheduling requirements shall be the responsibility of the Contractor.

1. Access and Contractor operations outside of conventional business hours require advance approval by Owner and coordination with Owner's security program.
2. Access to areas outside of the Work Areas.

B. Interruption of Utilities Serving Owner Occupied Areas: Advance notice and Owner approval is required regardless of magnitude or duration. Schedule utility interruption for times that will minimize disruption to Owner occupancy. Submit completed SHUTDOWN REQUEST at least seven days prior to requested shutdown date.

1. Identify existing utilities whether indicated or not and protect from damage.

C. Traffic Interruption: Provide 7 days advance notice and obtain written authorization.

1.5 DAMAGE AND RESTORATION

A. Restore or replace as directed by the Owner's Representative damage to existing and new Work including but not limited to landscaping, paving, roads and sidewalks damaged as a result of the performance of this work at no change in Contract amount.

B. Restoration: Equal to the physical and aesthetic characteristics of the original work. Finishes shall match the appearance of similar existing adjacent work. Comply with repair requirements for cutting and patching work.

C. Remove and replace unacceptable restoration work; where work cannot be acceptably restored as determined by the Owner's Representative provide new work as directed.

1.6 SECURITY OF SITE

A. Contractor shall provide 24 hour per day measures to keep construction area secure and prevent unauthorized access into the tunnel, or any other campus facility.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

UNIT PRICES

SECTION 01270

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Definitions:
 - 1. Unit Price: Cost quoted by bidder and stated on the Bid Form or agreed to by the Contractor and Owner subsequent to signing of the Contract for a specified unit of work that may be added to or deducted from the Contract Amount by Change Order in the event the quantity of that work required by the Contract Documents is increased or decreased. Unit Price shall include all necessary material, labor, equipment, services, overhead (including subcontractor's mark-up, employee benefits, and Contractor's insurance and bond), profit and applicable taxes.
 - 2. Adjustment to the Contract Sum by Unit Prices: Limited to the quantity of work provided multiplied by the Unit Price, no further adjustment (including overhead, profit and similar charges) will be made.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 UNIT PRICE SCHEDULE

- A. Unit Prices Schedule: Generic name, unit of measurement, price per unit, related specification Sections, subcontractor name if other than General Contractor and whether the amount is additive or deductive. Refer to individual Sections for additional requirements. Unit price shall represent the complete cost of the work including Contractor's overhead and profit.

END OF SECTION

SUBMITTALS

SECTION 01330

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Procedural requirements for work-related, and administrative submittals.
 - 1. Administrative Submittals: Refer to Division-1 sections, conditions of the Contract and other contract documents for requirements for administrative, non-work-related submittals.

1.2 DEFINITIONS

- A. Administrative Submittals: Include but not limited to the following:
 - 1. Permits.
 - 2. Payment applications.
 - 3. Performance and payment bonds.
 - 4. Insurance certificates
 - 5. Inspection and test reports.
 - 6. Schedule of values.
- B. Shop Drawings: Technical drawings and data specially prepared for this project, standard information prepared without specific reference to the Project will not be accepted as shop drawings. Shop drawings include but are not limited to the following items:
 - 1. Fabrication and installation drawings.
 - 2. Setting diagrams.
 - 3. Shopwork manufacturing instructions.
 - 4. Templates.
 - 5. Patterns.
 - 6. Contractor's Coordination documents.
 - 7. Schedules.
 - 8. Design mix formulas.
 - 9. Contractor's engineering calculations.
- C. Product Data: Demonstrate product complies with requirements; printed information, typically not specially-prepared for this project, includes but is not limited to the following:
 - 1. Manufacturer's specifications, installation, and catalogue cuts.
 - 2. Manufacturer's Safety Data Sheets.
 - 3. Color charts.
 - 4. Mill reports.
- D. Mock-up's: Provide the following finished product sample for approval prior to fabrications:
 - 1. Handrail with Galvanizing

E. Miscellaneous Submittals: Submittals that do not fit in the three previous categories, including, but not limited to the following:

1. Specially-prepared and standard printed warranties.
2. Testing and certification reports.
3. Record drawings.
4. Field measurement data.

1.3 SUBMITTAL PROCEDURES

A. Preparation and Processing: Coordinated with the performance of the Work, other submittals, testing, purchasing, fabrication, delivery and similar sequential activities.

B. Interrelated Work: Coordinated for Engineers review so that processing will not be delayed by the need to review submittals, concurrently; Engineer retains the right to withhold action on incomplete submittals pending receipt of related materials.

C. Review Time: Sufficient in the Engineer's professional judgment for processing of each submittal and coordination with related work. Schedule submittals so as not to delay progress of the Work as a result of time required to properly process submittals, and resubmittals. Advise the Engineer on each submittal where processing time is critical.

1. Engineer acknowledges the limits of the Contract Time and will cooperate with the Contractor with timely and effective processing of submittals consistent with the Engineer's responsibilities and professional judgment.
2. Engineer will promptly advise Contractor when submittal processing must be delayed for coordination with submittals not yet received.
3. No extension of time will be authorized due to Contractor's failure to properly coordinate submittals and transmit them to the Engineer sufficiently in advance of the work.

1.4 SUBMITTAL FORMAT

A. Comply with the following requirements for each type of submittal, unless otherwise required in individual technical Sections.

1. Deviations from Contract Documents: Noted on transmittal, and described on a separate attachment, and identified on the submittal.
2. Approved Final Submittals: Maintain as returned by Engineer, distribute copies to subcontractors, governing authorities and others as required for proper performance of the work. Show distribution on transmittal forms. Keep record submittals on site for quality control comparisons, acceptance of Work, and incorporation into record documents.
3. Unless otherwise required issue submittal and obtain Engineer's approval prior to ordering materials, and beginning fabrication.

B. Labeling: For identification processing and recording of action taken

1. Project name.
2. Date.
3. Name and address of subcontractor, material supplier and manufacturer.

4. Reference information to Construction Documents, pertinent drawings and specifications.
 5. Contractor's signed review and approval markings
 6. 4 by 5 inch space for the Engineer's processing marking.
- C. Transmittal Form: Attached to all submittals. Submittals transmitted to the Engineer from sources other than the Contractor will be returned to sender without action. Provide places for the following information:
1. Project name.
 2. Date.
 3. To: / From:
 4. Names of subcontractor, manufacturer and supplier.
 5. Category and type of submittal.
 6. Submittal and transmittal distribution record.
 7. Signature of transmitter.
 8. Contractor's signed certification stating, that the information submitted complies with the requirements of the Contract Documents.
 9. Other pertinent information.
- D. Shop Drawings: To scale, and with dimensions. Identify specific products, materials, compliance with specified standards, coordination requirements, and field measurements.
1. Format: Between 8.5 by 11 inch, and 36 by 48 inch. Provide title block indicating Project, firm preparing drawing, drawing scale, date and revisions. Allow 4 by 5 inch space beside title block for processing marks.
 2. Do not reproduce contract documents or copy standard printed information as the basis of shop drawings.
 3. Submittal: One reproducible print, one reproducible copy of the processed document will be returned for the Contractor's reproduction and distribution as necessary. Maintain the processed copy as a "Record Document"
 4. Coordination Drawings: Prepared as necessary and required to show special requirements for integration of separate components and systems.
- E. Product Data: Manufacturer's standard printed recommendations for applications shown, compliance with Reference Standards, tests, labels and seals, performance and aesthetic characteristics, required to document conformity with the Contract Documents.
1. Format: Single submittal incorporating required information. Indicate choices and options; where data includes items not required for the Project identify products and information applicable to the Project.
 2. Nonstandard Product Data: Submit as Shop Drawings where standard printed data is not acceptable.
 3. Acceptable Submittal: Minimum 4 copies of required product data, one processed copy will be returned. Provide additional copies when the Contractor wishes to have more than one processed copy returned. Confirm product compliance with Contract Documents prior to submitting.
- F. Samples: Fabricated, cured and finished, physically identical to material or product to be incorporated in the Work. Where color, pattern, and texture variations are inherent show range of variation to be expected in the final Work, submit not-less-than three units. Match

Engineer's sample, where specified; when samples are required for Engineer's selection of color, texture and pattern submit complete range of available choices. Samples are for Engineer's visual review of generic kind, color, pattern, and texture, and coordination of these characteristics with related elements of the Work; compliance with other required characteristics is Contractor's responsibility.

1. Format: Description of sample, material or product name, manufacturer, source, limitations of availability, size and delivery time, and compliance with reference standards and regulatory requirements.
2. Special Procedures: Indicate on transmittal for disposition of samples that may be returned and incorporated into the Work in accordance with Section requirements.
3. Submittals: A minimum of three samples, provide additional samples when directed.

G. Miscellaneous Submittals:

1. Inspection and Test Reports: Process as Shop Drawing when specially prepared for the project, or as Product Data when a standard publication of workmanship control testing at the point of production.
2. Warranties, Documents, and Bonds: Comply with Section 01770 requirements.

1.5 ENGINEER'S ACTION

- A. Processing of Contractor submittals by attached memorandum or mark-up with comments and affix a stamp to indicate status of review as follows: "Reviewed", "No Exceptions Taken", "Make Corrections Noted", "Rejected", or "Revise and Resubmit". "Checking is for general conformance with design concepts and compliance with Contract Document information. Corrections or comments made do not relieve contractor from complying with contract requirements. Contractor responsible for: confirmed correlated site dimensions, fabrication process, techniques of construction, and coordination of his work with all other trades."
- B. The Engineer shall be permitted sufficient time in their professional judgment for review and processing of each Contractor submittal without claim for delay to the progress of the Work, generally not less than 7 days. Engineer will endeavor to accelerate review upon written notification attached to the submittal stating that processing time is critical, detailing the nature of the critical timing and the period within which processing is requested to be completed; this request shall not be binding on the Engineer. Expedited review will not be provided when requested due to Contractor delay in making an acceptable submittal. Do not proceed with Work without Engineer's approval as required for submittal, Engineer's approval does not relieve Contractor of responsibility to perform the Work in accordance with Contract Documents.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SPECIAL PROCEDURES

SECTION 01350

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes special administrative and procedural requirements for the Work.

1.2 SPECIAL ADMINISTRATIVE SUBMITTALS

- A. Request for Information (RFI): Process to be used for clarification of Contract Requirements and assist the Contractor in gathering information needed for proper execution of the Work. The Contractor and Owner understand and agree that the Contract Documents are complete and sufficiently thorough to document the Engineer's design intent, and to establish Contract requirements, Contract Time, and Contract Sum. The Contractor and Owner also understand and agree that the Contract Documents do not provide all of the information that will be necessary to complete the Work. This information will be provided by the Contractor as work of the Contract. Occasionally the Contractor may have need of clarification of Contract requirements, design intent, resolution of on-site concerns or other collaboration with the Engineer that cannot be adequately resolved by required administrative and work-related submittals such as shop drawings, and coordination drawings.
 - 1. Prior to submitting to Engineer, Contractor shall date and sign RFI's, ensure that information is complete, and advise when cost or schedule impacts may occur.
 - 2. Engineer's Processing of RFI: Sufficient in the Engineer's professional judgment for the information requested. Engineer will stamp for date received, review the Contract Documents and respond on the RFI or attachments thereto as may be convenient. Engineer will not process RFI's lacking complete information, including necessary reference documents.
 - 3. Cost of processing RFI's resulting from Contractor's failure to make timely submittals, provide required coordination of the Work, and lack of familiarity with the Construction Documents will be the Contractor's responsibility at no change in Contract Amount.
- B. Special Reports: Submit directly to Owner within one day of an occurrence; copy the Engineer and other effected entities.
 - 1. Unusual Events: List chain of events, persons participating, response by the Contractor's personnel, an evaluation of the results or effects and similar pertinent information. Advise the Owner in advance when such events are known or predictable.
 - a. Unusual Events include but are not limited to enforcement actions of regulatory agencies and authorities, other than regular inspections by building officials.
- C. Accident Reports: Provide for accidents where personal injury is sustained, property loss of substance occurs, and where the event posed a significant threat of loss or personal injury. Include accidents on and off-site where work for the Project is in progress. Record and document data and actions.
- D. Monthly Written Reports, Daily Log, Cost Control System and other documentation required in the Oregon University System Contract shall be provided as required by the Contract.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

DEFINITIONS AND STANDARDS

SECTION 01425

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Definitions, description of specification format and content, and utilization of reference and industry standards.

1.2 DEFINITIONS

- A. Certain terms used in the Contract Documents are defined in this article. Definitions and explanations contained in this Section are general for the Work to the extent that they are not stated more explicitly in another element of the contract documents. Basic Contract definitions are included in the General Conditions.
- B. Regulations: Laws, statutes, ordinances and lawful orders issued by governing authorities, requirements of private entities such as utility company serving the Project, and conventions and agreements within the construction industry that effectively control the performance of the Work regardless of whether they are imposed by government authority or not.
- C. Indicated: A cross-reference to graphic representations, notes and schedules on the drawings, and shall be read to mean "as indicated on the drawings". Where terms such as "shown", "noted", "scheduled", and "specified" are used in lieu of "indicated", it is for the purpose of helping the reader locate the cross-reference, and no limitation of location is intended except as specifically noted.
- D. Directed, Requested and Similar Terms: Where not otherwise explained, terms such as "directed", "requested", "authorized", "selected", "approved", "required", "accepted", and "permitted" mean "directed by the Engineer", "requested by the Engineer", and similar phrases. However, no such implied meaning will be interpreted to extend the Engineer's responsibility into the Contractor's area of construction supervision.
- E. Approve: Where used in conjunction with the Engineer's response to submittals, requests, applications, inquiries, reports and claims by the Contractor, the meaning of the term "approved" will be held to limitations of the Engineer's responsibilities and duties as specified in General and Supplementary Conditions. In no case will the Engineer's approval be interpreted as a release of the Contractor from responsibilities to fulfill requirements of contract documents.
- F. Project Site: The term, "Project site", is defined as the space available to the Contractor for performance of the Work, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project site is shown on the drawings, and may or may not be identical with the description of the land upon which the Project is to be built.
 - 1. Work Area: Enclose the area or areas available to the Contractor for execution of the Work or a portion thereof.
- G. Furnish: Interpreted to mean supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations as applicable in each instance.

- H. Install: Used to describe operations at Project site including the actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing protecting, cleaning and similar operations, as applicable in each instance for the Work to be complete and ready for intended use.
- I. Provide: Interpreted to mean furnish and install, complete and ready for intended use, as applicable in each instance.
- J. Replace: When used in the context of "Remove and replace", referring to elimination of unapproved and unacceptable equipment, material and other Work from the Project, the term "Replace" means "Replace with new material, equipment and Work".
- K. Installer: The term "installer" is defined as "the entity" (person or firm) engaged by the Contractor, and subcontractors of any tier for performance of a particular unit of work at the Project site, including installation, erection, application and similar required operations. It is a requirement that installers are experienced in the operations they are engaged to perform.
- L. Necessary: Needed or essential for complete and proper performance of the Work as required and as demonstrated by conventional practices of the Trade or discipline in question and common sense.
- M. Required: Directive in the Contract Documents, and a charge of the Engineer which must be fulfilled for the Work to conform to the intent of the Contract Documents.
- N. Testing Laboratories: The term "testing laboratory" is defined as an independent entity engaged to perform specific inspections or tests of the work, either at the project site or elsewhere, and to report, and (if required) interpret results of those inspections or tests.
- O. Shop Work: Designates work not performed at the Project Site and is intended to signify that controlled conditions will be provided within tighter tolerances than might be achievable in the field. Such conditions include but are not limited to, environmental control, cleanliness, and sequence of assembly and finishing.
- P. Premium Time: Overtime and similar terms shall be defined as any period during which labor or a service is provided for which an elevated cost is assessed (by statute, labor agreement or other reason) due to time of day, calendar day, accumulated hours or other factors.
- Q. Tolerance: Dimensional deviations in the Work specified in individual Sections and reference standards are the maximum total acceptable deviation and shall not be additive to tolerances for other work.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. Specification Format: These specifications are organized into Divisions and Sections based upon the Construction Specifications Institute's 16-Division MasterFormat System.
 - 1. Divisions are standard categories of construction information.
 - 2. Sections: Considered as basic units of work, Section title is descriptive only and not intended to limit the meaning or content of a Section or to be completely descriptive of requirements specified therein.

3. Part: An organizational device dividing a Section into three distinct groups of related information.
- B. Sections are placed in the Project Manual in numeric sequence to facilitate cross-referencing. The Project Manual "Table of Contents" lists the numbers and names of specification Sections in the Contract Documents.
- C. Project Identification: The project name is recorded at the bottom left corner of each page of the specifications.
- D. Page Numbering: Pages are numbered independently for each Section, The Section number is shown together with the page number at the bottom of each page to facilitate the location of text in the Project Manual.
- E. Specification Text: Dependent upon other text to the extent described in individual Sections, and as follows.
 1. Text: Subordinate to Titles.
 2. Indented Text: Subordinate to preceding text that is not indented.
- F. Specification Language: Imperative and addressed to the Contractor except where other parties are specifically identified. Singular and plural meanings will be interpreted based upon the full context of the Contract Documents.
 1. The words "shall be" are included by reference wherever a colon (:) is used within a sentence or phrase.
 2. Effort has been made to employ gender neutral language throughout the documents; however, occasional gender based references may be used. Such terminology as workmanship, craftsmanship and other gender based terms shall be interpreted to be gender neutral.
 3. The terms "installer", "manufacturer and similar words shall be interpreted to mean the entity the Contractor has chosen to perform certain portions of the Work. The use of these terms shall neither be construed to shift responsibility for performance of the Work away from the Contractor nor alter their responsibility to comply with Project requirements.
- G. Method of Specifying one element of the Work has no bearing on requirements for another element of the Work, and may vary throughout the text, and include any combination of the following:
 1. Open generic-descriptive.
 2. Performance.
 3. Proprietary.
 4. Compliance with reference standards.
- H. Work Required to be Designed and Engineered by the Contractor: Comply with performance and design requirements established in the specifications. The Contract Documents do not include all prescriptive requirements nor details for Contractor designed work. In general, the documents will establish certain design and performance requirements for such work. If the information provided is not sufficient to perform services or certification required, submit a written request for additional information to Engineer. As a variety of solutions complying

with the Contract requirements may be available, it shall be the Contractor's responsibility to determine the finite scope of Contractor designed work.

- I. Conflicting, and Ambiguous Requirements: Interpreted to provide the highest quality, greatest quantity, and more costly, time consuming scope of Work; request Engineer's resolution before proceeding.
 - 1. Quantity and Quality of Work Specified: Minimum for the Work to be provided, and shall not otherwise be interpreted as establishing required limits.
- J. Assignment of Specialists: Required when levels of experience and qualifications are specified for entities performing specific parts of the Work. These special requirements, over which the Contractor has no choice or option, establish who may be qualified to perform the Work. The ultimate responsibility to fulfill Contract requirements remains with the Contractor.
 - 1. These Requirements: Interpreted so as not to conflict with the enforcement of building codes and similar regulations governing the work not to interfere with local trade union jurisdictional settlements and similar conventions.
 - 2. No Allowance: Made by Engineer in accepting and rejecting Work due to lack of experience and craftsmanship on the part of workers.
- K. Use of certain titles such as "carpentry" in the specification text, is not intended to imply that the Work must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter, and does not imply that the requirements specified apply exclusively to work by tradespersons of that corresponding generic name.

1.4 INDUSTRY STANDARDS

- A. Standards: Incorporated into the Contract by reference and shall have the same force and effect as if bound into the document. Maintain copies of codes and standards at the Project as necessary to understand and communicate the requirements for the Work. Contractor's responsibility to provide Work complying with Contract requirements shall not be diminished by statements made in referenced standards and documents. Comply with reference standards except where more stringent requirements obtain.
 - 1. Standards referenced directly in the Contract documents take precedence over standards not referenced.
 - 2. Standards not referenced, but applicable to the Work will be enforced as a general requirement that the Work conform to superior levels of quality typically recognized in the industry.
- B. Publication Dates: Date of the reference standard in effect as of the date of Contract Documents.
 - 1. Updated Standards: At the request of the Engineer, Contractor or governing authority, submit a change order proposal where an applicable industry code or standard has been revised and reissued after the date of the contract documents and before the performance of the work affected. The Engineer will decide whether to issue the change order to proceed with the updated standard.

- C. Familiarity With Standards and Issuing Bodies/Organizations: Responsibility of the entity performing the Work. The Contractor shall obtain copies of Standards from the publication source as necessary and required to comply with the intent of the Contract Documents.

1.5 ABBREVIATIONS AND NAMES

- A. Trade association names and title of general standards are frequently abbreviated. The acronyms and abbreviations referenced in contract documents are defined to mean the associated names. Both names and addresses are subject to change, and are believed to be, but are not assured to be, accurate and up-to-date as of date of contract documents. The Contract Documents may use only the acronym or the abbreviation for a given trade association or reference standard without stating the associated name in full. Request clarification from the Engineer where the intended reference or association is ambiguous or unclear.

1.6 SUBMITTALS

- A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

QUALITY ASSURANCE

SECTION 01450

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes, requirements for inspections, tests, reports, and related actions performed by the Owner's agent and others as necessary to evaluate whether the Work conforms to the requirements of the Contract Documents.
 - 1. Contractor: Responsible for conformity of the Work with the Contract Documents.
 - 2. Engineer's Administration of the Contract: Not included in Quality Control Services.
- B. Specific Quality Control Requirements: As indicated and as specified in each Section to cover manufacture and installation of standard and custom materials and products, and shall not be limited by the provisions of this Section.
- C. The Owner will provide an agent for Special Inspections and Testing to comply with IBC Section 1701 and directives of regulatory agencies having jurisdiction over the Work. Unless otherwise specifically required the Contractor shall have responsibility for all other Quality Control Services and assistance to the Owner's agent as required by this Section.
 - 1. Contractor shall provide an approved independent testing laboratory to perform quality control services not provided by the Owner's agent.
 - 2. Cost associated with the Contractor's quality control services and with assistance to the Owner's agent shall be included in the actual Cost of the Work.
- D. Retest Responsibility: Contractor's where results of quality control services do not indicate that Work complies with contract requirements, regardless of responsibility for initial tests.
 - 1. Work the Engineer determines may be defective: Tested by the Contractor as directed, including selection of testing agency.
 - 2. Owner will reimburse Contractor for costs of testing and retesting where results indicate the work complies with Contract requirements.
- E. Responsibility For Testing of Replaced and Remedial Work: Contractor's, regardless of responsibility for initial tests.
- F. Contractor shall cooperate with agency performing quality control services without regard to responsibility for quality control services; provide auxiliary services as directed, including, but not limited to:
 - 1. Access to the Work.
 - 2. Incidental labor, facilities and equipment to assist and take samples.
 - 3. Delivery of samples to test laboratories.
 - 4. Storage and protection of samples and equipment at Project.
- G. Contractor shall coordinate the Work with quality control activities regardless of responsibility for them, schedule times for inspections, tests and taking of samples; maintain progress of the Work

and avoid cutting and patching to accommodate inspections and tests.

1. Notify the testing agency in advance of operations to permit assignment of personnel.
2. Notify testing agency in advance of special inspections and tests required by building officials.

1.3 SUBMITTALS

- A. Quality Control Activities Schedule: Submit a tabular schedule within 14 days of the date of the Notice to Proceed, but in no case less than 7 days prior to the scheduled date for initiation of quality control activities. Schedule shall include the following as a minimum.
 1. Reference to specification section number and unit of work.
 2. Identification of activities to be performed and the party responsible for performing each.
 3. Time schedule and duration of each activity.
 4. Unique characteristics or requirements for each activity.
- B. Certified Written Report: Submit in duplicate, to Engineer each inspection, test and similar service performed by the Owner's agent.
- C. Reports shall include, but not be limited to the following:
 1. Name of testing agency and individuals performing services.
 2. Designation of the work and test method.
 3. Dates and locations of samples and tests and inspections.
 4. Ambient conditions when samples taken and tests performed.
 5. Inspection and test data and results.
 6. Interpretations of test results.
 7. Evaluation of Work compliance with Contract Documents.
 8. Recommendations on retesting, if applicable.

1.4 QUALITY ASSURANCE

- A. Regulatory Requirements for Special Inspections: Owner will engage a qualified agent to perform tests and inspections required by authorities having jurisdiction and as required by the Contract Documents, and will also be responsible for the following.
 1. Notifying the Engineer of results within 24 hours of performing tests or inspections.
 2. Submitting a certified written report of each test, inspection, and similar quality-control service to Engineer with copy to authorities having jurisdiction.
 3. Submitting a final report of special tests and inspections at Substantial Completion, including a list of unresolved deficiencies (if any).
 4. Interpret tests and inspections and affirm compliance or deviation from the Contract Documents.
 5. Retesting and re-inspection of corrected work.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 INSTALLATION

- A. Protect Work exposed for quality control service activities.
- B. Repair and Protection: Contractor's responsibility, regardless of entity responsible for quality control services.

END OF SECTION

TREE AND PLANT PROTECTION

SECTION 01565

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes requirements for work processes and temporary measures to protect trees, plants, and groundcovers from damage both above and below grade.
- B. Definitions:
 - 1. Dripline: Outer perimeter of branches of any tree or plant.
 - 2. Groundcover: Includes but not limited to plants and grass.
- C. Performance Requirements: Contractor shall provide complete measures to prevent damage due to construction activities and fulfill the following requirements regardless of whether the measures are completely documented by the Contract Documents or not.
 - 1. Soil contamination, erosion, compaction and unauthorized alteration of grade.
 - 2. Excessive wetting, and ponding due to storm water, and construction run-off.
 - 3. Prevent within drip-line of tree, construction traffic, stockpiling of soil, debris, and materials.
 - 4. Damage to soil, ground covers, roots, bark, trunk, limbs, branches, and foliage.
 - 5. Prevent unauthorized cutting, breaking, skinning and bruising of roots, branches, and bark.

1.2 SUBMITTALS

- A. Procedural proposal for work processes within tree and plant protection zones. Describe work methods, supplemental protection, and other measures provided to prevent damaged and deterioration due to the Work.
- B. Mitigation Measures: Where Work activities have caused or contributed to damage or deterioration of ground covers, trees or soil propose means and methods of mitigating the damage or deterioration and restore the prior condition of the plant materials and soils.
 - 1. Arborist's Maintenance Recommendations: Recommended care and procedures for trees affected by construction during and after completing the Work.
 - 2. Arborist's Irrigation Schedule: Means and sequence for watering to maintain wet soil conditions within tree protection zones.

1.3 SEQUENCE

- A. Install protection during initial mobilization at the site, and maintain until substantial completion.

PART 2 PRODUCTS

2.1 MANUFACTURED COMPONENTS

- A. Open Web Plastic Barrier Fence: 48 inches tall, safety orange; Amoco HiVu Barrier Fence or approved.
 - 1. Posts: Rigid metal, plastic or wood minimum 6 ft. length adequate strength to support fencing and resist wind and moderate live loads.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Inspect trees, plants, and groundcovers, document existing conditions prior to installation of protection.
- B. Water trees and plants as necessary to maintain existing condition throughout the Contract period until Substantial Completion.

3.2 PREPARATION

- A. Provide temporary fence for protection of trees to remain use fence type appropriate for the hazardous to be protected against; provide chain link fencing complying with ASTM F 567 to protect from vehicles, and plastic barrier fencing in areas where traffic is limited to pedestrians. Extend fencing ten feet beyond dripline, unless greater distance is required for protection of selected species.
 - 1. Prevent entry into protected areas except as authorized in writing by the Owner's Landscape maintenance personnel.
 - 2. Driving and Parking: Not permitted on grass, nor within dripline.
 - 3. Storage of Materials and Debris: Not permitted within dripline.

3.3 EXECUTION

- A. Carefully and cleanly cut roots and branches of trees indicated to be left standing where such roots and branches obstruct new construction. Do not allow exposed roots to dry out before permanent backfill is placed; provide temporary earth cover, or pack with peat moss and wrap with burlap. Water and maintain in moist condition and temporarily support and protect from damage until permanently relocated and covered with backfill
 - 1. Coat cut faces using an approved coating specifically formulated for use on damaged plant tissue.
 - 2. Protect exposed roots with wet burlap until they can be covered with soil.
- B. Structural support (cabling) in accordance with National Arborist Association Standards may be required on specific trees within the project limits and where required for construction clearance, as identified by the Consulting Arborist.
- C. Excavation and Trenching Within Drip Lines: Generally limited to hand work. Permitted where indicated, and at other specifically approved locations per the Contractor's approved submittals.

1. Tunnel under or around roots by hand digging or boring. Do not cut main lateral roots and tap roots over one inch diameter; cut smaller roots which interfere with installation of new work.

D. Existing Grading: Maintained within drip line of trees and plants unless otherwise indicated on the drawing and approved by the Engineer.

3.4 TREE AND PLANT REPAIR AND REPLACEMENT

A. The Contractor shall pay the Owner the value of existing trees, that were to remain, which were damaged in the course of the Work and existing trees within plant protection zones that die

within one year of Substantial Completion due to failure to comply with requirements of this Section.

1. Liquidated Damages: Assessed according to the formula and standards adopted by the *Council of Tree and Landscape Appraisers* and the evaluation formula set forth in *The Council of Tree and Landscape Evaluation Guide for Plant Appraisers*, current edition at rates per square inch of trunk area for conifers and deciduous trees.

B. Wound and partial injury will be calculated by percentage, estimated by the Consulting Arborist, of the total value of the damaged tree. Liquidated damages for partial injuries will include the cost to the Owner for loss appraisal by the Consulting Arborist plus the cost for necessary damage repair. Wound or damage to an existing tree due to the Work includes but is not limited to the following.

1. Damage to cambium tissue.
2. Unauthorized and improper cutting, breaking or removing of branches and roots.
3. Soil compaction and other soil damage including contamination.

C. Damaged Trees and Groundcover: Replace where Engineer determines restoration to normal growth pattern is not possible. Make repairs promptly after damage occurs to prevent progressive deterioration of damaged trees.

1. Replacement Trees: Plant and maintain as directed.
2. Replacement Groundcovers: Same size and quality as damaged, species selected by Owner.

END OF SECTION

PRODUCT REQUIREMENTS

SECTION 01600

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes requirements for general control of product, material, equipment, and substitution requests.

1.2 DEFINITIONS

- A. Products: Includes the terms "material", "system" and terms of similar intent. Purchased for incorporation in the Work, regardless of whether specifically purchased for the Project or taken from the Contractor's stock.
- B. Named Products: Identified by use of the manufacturer's name, make, or model designation, current as of the date of the Contract Documents.
- C. Materials: Products that must be substantially cut, shaped, worked, mixed, finished and otherwise processed for incorporation into the Work.
- D. Method: Specific entity (including installers and subcontractors), technique, or sequence required by the Contract Documents.
- E. Substitutions: Contractor's requests for changes in the products, materials, and methods of construction required by the Contract Documents. Unless otherwise required the Contractor's determination of and compliance with governing regulations and orders by authorities are "substitutions" and are not a basis for change orders.
 - 1. The following are not considered substitutions.
 - a. Revisions to the Contract requested by the Owner or Engineer.
 - b. Substitutions accepted prior to the Contract Date, and included in the contract documents by addendum.
 - c. Contractor Option where specific manufacturer and product are listed. Where only a manufacturer is listed provide a substitution request for the product of the listed manufacturer submitted in lieu of the specified product when requested by the Engineer.

1.3 SUBMITTALS

- A. Substitution Request Submittal: Identify the product, fabrication, or method to be replaced by the substitution; include related specification section and drawing numbers. Include the following:
 - 1. Complete product data, drawings and descriptions of products, and fabrication and installation procedures.
 - 2. Samples where applicable or requested.
 - 3. Detailed comparison of the proposed substitution with the work originally specified, including size, weight, durability, performance and visual effect.

4. Complete coordination information, and changes required in the Work to accommodate the substitution, including work performed by the Owner and separate prime Contractors.
5. Indicate effect substitution will have on the work schedule in comparison to the schedule without approval of the proposed substitution.
6. Provide complete cost information, including a proposal of the net change, if any in the Contract Sum.
7. Contractor certification that the proposed substitution will result in work that is equal-to or better than the work required by the Contract documents, and that it will perform adequately in the application indicated.
8. Contractor's waiver of rights to additional payment or time, which may subsequently be necessary because of the failure of the substitution to perform adequately.

B. Substitution Request Form:

1. Engineer's action: Post-bid substitutions; Within ten days of receipt of the Contractor's request for substitution, the Engineer will notify the Contractor of either the acceptance or rejection of the proposed substitution.
2. Acceptance of substitutions during bidding: By Addendum.
3. Acceptance of substitutions after contract is signed: By Change Order.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Provide products of the same generic kind, from a single source, for each unit of work.
- B. Assembled Products and Constituent Components: Current production by manufacturers regularly engaged in the manufacture of such items. When two or more of the same units are required, they shall be products of one manufacturer. Manufacturer of equipment assemblies, which includes components made by others, shall assume complete responsibility for the final assembled unit.
 1. Constituent Parts: Compatible with each other and with the total assembly for the intended service. Like parts shall be product of a single manufacturer.
- C. Compatibility of Products and Materials: Essential requirement for every product and material incorporated in to the Work. Each product and material selected for use in the Work must be compatible with other products and materials previously selected. Universal compatibility between specified products and materials and alternative and substituted products and materials is not assured by the Contract documents, but must be provided by the Contractor.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products in accordance with manufacturer's recommendations, and standards referenced in individual Sections. Maintain fitness for intended application; prevent loss, theft, damage, contamination, deterioration, and overcrowding of Project. Minimize onsite storage period, especially for items known or recognized to be flammable, hazardous, and easily damaged.
 1. Ferrous and Galvanized Metal Products: Keep dry, off of the ground, covered with tarpaulins; provide for ventilation and escape of water vapor. Prevent wet storage stain.

- B. Deliver products to the site in the manufacturer's sealed container or other protective packaging complete with labels, tags, and instructions for handling, storing, unpacking, protecting and installing.
- C. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units. Avoid concentrated loads that could endanger supporting construction. Avoid extremes of temperature and humidity.

PART 2 PRODUCTS

2.1 MATERIALS AND MANUFACTURED UNITS

- A. Products: New, Undamaged, comply with Contract requirements, and complete with all accessories, trim, finish, safety guards, devices and details necessary for a complete installation.
 - 1. Provide products used successfully in similar conditions of service on other projects.
 - 2. Replacement Parts and Product: Certified by Manufacturer as being readily available to Owner at a later date.
- B. Individual Requirements for Products and Manufacturers: Included in the Contract Documents, when conflicting requirements are discovered, obtain Engineer's clarification before proceeding.
 - 1. Visual Matching: Determined by the Engineer; request substitution where product is not available that matches the sample satisfactorily and complies with other requirements.
- C. Product Options: Controlled by Contract requirements only.
 - 1. Except as denoted by the term "or approved" requests for substitution will be accepted only during the bidding period, comply with requirements for substitutions to obtain approval of unnamed product, and manufacturer.
 - 2. Single Product, and Manufacturer Name: No options, provide as listed.
 - 3. Multiple Product, and Manufacturer Names: Contractor's option, provide one from list
 - 4. No Product, and Manufacturer Name: Contractor's option, provided choice complies with specified properties and performance characteristics, and is recommended in writing by manufacturer for conditions of service shown. General product performance is implied where express performances are specified.
- D. Manufacturer's Nameplate and Trademarks, do not attach or imprint on surfaces of products exposed to view in occupied spaces nor on the exterior of the completed project, except as required for labels and operating data.
 - 1. Required Labels: Where required for observation after installation, locate on inconspicuous, accessible surface or otherwise conceal.

2.2 SUBSTITUTIONS

- A. Contractor submittal of and the Engineer's acceptance of shop drawings, product data or samples which relate to work not complying with requirements of the contract documents, does not constitute an acceptable request, nor approval, for a substitution.

Conditions: Contractor's request for substitution will be received and considered when extensive revisions to the contract documents are not required, when the proposed changes are in keeping with the general intent of the contract documents, when the request is timely, fully documented and properly submitted, and when one or more of the following conditions is satisfied, all as judged by the Engineer; otherwise the requests will be returned without action except to record non-compliance with these requirements.

1. Request is received 7 days prior to bid opening, except as otherwise permitted in this Section.
2. Specified product or method cannot be provided within the Contract time except as a result of the Contractor's failure to pursue the work promptly and to coordinate the various activities properly.
3. Specified product or method cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
4. Substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear, including additional compensation to the Engineer for redesign and evaluation services, increased cost of other work by the Owner or separate Contractors, and similar considerations.
5. Specified product or method cannot be provided, and coordinated in a manner which is compatible with other materials of the work, and where the Contractor certifies that the substitution will overcome the incompatibility.
6. The Engineer will consider a request for substitution when the specified product or method is not available with the special warranty required for the Project and where the Contractor certifies that their proposed substitution will be warranted as required.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Except as otherwise indicated in individual sections of these specifications, comply with the manufacturer's instructions and recommendations for installation of the products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other work. Clean exposed surfaces and protect surfaces as necessary to ensure freedom from damage and deterioration at time of acceptance.
 1. Protect installed Work, including Owner furnished Contractor installed components and Owner installed work, from damage due to construction activities.
- B. Installer's Inspection of Conditions: Require the Installer of each major unit of work to inspect the substrate to receive work and conditions under which the work is to be performed. The Installer shall report all unsatisfactory conditions in writing to the Contractor. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.
- C. Inspect each item of materials immediately prior to installation and ensure that conditions are appropriate for installation to proceed. Reject damaged and defective items.

END OF SECTION

DEMOLITION, SALVAGE AND ABANDONMENT

SECTION 02221

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Demolition, salvage and abandonment of existing facilities.

1.2 REFERENCED SECTIONS

- A. The following Sections are referenced in this Section
 - 1. Section 01330 – Submittals
 - 2. Section 02300 – Earthwork

1.3 SUBMITTALS

- A. Comply with Section 01330.
- B. Description of removal procedures for careful removal of materials and equipment and the protection of facilities which are to remain undisturbed.
- C. Time schedule for demolition work. Show demolition in relation to new construction, including any temporary facilities.

1.4 EXISTING CONDITIONS

- A. Prior to the submittal of Bids, Contractor shall visit the site and inspect all facilities to become familiar with existing conditions and utilities.

1.5 REGULATORY REQUIREMENTS

- A. Dispose of debris in accordance with the requirements of jurisdictional agencies.
- B. Comply with applicable air quality control regulations.
- C. Obtain necessary permits for building demolition, transportation of debris to disposal site(s) and dust control.
- D. Erect appropriate safety devices to protect the general public, Owner's operations personnel, and workers from the hazards of demolition activities. Install barriers, guard rails and fences, and provide appropriate warning signs.

1.6 BURNING

- A. The use of burning at the project site for the disposal of refuse, debris, and waste materials will not be permitted.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 GENERAL

- A. The Drawings identify the major equipment and facilities to be demolished, salvaged or abandoned. Auxiliary utilities such as water, air, drainage, lubrication oil, electrical wiring, controls, and instrumentation are not necessarily shown.
- B. Unless indicated otherwise on the Drawings, protect in-place auxiliary utilities, as well as equipment and pipe supports and associated instrumentation devices pertaining to piping or equipment..

3.2 PROTECTION OF EXISTING FACILITIES

- A. Before beginning any cutting, trenching, or demolition work, carefully survey the existing work and examine the Contract Documents to determine the extent of the Work.
- B. Take precautions to prevent damage to facilities which are to remain in place or are to be salvaged, and be responsible for any damages to these facilities resulting from this work. Repair or replace damages to such work to return the facilities to its pre-existing condition at no additional cost to the Owner.

3.3 DEMOLITION

- A. Demolish structures and equipment in an orderly and safe manner.
- B. Dispose of material not identified for salvage or re-installation at a new location.
- C. Minimize dust by sprinkling with water.
- D. Backfill excavations caused by demolition in accordance with Section 02300.

3.4 BURIED PIPELINES

- A. Where buried pipelines are shown to be removed on the Drawings, they may be abandoned in place if there is no conflict with proposed construction and they are not located under or within 10 feet of any proposed structure.
- B. Pipelines abandoned in place shall be plugged at each end with 12 inches of six-sack concrete.
- C. Pipes that are shown to be demolished and cannot be abandoned in place shall be removed along with all fittings, valves, CLSM and related incidentals and disposed of as described below

3.5 ASBESTOS CEMENT PIPE

- A. Not used.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. Concrete, site debris, rubbish, and other materials resulting from demolition operations, as well as mechanical and electrical equipment designated to be demolished, shall be the property of the Contractor and shall be legally disposed of at the Contractor's expense.

3.7 CLEANING

- A. During and upon completion of the demolition operations, promptly remove unused tools and equipment, surplus materials, rubbish, debris, and dust and shall leave work areas in a clean condition.
- B. Do not sweep, grade, or flush surplus materials, rubbish, or debris into storm drains, channels, lakes, or streams.

END OF SECTION

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EARTHWORK

SECTION 02300

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes requirements for excavation, backfill and grading, as required for construction of concrete tunnel lids, footings, stairs, and sidewalks.

1.2 DEFINITIONS

- A. Excavation: Consists of removal of material encountered to subgrade elevations indicated and subsequent disposal of materials removed.
- B. Subgrade: Previously undisturbed material to be prepared, and compacted to required density and elevation to support improvements.
- C. Earth Excavation: Materials not otherwise defined as rock excavation including removal and disposal of pavements, visible on grade obstructions, underground structures, utilities and other items indicated to be removed.
- D. Unauthorized Excavation: Includes removal and disposal of material beyond subgrade elevations, and dimensions indicated without prior approval of the Engineer.

1.4 SUBMITTALS

- A. Product Data: Document compliance with locally available materials for each product.
 - 1. Aggregate

1.5 QUALITY ASSURANCE

- A. Codes and Standards: Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.
- B. Testing and Inspection Service: Owner will engage soil testing and inspection service, for quality control testing during earthwork operations.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Stockpile satisfactory excavated materials in approved location, until required for backfill or fill. Place, grade, and shape soil stockpile for proper drainage.
 - 1. Do not store soil within drip line of trees indicated to remain.
 - 2. Dispose of excess soil material as waste material.

1.7 PROJECT CONDITIONS

- A. Location of existing underground utilities in areas of Work is Contractor's responsibility regardless

of whether indicated on the Contract Documents or not. Consult utility owner for directions immediately upon discovery of uncharted and incorrectly charted utilities.

- B. Interruption of Utility Service : Scheduled in advance with Owner as required. Provide supplemental service for each utility affected.
 - 1. Coordinate service interruption with utility companies effected.
 - 2. Repair damaged utilities to satisfaction of utility owner.

1.8 SEQUENCE

- A. Schedule and sequence the Work using means and methods that will prevent disturbance of subgrade soils due to earthwork, construction traffic and other Contractor activity.

1.9 MAINTENANCE

- A. Repair settlement at excavated areas for a period of one year following final acceptance at no additional cost to Owner. Remove surface (pavement, lawn or other finish), add backfill material, compact, and replace surface treatment; restore appearance, quality, and condition of surface and finish to match adjacent work, and eliminate evidence of restoration.
- B. Topsoil and Imported Soil: Maintain free of regenerative weeds for one year following Final Acceptance.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Backfill and Fill Materials: Salvaged topsoil, native soil and excavated material are not acceptable for use as fill. Do not use water saturated soil material, contaminated material, and material that is frozen or contains frost or ice.
 - 1. Acceptable soil material shall contain neither organic material nor other material deleterious to structural performance.
- B. Aggregate Fill: Well graded mixture of crushed gravel.
 - 1. Aggregate Base Beneath Tunnel Lids, Footings, Stairs, and Sidewalks: 3/4 inch minus base rock complying with ODOT Specifications.
 - 2. Paving Base: 3/4 inch minus base rock complying with ODOT Specifications.

PART 3 EXECUTION

3.1 PREPARATION

- A. Protection: Prevent damage to structures, utilities, pavements, vegetation and improvements due to earthwork. Provide barricades, fences, warning lights, and other protection for public safety and access to occupied portions of the Project.
 - 1. Barricade open excavations. Post warning lights as recommended by authorities having jurisdiction.

2. Excavate by hand within drip-line of trees to remain. Do not damage trees or roots, prevent dehydration of exposed roots. Refer to Section 01565 for additional requirements.

B. Surfaces to receive fill and soils to be compacted shall be free of ice, frost, and standing water, and shall not be saturated with water.

1. Subgrade Supporting Tunnel Lids, Footings, Stairs, Sidewalks and Pavement: Undisturbed native soil or approved granular fill placed and compacted as required.

3.2 EXCAVATION

A. Unauthorized excavation as-well-as remedial work directed by the Engineer shall be provided at no change to Contract amount.

1. Excavation beyond outside dimension of unformed concrete, more than one foot outside of footing perimeter and two feet outside of concrete requiring formwork, and more than 6 inches below bottom of slabs on grade is unauthorized excavation.

B. Perform the following remedial work at areas of unauthorized excavation.

1. Under footings, foundation bases, and retaining walls, extend bottom elevation of footing or base to excavation bottom, do not alter required top elevation.
2. Unless otherwise directed backfill and compact unauthorized excavations as specified for authorized excavations of same classifications. Provide imported aggregate fill to establish required elevations unless otherwise acceptable.

C. Additional Excavation: When excavation has reached required subgrade elevations, notify Engineer, who will inspect conditions. When unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed.

D. Stability of Excavations: Comply with limitations of the Building Code and Oregon Occupational Health and Safety regulations. Except as necessary due to soil conditions or work sequence and where more gentle slopes are required; cut and fill slopes shall not exceed 2H : 1V. Provide shoring and bracing where 2:1 slope cannot be maintained.

E. Dewatering: Prevent water from flowing into and accumulating in excavations and from flooding project site and surrounding area. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations.

1. Provide and maintain pumps, well points, sumps, suction and discharge lines, and dewatering system components necessary to convey water away from excavations.
2. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rain water and water removed from excavations to collecting or run-off areas.

F. Excavation for Structures: Conform to elevations and dimensions shown. Extend excavation a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of service, other construction, and for inspection.

1. Do not disturb bottom of excavation for footings and foundations.
2. Excavate by hand to final grade just before concrete reinforcement is placed.

3. Trim bottoms to required lines and grades to leave solid base to receive other work.
- G. Excavation for Pavements: Coordinate with Section 02741 for asphalt concrete, as necessary to comply with cross-sections, elevations and grades required.
1. Provide for minimum paving base thickness of 9 inches in areas subject to automobile traffic.
- H. Trenches: Remove unstable, soft, and unsuitable materials at the surface upon which pipes are to be laid, and backfill with clean sand or pea gravel to indicated level. Do not backfill trench until required inspections and tests have been completed.
1. Trench Bottom: Smooth, firm, stable, and rock-free foundation, throughout the length of the pipe of elevation required. Configure trench bottom for pipe. Excavate bell holes at each pipe joint so that bells are relieved of all loads and continuous bearing of the pipe barrel on the foundation is achieved.
 2. Place bedding material in the pipe zone to minimum 6 inches depth for plastic pipe. Compact bedding material to 95 percent relative dry density and provide required pipe elevations and gradients in configuration indicated with full-height bedding and effective support of pipe wall.
 3. Identification Tape: One continuous layers 12 inches below finish grade. Place identification tape over the center of the utility. Tape shall be visible at valve boxes, cleanouts, manholes and similar structures.
- I. Coordinate excavation, preparation and backfill with Work of related Sections for irrigation systems.

3.3 BACKFILL AND FILL

- A. Place approved soil material in layers to required subgrade elevations, for each area classification listed below. Do not use water saturated soil material, contaminated material, and material that is frozen or contains frost or ice.
1. Use only material approved for each class of fill and backfill required.
 2. Under grassed areas, use approved excavated or borrow material.
 3. Under stairs, sidewalks and pavements, use granular fill material.
- B. Backfill excavation as promptly as work permits, but not until completion of the following:
1. Inspection, testing, approval, and recording locations of underground utilities.
 2. Removal of concrete formwork, shoring and bracing. Prevent settling due to removal of materials from below structures.
 3. Backfilling of voids with satisfactory materials.
 4. Removal of trash and debris from excavation.
 5. Permanent or temporary horizontal bracing is in place on horizontally supported walls.
- C. Place backfill and fill materials in uniform lifts not to exceed the following loose depth, and compact each lift as required. Prevent wedging action of backfill against structures and displacement of piping and conduit.
1. Granular Fill Beneath Tunnel Lids, Footings, Stairs, and Sidewalks: 6 inch lifts.

3.4 COMPACTION

- A. Percentage of Maximum Density Requirements: Following percentage of maximum density as measured using ASTM D 698 for soil material with optimum moisture content.
 - 1. Stairs, Sidewalks and Pavements: Compact each lift of backfill or fill material to 95 percent relative density.
 - 2. Lawn and Unpaved Areas: Compact top 6 inches of subgrade and each layer of backfill or fill material to 90 percent relative density.
 - 3. Trench Bottom: Compact top 6 inches of subgrade and each layer of backfill or fill material to 95 percent relative density.
- B. Moisture Control: Condition fill, backfill and subgrade material for each lift to within plus or minus 2 percent of optimum moisture as determined by ASTM D 1557; aerate or moisten soils to be compacted with uniform application of water as necessary. Do not over moisten soil, and prevent appearance of free water during compaction.
- C. Compacted Fill Surfaces: Firm and yield only slightly beneath rubber tired construction equipment. Fills which rut, pump or weave as determined by the Engineer are not acceptable. Remove and replace unacceptable fills with acceptable material compacted as required at no change in Contract amount.

3.5 GRADING

- A. Provide smooth finished surfaces within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated, or between such points and existing grades.
- B. Grade areas to drain away from structures and to prevent ponding. Finish surfaces free from irregular surface changes.
- C. Compaction: After grading, compact subgrade surfaces to the depth and indicated percentage of maximum or relative density for each area classification.

3.6 FIELD QUALITY CONTROL

- A. Tests: Allow testing service to inspect and approve subgrades and fill layers before further construction work is performed.
 - 1. Field Density Tests: In accordance with one or more of the following ASTM methodologies as necessary to evaluate the character of the Work.
 - a. D 1556 Soil Density by Sand Cone Method, D2922 Soil Density by Nuclear Methods, D 2167 Soil Density by Rubber Balloon Method, or D 3017 Water Content by Nuclear Method .
 - 2. Perform one field density test of subgrade for each location of sidewalks to be replaced.
- B. If in opinion of Engineer, based on testing service reports and inspection, subgrade or fill that has been placed are below specified density, provide additional compaction and testing at no change in contract amount.

3.7 RESOURCE RECOVERY AND WASTE MATERIAL DISPOSAL

- A. Transport approved excess excavated material to designated soil storage areas on Owner's property and stockpile soil or spread as directed by Engineer.
- B. Transport waste material, including unacceptable excavated material, surplus excavated material exceeding capacity of Owner's soil storage area, trash, and debris, and dispose of it off the Owner's property. Comply with Contract requirements to maximize resource recovery, and recycling, and minimize material disposed of as waste. Provide submittals documenting recovery and disposal procedures and materials quantities as necessary for compliance with environmental certification requirements.

3.8 DISPOSAL OF EXCESS AND WASTE MATERIALS

- A. Remove waste materials, including unacceptable excavated material, trash and debris, and dispose off Owner's property.
- B. Remove excess excavated material, trash, debris and waste materials, and dispose of it off the Owner's property.

3.9 PROTECTION

- A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.
- B. Cold Weather Protection: Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F.
- C. Repair and re-establish grades in where settlement, erosion, and compaction have occurred to conform to specified tolerances.
- D. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction. Remove and replace material that cannot be acceptably restored to the required condition.

END OF SECTION

MINOR HOT MIXED ASPHALT CONCRETE

SECTION 02741

PART 1 GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Construction of asphaltic concrete repair.
- B. Related Sections:
 - 1. Section 02300: Earthwork

1.2 REFERENCES

- A. Oregon Department of Transportation, "Standard Specifications for Highway Construction" current manual, hereinafter called "Standard Specifications".
- B. Oregon Department of Transportation, "Supplemental Standard Specifications". Section 00744 QA - Minor Hot Mixed Asphalt Concrete (MHMAC) January 2008.
- C. American Society for testing and Materials:
 - 1. ASTM D 698, Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5-lb (2.49.kg) Rammer and 12-in (305-mm) Drop.
 - 2. ASTM D 2041, Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures.

1.3 QUALITY ASSURANCE

- A. Perform work in accordance with Standard Specifications.
- B. Mixing Plant: Conform to Standard Specifications. Company with experience in mixing asphaltic concrete for a period of 5 years minimum.
- C. Applicator: Company with experience in applying asphaltic concrete pavement for a period of 2 years minimum.
- D. Obtain materials from same source throughout.

1.4 TESTS

- A. Testing and inspection services during asphaltic concrete paving operations to include testing and inspection of aggregate base course, paving operations and testing of materials, temperature, compaction, thickness and surface smoothness as specified in Division 1: Quality Assurance.
- B. The in-place density of compacted asphaltic concrete paving will be tested in accordance with ASTM D 2041 (Rice gravity).

- C. Submit proposed mix design for review prior to commencement of work.

1.5 SUBMITTALS

- A. Submit all test results as required by the ODOT Standard Specifications.
- B. Design Mixes: For each asphalt pavement mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments. Written proposal for each asphalt mix and strength is required. Submit 15 days prior to start of Work.
- C. Material Certificates: Signed by supplier and Contractor certifying that each of the following materials complies with requirements. Submit with laboratory test reports.
 - 1. Aggregates:
 - a. Indicate materials sources for principal constituents. Document Reclaimed Asphalt Pavement (R.A.P.) content expressed as percentage by weight of total mix. Document post consumer materials as well as post industrial materials.
 - b. Reclaimed Asphalt Pavement: Not to exceed 15 percent.
 - 2. Liquid Asphalt Prime and Tack Coats
 - a. Indicate materials sources for principal constituents. Document VOC components shall comply with Section 1600 limitations on chemical compounds for maximum VOC content of 250 grams per liter.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Do not place asphalt when base surface temperature is less than 40 degrees Fahrenheit.
- B. Do not place asphalt when base surface is wet or frozen.
- C. Do not apply prime or tack coats when ambient temperature is below 50 degrees Fahrenheit or when temperature has been below 35 degrees Fahrenheit in previous 12 hours.
- D. Do not apply prime or tack coats when base surface is wet or contains dust or debris.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Asphaltic Concrete: ODOT Level 2 mix design conforming to the Standard Specifications.
- B. Asphalt Cement: PG 64-28, conform to the Standard Specifications.
- C. Liquid Asphalt Tack Coat: Conform to the Standard Specifications.
- D. Emulsified Asphalt: CQS-1h, type II Conform to the Standard Specifications.
- E. Joint Sealant: ASTM D 3405, hot-applied, single-component, polymer-modified bituminous sealant.

- F. All aggregates used in the preparation of asphaltic concrete pavement shall conform to the ODOT Standard Specifications. Post industrial reclaimed aggregates may be used as accepted by ODOT standards.
- G. Reclaimed Asphalt Product, (R.A.P.): Conform to the Standard Specifications. Not to be less than 14 percent or exceed 15 percent as percentage by weight of total mix.

2.2 EQUIPMENT

- A. Paving Equipment: Spreading, self-propelled machine capable of maintaining line, grade and course thickness indicated. Spreader box or manual methods may be used only in small areas.
- B. Compacting Equipment: Steel wheel roller. Use hand operated mechanical vibrators in small areas.

PART 3 EXECUTION

3.1 INSPECTION

- A. Inspect base conditions. Report any soft areas or contaminated areas as detected by the geotechnical engineer to Architect prior to proceeding with work.
- B. Verify compacted aggregate base is dry and ready to support paving and imposed loads.
- C. Verify gradients and elevations of aggregate base are correct and all paved areas will properly drain.
- D. Field inspection shall be done to ensure that the material, grades, compaction, and installation of the asphaltic concrete pavement meet the specifications.
- E. Notify Engineer of conditions detrimental to proper and timely completion of work.
- F. Beginning work means acceptance of existing base conditions.

3.2 PREPARATION

- A. Coat surfaces of catch basin frames with oil to prevent bond with asphalt paving.
- B. Protect existing site improvements from damage by paving work.
- C. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
 - 1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.

3.3 PATCHING EXISTING PAVEMENT

- A. Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into adjacent sound pavement,

unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade. Fill excavated pavements with hot-mix asphalt base mix and, while still hot, compact flush with adjacent surface.

3.4 APPLICATION OF TACK COAT

- A. Apply tack coat at rate of 0.05 to 0.15 gal. per sq. yd. to cleaned contact surfaces of previously placed asphaltic concrete, Portland Cement Concrete, and other similar surfaces abutting or projecting into asphaltic concrete paving.

3.5 PLACING ASPHALT PAVEMENT

- A. Pavement Wearing Course: Install paths, driveway and parking lot asphalt concrete pavement wearing course surfacing in one or two lifts to a minimum total compacted thickness as indicated on Drawings.
 - 1. Apply tack coat between lifts of asphalt.
- B. Spread and strike-off asphaltic concrete mixture using self-propelled paving machine except that inaccessible and small areas may be placed by hand. Spread mixture at a minimum temperature of 270 degrees Fahrenheit, measured in the hopper at the time of placement.
- C. Ensure joints made during asphaltic concrete paving operations are straight, vertical, tightly bonded free of broken or loose material and have same texture, density and smoothness as adjacent paving. Joints shall be crack sealed upon completion of asphaltic concrete paving operations.
- D. Compact each asphaltic concrete paving course with self-propelled rolling equipment. Start compaction as soon as paving will bear equipment without checking or undue displacement.
- E. Carry out compaction in three operations (breakdown or initial rolling, second rolling and finish rolling) in pass sequence to produce smooth surfaces of uniform texture, free from depressions (bird baths), and roller marks.
- F. Compact with hand tampers in areas not accessible to rolling equipment.
- G. Compact asphaltic concrete paving to 91 percent of ASTM D2041.

3.6 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- B. Compacted Scheduled Thickness: Within 1/4 inch of design thickness.
- C. Variation from True Elevation: Within 1/2 inch.

3.7 CLEANING

- A. Clean asphalt spatters from adjacent concrete surfaces.

B. Clean loose asphalt aggregate from concrete surfaces.

3.8 PROTECTION

A. Immediately after placement, protect pavement from vehicular traffic mechanical injury for minimum of three days.

END OF SECTION

IRRIGATION SYSTEM

SECTION 02810

PART 1 GENERAL

1.1 SUMMARY

- A. This Section includes installing piping sleeves under sidewalks for future irrigation piping.
- B. Related Sections include the following:
 - 1. Section 01565: Tree Protection and Trimming.
 - 2. Section 02300: Earthwork.

1.2 DEFINITIONS

- A. The following are industry abbreviations for plastic materials:
 - 1. ABS: Acrylonitrile-butadiene-styrene plastic.
 - 2. FRP: Fiberglass-reinforced plastic.
 - 3. PA: Polyamide (nylon) plastic.
 - 4. PE: Polyethylene plastic.
 - 5. PP: Polypropylene plastic.
 - 6. PTFE: Polytetrafluoroethylene plastic.
 - 7. PVC: Polyvinyl chloride plastic.
 - 8. TFE: Tetrafluoroethylene plastic.
 - 9. HDPE: High Density Polyethylene

1.3 SUBMITTALS

- A. Product Data: Include pressure ratings for the following:
 - 1. Piping sleeves.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver piping to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.
- B. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.5 PROJECT CONDITIONS

- A. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Oregon Institute of Technology.

1.6 RECORD DRAWINGS:

- A. Provide and keep up to date a record set of Record Drawings of where piping sleeves were installed.

- B. Before the date of the final observation of the project by the Owner's Representative Representative, the Contractor shall deliver the Record Drawings to the Owner's Representative.

PART 2 PRODUCTS

2.1 MATERIALS

A. Sleeves:

1. Schedule 40, PVC 1120, Type 1, pipe under all sidewalks. All pipes shall be polyvinyl chloride, continuously bearing seal of the National Sanitation Foundation and complying with the requirements of ASTM D2246 and D1785. Pipe size shall be 4-inch as indicated on the Drawings.
2. All socket fittings for PVC Schedule 40 pipe to be Schedule 40, NSF approved and complying with ASTM D 2466.

B. Pipe Solvent Cement:

1. PVC Solvent Cement ASTM D-2564.

C. PVC Cleaner and Primer:

1. ASTM F-656, I.P.S. P-70.

D. Other Material:

1. Sand: Clean, suitable for backfilling and bedding pipe.
2. Detectable Tape: Minimum 3-inch wide, 5 mils thick inert plastic tape with continuous layer of aluminum foil encased in the plastic. Tape identification shall match the utility being marked..
 - a. Manufacturer: Terra Tape Detectable, or equal.

PART 3 EXECUTION

3.1 TRENCHING

- A. Refer to Section 01565 Tree Protection and Trimming for excavating, trenching, and backfilling near existing trees.
- B. Refer to Section 02300 Earthwork for excavating, trenching, and backfilling.
- C. Install warning tape directly above piping sleeves, 12 inches above top of pipe.
- D. Install sleeves under sidewalks.
- E. Provide 24 inches minimum cover over top of piping sleeves.

3.2 PIPING INSTALLATION

- A. Location and Arrangement: Drawings indicate location and size of piping sleeves. Install piping as indicated unless deviations are approved by Owners Representative Representative. Install all piping in planting beds wherever possible.
- B. Install piping at minimum uniform slope of 0.5 percent down toward drain valves.
- C. Install piping free of sags and bends.
- D. Lay piping on solid subbase, uniformly sloped without humps or depressions.
- E. Install PVC piping in dry weather when temperature is above 40 degrees F.
- F. Install PVC cap on each end of sleeve.

3.3 JOINT CONSTRUCTION

- A. Construct pipe joints in accordance with the following:
 - 1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
 - 2. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.

3.14 CLEANING

- A. Flush dirt and debris from piping before capping and backfilling.

END OF SECTION

LAWN AND GRASSES

SECTION 02920

PART 1 GENERAL

1.1 SUMMARY

- A. Furnish labor, material and equipment required for application of seed mixes, as specified, in areas disturbed during construction. Contractor has the option to manually seed or hydroseed, or a combination of the two methods. The following specification addresses both methods.
- B. Verify site conditions that will not adversely affect execution.
- C. University shall determine areas beyond those shown on Drawings disturbed by construction that are to be prepared and seeded at no additional cost to the University.

1.2 SEASON

- A. Seeding shall take place in normal weather and temperatures that are appropriate and typical for such work between April 15 and September 30. Seeding on other dates or during adverse conditions is at the risk of the Contractor.

1.3 PROTECTION

- A. Provide adequate measures to protect workers and passers-by the site. Execute all work in an orderly and careful manner with due consideration for any and all surrounding areas, plantings, or structures which are to remain. Protect all adjacent property and improvements from work damage, and replace any portions damaged.

1.4 SUBMITTALS

- A. Dealer guarantee statements of analysis for Oregon Certified Seed. Deliver the seed bag tags to Owners Representative.
- B. Seed: Immediately following Contract award, submit for approval by the Owner's Representative a written statement of conformance or compliance with these specifications. Include the following information:
 - 1. Name and location of supplier.
 - 2. Supplier's certification of geographic origins of seeds.
 - 3. Purity and germination rates for each species.
 - 4. Percentage of pure live seed (PLS) for each species.
- C. Prior to beginning seeding operations, submit copies of all seed labels to Owner's Representative.
- D. Submit written documentation verifying compliance with native grass hay specification.
- E. At least 7 days prior to the seeding operations, submit a description of the seeding equipment and methods for approval by the University.

1.5 QUALITY ASSURANCE

- A. All native seed shall comply with botanical names provided in: Hitchcock, C.L. and A. Cronquist, "Flora of the Pacific Northwest", 1973.
- B. PLS is the amount of living, viable seed in the total amount of seed. The amount of seed to be applied is obtained by using the purity and germination rates from the label on the actual bag of seed to be used on the project. To calculate the amount of seed to be supplied for each species:
 - 1. Multiply the seed germination rate by the purity rate.
 - 2. Divide the specified PLS seeding rate by the result of subarticle No. 1. Round off the result to the nearest ounce.

PART 2 - PRODUCTS

2.1 SEED: GENERAL REQUIREMENTS

- A. General: Provide fresh, clean, new-crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America.

2.2 SEED MIXES

- A. Low maintenance drought tolerant, dwarf type and formulated for the Klamath Basin Area based on the following seed types produced in Southern Oregon or Northern California or approved equal.
 - 1. Apply seed at the rate of 7.5 pounds per 1,000 square feet of area.
 - a. 70 percent Kentucky Bluegrass
 - b. 15 percent Fine Fescue
 - c. 15 percent Perennial Rye

2.3 MULCHES

- A. Straw for Lawn Area: Provide stalks from oats, wheat, rye, or barley that are free of weeds, mold or other deleterious material. Straw shall be in an air dry condition and suitable for placing with commercial mulch blowing equipment.

2.4 FERTILIZER

- A. Fertilizer (for Surface Applications): To be determined based upon topsoil analysis. For bidding purposes, assume: 16 (nitrogen)- 8 (phosphorous)- 8 (potassium), slow release, granular commercial fertilizer at 500 lbs./acre in all seeded areas.

2.5 HYDRO-SLURRY MIX

- A. The slurry mix shall consist of the following:
 - 1. Wood cellulose fiber, dyed green, at 2,000 lbs. per acre.
 - 2. Apply binder (tackifyer) at 50 lbs. per acre. Approved products: "M" binder (tackifyer), R-2400 (tackifyer), or approved equal.
 - 3. Fertilizer.

2.6 TEMPORARY BARRICADE MATERIALS

- A. Agricultural metal stakes, minimum 42-inch exposed height.
- B. Twine or wire.
- C. Plastic flagging tape, 12-inch lengths.

PART 3 - EXECUTION

3.1 GENERAL

- A. Sow seed during planting season specified in Part 1.
- B. Do not sow seed when weather conditions are unfavorable, such as during drought, heavy rain or high winds.

3.2 MANUAL SEEDING

- A. Immediately before seeding, scarify, loosen, float and drag all seed beds as necessary to bring them to proper condition. Remove foreign matter larger than one-inch in diameter. Establish raked seed bed and obtain approval prior to seeding.
- B. Broadcast seed at specified rates with a belly crank (for woody plant seeds and small areas), drill seeder or other application equipment capable of accurately distributing seed. Make two passes perpendicular to each other insuring even distribution. Apply broadcast fertilizer at specified rate.
- C. Rake seed very lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.

3.3 HYDROSEEDING

- A. It is the Contractor's option to hydroseed any areas of the project requiring seeding.
- B. Immediately before seeding scarify, loosen, float and drag all seed beds as necessary to bring them to proper condition. Remove foreign matter larger than one-inch in diameter. Establish raked seed bed and obtain approval prior to seeding.
- C. Hydroseed seed at specified rates.
- D. Agitate as necessary the slurry to assure an even mix of ingredients.
- E. Hydroseed evenly over entire area.

3.4 MAINTENANCE

- A. Maintain seeded areas including mowing, fertilizing, re-seeding, watering, etc. and continue until final acceptance.
- B. Reseed unacceptable areas.

3.5 ACCEPTANCE

- A. Acceptance of all seeded areas will be based on growth of a uniform color and dense stand of grass, without bare spots of over 2 square inches. Contractor to ensure seed establishment of all areas prior to September 30.

3.6 CLEAN-UP

- A. Remove debris from surrounding areas; including all pavement, concrete, gravel, and planting areas. Remove germinated seed in planting areas without harming other plant material.

3.7 FINAL PROTECTION

- A. Install temporary barricade of agricultural metal stakes and 2 strands of twine or wire with strips of plastic flagging 36 inches apart separating finish seeded areas from foot and vehicular traffic. Remove barricade after seeded areas have been established and accepted.

END OF SECTION

CONCRETE FORMWORK

SECTION 03100

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes requirements for formwork for cast-in-place concrete.
- B. Related Sections:
 - 1. Section 02300 Earthwork
 - 2. Section 03200 Concrete Reinforcement
 - 3. Section 03300 Cast-In-Place Concrete

1.2 SYSTEM DESCRIPTION

- A. Design Requirements: Formwork, shoring and bracing shall provide completed concrete surfaces conforming to sizes, shapes, lines, grades and dimensions indicated, with openings, offsets, keyways, recesses, anchorages, inserts and other features as required. Formwork shall be removable without damage to concrete and adjacent surfaces.
 - 1. Design of forms, and shoring shall be the sole responsibility of the Contractor and shall comply with ACI 301 and 318.
 - 2. Forms: Impart a uniform surface and appearance free of variation due to exposure to moisture, and chemicals, undesirable surface characteristics and other defects.
- B. Performance Requirements: The Contractor shall determine construction loads and all other loads including safety factors that must be supported by formwork, shoring, re-shoring and related temporary supports throughout the course of the Work.
 - 1. Contractor shall ensure formwork, shoring and all related support work comply with regulatory requirements including but not limited to safety regulations.

1.3 SUBMITTALS

- A. Product Data: Include specifications and installation instructions for proprietary materials and items as required, including form coatings, manufactured form systems, ties, and accessories.
- B. Shop Drawings: Indicate pertinent dimensions, materials, and arrangement of joints, ties and accessories for formwork and shores. Engineer's review is for general applications only. Structural stability and efficiency is Contractor's responsibility.
- C. Samples: When directed submit samples of formwork materials.

1.4 QUALITY ASSURANCE

- A. Design, construct, erect, maintain and remove forms, shores and related structures for cast-in-place concrete work in compliance with requirements and tolerances of American Concrete Institute Standard ACI 347, *Recommended Practice for Concrete Formwork*. Formwork shall

produce as-cast surfaces complying with tolerance requirements of Section 03300.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Form Sheathing and Liners : Plywood, metal, metal-framed plywood faced and other acceptable panel-type materials, minimize number of joints and conform to join patterns where indicated. Contractor is encouraged to reduce materials consumption for the Work by utilizing form sheathing that may be reused. Consideration shall also be given to form liners where they will enable reuse of sheathing.
1. Exposed Concrete: Single use 0.75 inch Type I Concrete Form plywood B-B Medium Density Overlaid both sides, or multiple use 0.75 inch HDO Plyform High Density Overlaid Concrete Form, Class I.
 2. Concealed Concrete: Comply with U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood", Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.
 3. Chamfer Strips: Prefabricated rigid wood or PVC chamfer strips to produce 0.75 inch radius unless otherwise indicated.
 4. Lumber: Dressed on two edges and one side.
- B. Form Ties: Prefabricated, adjustable length, removable or snap-off metal ties; minimum 1 inch concrete coverage of embedded remnants and maximum 1 inch diameter hole from removed tie.
1. Site fabricated and wire ties are not acceptable.
- C. Form Coatings: Water-based, VOC content 100 grams per liter or less, commercial formulation form-coating compounds compatible with forming materials and subsequent coatings, adhesives and treatments that will not stain, bond to nor adversely affect concrete.
1. Cast-In-place Concrete: WR Meadows Duogard II, ChemMasters SafeSlip, Nox-Crete PCE, Symons Magic Kote E, or approved.
- D. Formwork Sealant: One-part silicone conforming to ASTM C 920, Grade NS, Class 25.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Protection: Support imposed loads until concrete has cured adequately to support them. Provide crush plates and other protection to prevent damage to concrete surfaces during stripping.
- B. Prevent movement and deformation of formwork and liners during concrete placement; shore, brace, block and support as necessary.
- C. Prevent leakage of cement paste at joints, openings and penetrations in formwork.
- D. Temporary Openings: At inconspicuous locations for cleanout and inspection of forms and placing of concrete.

- E. Form all concrete surfaces. Do not use earth forms without prior written approval.
- F. Chamfer exposed corners and edges as indicated, using wood, metal, PVC or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints. Kerf inserts for forming keyways, reglets, and recesses.
- G. Clean formwork and surfaces to receive concrete immediately prior to placement of concrete, remove debris and contaminants which might impair quality of completed work.
- H. Re-Used Forms and Liners: Re-use limited to materials intended for multiple use. Prepare as specified for new, single-use forms, remove concrete and coating residues and restore as necessary to provide acceptable surface condition; damaged and deteriorated forms shall not be used.
- I. Form Coatings: Apply to contact surfaces, comply with manufacturer's recommendations, prevent accumulation of coatings in formwork, and do not coat bond surfaces of existing concrete and embedded items.
 - 1. Coat forms and liners as necessary to prevent staining of concrete work.

3.2 JOINTS

- A. Construction Joints: Horizontal and vertical, locate as indicated, and as specified in ACI 301, Section 2.2.2.5. Impair neither the strength nor appearance of the Work, place perpendicular to main reinforcement and with keyways 1.5 inches deep minimum, keyed bulkheads may be used.
- B. Formwork Joints: Tight and regular, use minimum number of joints necessary for Work indicated.
 - 1. Form Ties: Provide a uniform pattern and appearance in concrete work exposed to view.

3.3 INSTALLATION OF EMBEDDED ITEMS

- A. Embedded Items and Built-ins: Position in forms as necessary to accommodate Work of other trades, ensure correct placement, size and location for openings, recesses, anchors, and items built into forms. Use setting diagrams, templates and directions provided by suppliers of items anchored to and cast into cast-in-place concrete.
- B. Edge Forms and Screed Strips for Slabs: Set to obtain required elevations and contours in finished surface, support screed strips with strike-off templates or accepted compacting type screeds.

3.4 SHORES AND SUPPORTS

- A. Arrange forms to allow stripping without removal of principal shores.
- B. Shore construction to ensure distribution of loads throughout structure. Do not impose loading conditions for which the structure was not designed nor has not achieved sufficient strength to carry.
- C. Remove shores and supports in a planned sequence, do not damage partially cured concrete. Prevent deflection and excessive loading of concrete.

3.5 REMOVAL OF FORMS

- A. Formwork not supporting weight of concrete, may be removed after cumulatively curing at not less than 50 degrees F for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by stripping, and provided curing and protection operations are maintained.
- B. Formwork supporting weight of concrete, such as beam soffits, joists, slabs and other structural elements, shall not be removed in less than 14 days or until concrete has attained design minimum compressive strength.
 - 1. Determine potential compressive strength of in place concrete by testing field-cured specimens representative of concrete location or members.
- C. Form facing material may be removed 4 days after placement, only if shores and other supports have been arranged to permit removal of form facing material without loosening or disturbing shores and supports.
- D. Tolerances: Comply with ACI 117, except when specifically stated otherwise tolerances shall be total amount allowed; for example a tolerance of 0.75 inch shall be interpreted to mean plus 0.375 and minus 0.375 inch for a total of 0.75 inch.
 - 1. Work the Engineer determines has dimensional variations that adversely affect appearance and suitability for the purpose intended shall be replaced regardless of compliance with tolerance of ACI 117.
 - 2. To be acceptable Work must comply with tolerances when fully cured and temporary supports have been removed.

END OF SECTION

CONCRETE REINFORCEMENT
SECTION 03200

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes reinforcing bars, supports and accessories for cast-in-place concrete.
 - 1. See General Notes on C-series civil drawing sheets for additional information.
- B. Related Sections:
 - 1. Section 03100 Concrete Formwork
 - 2. Section 03300 Cast-In-Place Concrete

1.2 REFERENCES

- A. Comply with requirements of the following, including modification required by applicable Codes.
 - 1. American Concrete Institute, ACI 315 *Manual of Standard Practice for Detailing Reinforced Concrete Structures*.
 - 2. American Concrete Institute, ACI 318 *Building Code Requirements for Reinforced Concrete*.
 - 3. American Welding Society, AWS D1.4 *Structural Welding Code Reinforcing Steel*.
 - 4. Concrete Reinforcing Steel Institute (CRSI), *Manual of Standard Practice*.

1.3 SUBMITTALS

- A. Submit product data including specifications and installation instructions for all proprietary materials and reinforcement accessories.
- B. Shop Drawings: For fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315 show bar schedules, stirrup spacing, diagrams of bent bars, arrangement and support of concrete reinforcement, and coordination with embedded and cast-in items.
- C. Mill Certificates: Submit steel producers certificates of mill tests for reinforcing steel.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Store reinforcing steel blocked up off the ground and in orderly stacks.
- B. Each stack shall contain only bars with the same identifying label.

PART 2 PRODUCTS

2.1 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A 615, Grade 60, deformed. Provide ASTM A 706 where reinforcement is to be welded and where indicated.

- B. Steel Wire: ASTM A 82, plain, cold-drawn, steel.
- C. Deformed Steel Wire: ASTM A 496.
- D. Welding Electrodes: AWS A5.1, low hydrogen, E70 series.
- E. Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI specifications, unless otherwise acceptable. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.
 - 1. Exposed Concrete: Legs of supports in contact with forms, shall be plastic protected (CRSI, Class 1) or stainless steel protected (CRSI, Class 2).
- F. Reinforcing Couplers: Type 1 ICC approved; capable of developing 125 percent of specified minimum yield strength of bar in tension or compression. Subject to compliance with requirements provide one of the following; Lenton Taper Threaded Connection, Erico Inc., Bar-Lock Standard Coupler, Bar-Lock Coupler Systems, or Bar Splice Bar splice Products Inc.
- G. Deformed Bar Anchors: Nelson, flux filled deformed bar anchors, type D2L, as manufactured by Nelson Stud Welding or equal (no known equal)
 - 1. Deformed Bar Anchor material shall be made from cold rolled, deformed steel reinforcing bars conforming to ASTM A496.
 - 2. Deformed Bar Anchor material shall have a yield strength, f_y , equal to 70,000 pounds per square inch.
 - 3. Deformed Bar Anchor material shall have a tensile strength, f_t , equal to 80,000 pounds per square inch.

2.2 FABRICATION

- A. Coordinate reinforcing with anchors, shear studs, block-outs, conduits, sleeves, and other items, to be cast in concrete. Fabricate reinforcing to eliminate conflicts with the placement of embedded and cast-in items.
- B. Field fabrication will be allowed only when the Contractor has demonstrated they have the capacity to properly fabricate the required reinforcing.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
- B. Place reinforcement to obtain minimum concrete coverage acceptable to Engineer. Continue reinforcement across construction joints.

1. Allow observation by Engineer at completion of placement.
 2. Reinforcing partially embedded in concrete shall not be field bent except as indicated or specifically approved in advance.
 3. Spacing. As indicated, and to comply with ACI 318.
- C. Welding: Acceptable only where required on the drawings and shall comply with AWS D 1.4
1. Welding material, wire cuttings, and tramp metal shall be thoroughly cleaned from forms for exposed concrete before any concrete is placed.
 2. Do not use tack welds in welding processes.
 3. Welding is not permitted weld within two bar diameters of cold bends.
- D. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.
- 3.2 FIELD QUALITY CONTROL
- A. As a minimum, the Owner's Quality Control Inspector will test and inspect the work to comply with the requirements of OSSC Chapter 17. In addition to other required inspections, the following are subject to Special Inspection.
1. Placement of reinforcing steel as required by Sec. 1701.5, Item 4.
 2. Welding of reinforcing steel as required by Sec 1701.5, Item 5.3. and 1701.6.1. Butt welds will be inspected using radiographic testing.
 3. The Owner's inspector shall be present during all field bending of reinforcement.
 4. Installation of deformed bar anchors to be tested in accordance with Section 7.1 of AWS D1.1
 5. Testing and inspection of mechanical splices and reinforcing couplers to conform to manufacturer's recommendations and ICC-ES report.

END OF SECTION

CONCRETE ANCHORS

SECTION 03251

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Requirements pertaining to post-installed and cast-in-place anchors for materials and equipment. This section pertains to all other sections of these specifications that require post-installed or cast-in-place anchors, unless specified otherwise.

1.2 RELATED DOCUMENTS

- A. Division 1 General Requirements
- B. Division 3 Concrete
- C. Division 4 Masonry
- D. Division 5 Metals

1.3 REFERENCES

- A. ACI 318 – Building Code Requirements for Structural Concrete
- B. ACI 355.2 – Qualification of Post-Installed Mechanical Anchors in Concrete
- C. ACI 355.4 – Qualification of Post-Installed Adhesive Anchors in Concrete
- D. ASTM A36 – Standard Specification for Carbon Structural Steel
- E. ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- F. ASTM A193 – Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service
- G. ASTM A510 – Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel
- H. ASTM A615 – Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
- I. ASTM A706 – Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
- J. ASTM B633 – Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel
- K. ASTM B695 – Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel
- L. ASTM C881 – Standard Specification Epoxy-Resin-Based Bonding Systems for Concrete

1.4 SUBMITTALS AND SUBSTITUTIONS

- A. Submittals are to be in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: The installer shall be experienced in installing anchors equal to type, and into the substrate material required for this project. See PART 3 EXECUTION.
- B. Evaluations Reports and Listings: Anchors and related materials shall be listed by one or more of the following agencies, as applicable:
 - 1. ICC Evaluation Service
 - a. Anchors shall be manufactured under an approved quality assurance program with follow-up inspections by an inspection agency under ISO/IEC 17020 by a recognized accreditation body conforming to the requirements of ISO/IEC 17011.
 - 2. IAPMO Uniform Evaluation Service
 - a. Anchors shall be manufactured under an approved quality assurance program with follow-up inspections by an inspection agency under ISO/IEC 17020 by a recognized accreditation body conforming to the requirements of ISO/IEC 17011.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to job site in manufacturer's or distributor's packaging undamaged, complete with installation instructions.
- B. Protect and handle materials in accordance with manufacturer's recommendations to prevent damage or deterioration.

1.7 PROJECT CONDITIONS

- A. Adhesive anchors shall be installed in concrete having a minimum age of 21 days at time of anchor installation.
- B. Anchoring adhesives must be stored at temperatures prescribed by the manufacturer and must not be used beyond the expiration date.
- C. The anchor or fastener coating, plating or steel type must provide suitable corrosion resistance for the environment in which the anchor or fastener is installed.

PART 2 PRODUCTS

2.1 EXPANSION ANCHORS FOR CRACKED AND UNCRACKED CONCRETE

- A. Anchors shall be designed in accordance with ACI 318 Appendix D, which requires post-installed mechanical anchors to be qualified according to ACI 355.2. Such anchors shall be imperial sized, threaded stud with an integral cone expander and three-segment expansion clip. The stud shall be manufactured from carbon steel or type 316 or 304 stainless steel.
- B. Expansion anchors for cracked and uncracked concrete shall be:
 - 1. Simpson Strong-Tie Strong-Bolt 2 Wedge Anchor
 - 2. Hilti USA Kwik Bolt
 - 3. Red Head Trubolt
 - 4. Approved Equal

2.2 SCREW ANCHORS FOR CRACKED AND UNCRACKED CONCRETE

- A. Anchors shall be designed in accordance with ACI 318 Appendix D as amended by the specific design provisions of ICC-ES AC193. Anchors shall be manufactured from carbon steel which is subsequently heat-treated. Anchors shall be zinc-plated in accordance with ASTM B633, Class SC1, Type III.
- B. Screw anchors for cracked and uncracked concrete shall be:
 - 1. Simpson Strong-Tie Titen HD Screw Anchor
 - 2. Hilti USA Kwik-Con II
 - 3. Red Head Large Diameter Tapcon
 - 4. Approved Equal

2.3 SELF-UNDERCUTTING ANCHORS FOR CRACKED AND UNCRACKED CONCRETE

- A. Anchors shall be designed in accordance with ACI 318 Appendix D, which requires post-installed mechanical undercut anchors to be qualified according to ACI 355.2. Self-undercutting anchors shall be imperial sized and have an expansion ring with undercutting teeth that expand over a cone upon tightening of the nut. Threaded rod, spacer sleeve, undercut expansion ring and expansion cone shall be manufactured from carbon steel and shall be zinc-plated in accordance with ASTM B633, Class SC1.
- B. Self-undercutting anchors for cracked and uncracked concrete shall be:
 - 1. Simpson Strong-Tie Torq-Cut
 - 2. Hilti USA HDA
 - 3. Liebig SuperPlus
 - 4. Approved Equal

2.4 ADHESIVE ANCHORS FOR CRACKED AND UNCRACKED CONCRETE

- A. An adhesive anchor shall consist of: 1) threaded rod or reinforcing bar insert; and 2) adhesive formula. Threaded rod inserts shall meet the minimum requirements of ASTM F1554 Grade 36, ASTM A193 Grade B7, ASTM A193 Grade B6 (Type 410 Stainless Steel) or ASTM A193 Grade B8 and B8M (Types 304 and 316 Stainless Steel). Reinforcing bar inserts shall meet the minimum requirements of ASTM A615 Grade 60 or ASTM A706 Grade 60. For exterior exposure the insert shall be stainless steel. Inserts in contact with preservative-treated and fire-retardant-treated wood shall be zinc coated in accordance with ASTM A153 Class C or D or stainless steel or demonstrated through tests to be equivalent to the coatings described. Adhesives shall be an epoxy resin bonding system that is injectable, two-component, cartridge-type systems dispensed and mixed through a static mixing nozzle supplied by the manufacturer. Acceptable installation and performance temperature ranges shall be verified with manufacturer's literature prior to installation.
 - 1. Adhesive anchors for cracked and uncracked concrete shall be:
 - a. Simpson Strong-Tie SET-XP Epoxy Adhesive
 - b. Hilti USA HY-150
 - c. Red Head EPCON G5
 - d. Approved Equal

2. Adhesive anchors for cracked and uncracked concrete and decreased installation temperature (14°F) shall be:
 - a. Simpson Strong-Tie AT-XP Acrylic Adhesive, IAPMO-UES ER-263
 - b. Approved Equal

2.5 GAS-ACTUATED FASTENERS AND ASSEMBLIES

- A. Gas-Actuated Fasteners are manufactured from steel complying with ASTM A510, Grade 1060 or 10B60, and austempered to a Rockwell “C” core hardness of 53-56. Fasteners shall be galvanized in accordance with ASTM B695, Class 5, Type I or zinc electroplated in accordance with ASTM B633 SC1, Type I.
- B. Gas-Actuated Fasteners and Assemblies attached to normal-weight and sand-lightweight concrete and steel deck with sand-lightweight concrete fill shall be:
 1. Simpson Strong-Tie Gas-Actuated Fasteners and Assemblies
 2. Ramset Gas-Actuated Fasteners and Assemblies
 3. Hilti USA Gas-Actuated Fasteners and Assemblies
 4. Approved Equal

2.6 POWDER-ACTUATED FASTENERS, THREADED STUDS AND ASSEMBLIES

- A. Fasteners and threaded studs are manufactured from steel complying with ASTM A510, Grades 1060 to 1065 or 10B60 to 10B65 and austempered to a Rockwell “C” core hardness of 51 to 56. Fasteners shall have a mechanically plated zinc finish complying with ASTM B695, Class 5, Type I.
- B. Powder-actuated fasteners, threaded studs and assemblies attached to normal-weight and sand-lightweight concrete or steel deck with sand-lightweight concrete fill shall be:
 1. Simpson Strong-Tie Powder-Actuated Fasteners
 2. Hilti USA Powder-Actuated Fasteners
 3. Ramset Powder-Actuated Fasteners
 4. Approved Equal

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine supporting base materials and environmental conditions. Do not begin installation until base materials have been properly prepared.
- B. Unless otherwise specified, do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
- C. Install only if environmental conditions are in compliance with manufacturer’s recommendations for installation conditions.

3.2 INSTALLATION

- A. Adhesive anchors shall be installed in concrete having a minimum age of 21 days at time of anchor installation.

- B. Installation shall conform to the manufacturer's published installation instructions.
- C. Where holes are drilled in concrete or masonry, holes shall be accurately and squarely drilled, and the holes shall be cleaned in accordance with the manufacturer's recommendations.
- D. Unless otherwise noted, anchors shall be installed in holes drilled into base materials using carbide-tipped drill bits conforming to ANSI B212.15-1994.
- E. Where manufacturer recommends use of special tools for installation of anchors, such tools shall be used, unless otherwise permitted specifically by the Engineer or Architect of Record.
- F. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Exercise care in drilling to avoid damaging existing reinforcing or embedded items. Notify the Engineer if reinforcing steel or other embedded items are encountered during drilling.

3.3 FIELD QUALITY CONTROL

- A. Special Inspection
 - 1. Comply with Division 1 requirements
- B. Installer Certification
 - 1. The following installer certification requirements apply to adhesive anchors assessed by the acceptance testing under ACI 355.4:
 - a. Installation of adhesive anchors shall be performed by personnel trained to install adhesive anchors.
 - b. Adhesive anchors installed in horizontal or upwardly inclined orientations to resist sustained tension loads shall be continuously inspected during installation by an inspector specially approved for that purpose by the building official. The special inspector shall furnish a report to the licensed design professional and building official that the work covered by the report has been performed and that the materials used and the installation procedures used conform with the approved contract documents and the manufacturer's printed installation instructions.
 - c. Installation of adhesive anchors horizontally or upwardly inclined to support sustained tension loads shall be performed by personnel certified by an applicable certification program. Certification shall include written and performance tests in accordance with the ACI/CRSI Adhesive Anchor Installer Certification program, or equivalent.

END OF SECTION

CAST-IN-PLACE CONCRETE

SECTION 03300

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes materials, mixes, accessories, and Work necessary and required for cast-in-place concrete as indicated and specified herein.
- B. Related Sections:
 - 1. Section 03100 Concrete Formwork
 - 2. Section 03200 Concrete Reinforcing

1.2 SUBMITTALS

- A. Product Data: Required for each material and product to be incorporated into the Work.
- B. Samples: Submit samples of materials as specified and as otherwise requested by Engineer, including names, sources and descriptions.
- C. Laboratory Test Reports: Required for concrete materials and mix design.
- D. Shop Drawings: Include details of steel reinforcement placement including material, grade, bar schedules, spacing, bent bar diagrams, arrangement, and supports.
- E. Material Certificates: Signed by manufacturer and Contractor; Submit in lieu of laboratory test reports as acceptable to Engineer, demonstrate compliance with requirements.
- F. Mix Design: Written proposal for each concrete mix and strength required submit 7 days prior to start of Work. See Structural General Notes Section H for tunnel lid mix design requirements. All mix design shall be appropriate for exterior concrete with severe exposure to freeze thaw / de-icing chemicals and list the following:
 - 1. All materials and admixtures and their proportions.
 - 2. Water-cement ratio, slump, and aggregate grading.
 - 3. Evidence that mix design meets the strength requirements: Compression test data (field experience method) or results of testing (trial batch method) used to establish mix proportions.
 - 4. Whether the mix is appropriate for pumping.
- G. Submit schedule of concrete placement operations before commencing Work, show on one or more plans or elevations, locations of construction, contraction and expansion joints.

1.3 QUALITY ASSURANCE

- A. Contractor's responsibility to provide Work complying with contract requirements shall not be altered by statements in referenced standards and documents. Comply with the following except where otherwise indicated and where more stringent requirements apply.

1. ACI 301 Specifications for Structural Concrete.
 2. ACI 304 Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
 3. ACI 305 Hot Weather Concreting.
 4. ACI 306 Cold Weather Concreting.
 5. ACI 309 Recommended Practice for Consolidation of Concrete.
 6. ACI 318 Building Code requirements for Reinforced Concrete.
- B. Ready-Mix-Concrete Producer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- C. Source Limitations: Obtain cement concrete pavement products and each type or class of cementitious material of the same brand from the same manufacturer's plant and each aggregate through one source.
- D. Concrete Testing Service: Owner will engage a qualified testing agency to perform material evaluation tests.
- E. Formwork Observation: Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed. Notify Owner's Representative 48 hours minimum prior to placing concrete that formwork is in place and ready for observation. Do not proceed with concrete placement prior to obtaining Owner's Representative's approval that formwork meets the lines and grades intended on the Drawings. Concrete placed without the Owner's Representative's approval of formwork shall be removed and replaced at no additional cost to the Owner.

1.4 PROJECT CONDITIONS

- A. Environmental Requirements: Do not place concrete when weather conditions may reduce performance characteristics, and prevent proper finishing, and curing.

PART 2 PRODUCTS

2.1 CONCRETE

- A. Portland Cement: ASTM C 150, Type IA. Use one brand of cement throughout project, unless otherwise acceptable to Engineer.
- B. Normal Weight Aggregates: From a single source, comply with ASTM C 33, and as herein specified. Do not use aggregates containing deleterious nor alkali reactive substances.
- C. Water: Plant-batched concrete shall include a minimum of 6 percent recovered wash-down water measured by volume of total mix. Recovered wash-down water shall be treated by settling, filtration and other acceptable means to remove deleterious materials prior to incorporation into mix.
- D. Water: ASTM C 94.

2.2 ADMIXTURES

- A. Subject to compliance with specified requirements, provide one of the listed products for each admixture used; submit substitution request prior to bid, and comply with requirements of Section 01330.
- B. Calcium chloride and admixtures containing more than 0.1 percent calcium chloride ions shall not be used.
- C. Coordinate admixtures to ensure compatibility. Prevent unpredictable and non-controlled side effects and reactions between mix components.
- D. Air-Entraining: ASTM C 260.
 - 1. Darex AEA; W.R. Grace.
 - 2. MB AE-90; Master Builders.
- E. Water Reducer: ASTM C 494, Type A.
 - 1. Darex WRDA-79; W.R. Grace.
 - 2. Pozzolith; Master Builders.
- F. Water-Reducing, Non-Chloride Accelerator Admixture: ASTM C 494, Type E.
 - 1. Darex WRDA Type III; W.R. Grace.
 - 2. Pozzutec 20; Master Builders.
- G. Water-Reducing, Retarding Admixture: ASTM C 494, Type D.
 - 1. Daratard; W.R. Grace.
 - 2. Pozzolith 300-R; Master Builders.
- H. Fly Ash: ASTM C 618 (including Table 2A) Type F or Type C, subject to approval of mix design data.

2.3 ACCESSORIES

- A. Non-Shrink Base Plate Grout: Premixed compound using natural non-metallic aggregate, and conforming to Corps of Engineers' CRD-C621-81.
 - 1. Compressive Strength: 2,400 psi in 48 hours and 6,000 psi in 28 days.
 - 2. Five-Star Grout by US Grout Corporation; Masterflow 880 grout by MasterBuilders; or approved.
- B. High Strength Non-shrink Grout: Masterflow 928 grout by Master Builders; Sika Grout 212 by Sika Corporation or approved.
 - 1. Fluid Grout: CRD-C611-81, flow of 22 to 30 seconds, one hour after batching, at 40 to 100 degrees F.
 - 2. Strength: 2,500 psi at 24 hours, 4,500 psi at three days, and 7,000 psi at 28 days.

- C. Moisture-Retaining Cover: Complying with ASTM C 171. Waterproof paper, or polyethylene film.
- D. Curing Compound: ASTM C 309 Type 1, Class A content, liquid membrane forming compound for concrete; product shall be applied at a uniform rate of 100 ft²/gallon. Method of application is the Contractor's responsibility.
- E. Preformed Expansion Joint Filler: Bituminous type conforming to ASTM D994 or resin-bonded cork conforming to ASTM D1752, Type II
- F. Concrete Joint Sealant: Sealant shall conform to the requirements of ASTM C 920.

2.4 CONCRETE MIXTURES

- A. Mix Design: As specified in ACI 301 for each type of concrete required, use laboratory trial batch or field experience methods.
 - 1. Submit mix designs for the following:
 - a. Stairs and Sidewalks
 - b. Tunnel Lids
 - 2. Mix Design Proposal: Submit 7 days in advance of production to avoid delay in Work, do not begin concrete production prior to Engineer's review.
- B. Proportion mixtures to provide normal-weight concrete with the following properties:
 - 1. Sidewalks:
 - a. Compressive Strength (28 Days): 4,000 psi.
 - b. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45.
 - c. Slump Limit: 4 inches without Water-Reducing Admixtures; [5 inches with Water-Reducing Admixtures].
 - i. Slump Limit for Concrete Containing High-Range Water-Reducing Admixture: When a high-range water-reducing admixture is used, the maximum limit may be increased an additional 2 inches.
 - 2. Tunnel Slab:
 - a. Compressive Strength (28 Days): 5,000 psi.
 - b. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.40.
 - c. Slump Limit: 4 inches without Water-Reducing Admixtures; [5 inches with Water-Reducing Admixtures].
 - i. Slump Limit for Concrete Containing High-Range Water-Reducing Admixture: When a high-range water-reducing admixture is used, the maximum limit may be increased an additional 2 inches.
- C. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content of 5 to 7 percent.
- D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

- E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
- F. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements as follows:
 - 1. Fly Ash or Pozzolans: 25 percent.
 - 2. Ground Granulated Blast-Furnace Slag: 50 percent.
 - 3. Combined Fly Ash or Pozzolans, and Ground Granulated Blast-Furnace Slag: 50 percent, with fly ash or Pozzolans not exceeding 25 percent.
- G. Transit Mixed Concrete: Maximum time from batching to placement shall be 90 minutes; conform to ASTM C 94.
 - 1. Do not add water after leaving the concrete plant.
 - 2. Re-tampering of concrete at site is not permitted.
- H. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; Acceptable to Engineer and at no change in Contract amount.
 - 1. Submit laboratory test data for revised mix design and strength results for approval before using in work.

2.5 SOURCE QUALITY CONTROL

- A. Concrete Testing Service: Engage a testing laboratory acceptable to Engineer to perform material evaluation tests and design concrete mixes.
- B. Admixture manufacturer shall provide a knowledgeable representative trained as a concrete technician and acceptable to the Engineer to assist in proportioning concrete materials for optimal results, and advise on proper admixture use and mix adjustment to meet Project conditions, at no change in contract amount.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Prior to placing concrete inspect placement of reinforcing, verify that formwork is ready to receive concrete, and that items to be cast-in and embedded are in place. Coordinate the Work of other trades to permit setting and installation of their Work.

3.2 CONCRETE PLACEMENT

- A. Placing Concrete: Convey and deposit to ensure a continuous flow at delivery without separation of materials, limit drops to 60 inches for unexposed work and 36 inches for exposed work. Maintain reinforcing in proper position during placing.
 - 1. In Forms: Horizontal layers up to 24 inches deep, place each layer while preceding layer is still

- plastic, avoid cold joints between layers.
2. Slabs: Place and consolidate in a continuous operation to limits of construction joints and to elevation indicated; Surfaces smooth, level, free of humps, and hollows, for finish specified.
- B. Consolidation: During placing by mechanical vibrating equipment, provide even dense surfaces, prevent honeycomb, rock pockets and voids.
1. Do not use vibrator to transport concrete inside forms. Place at regular intervals within machine's visible effective range.
 2. Rapidly penetrate placed layer and at least 6-inches into preceding layer. Do not insert vibrator into lower layers of concrete that have begun to set.
 3. For exposed concrete keep vibrator on the unexposed side of reinforcing steel, or 2.5 inches away from form surface.
- C. Cold Weather Placing: Comply with ACI 306 and Section 5 of ACI 301. At ambient temperature below 40-degrees F, uniformly heat water and aggregates before mixing, provide a mixture temperature conforming to Table 1.4.1 of ACI 306. Maintain protection for minimum times as noted in Table 1.4.2 of ACI 306.
1. Do not use frozen materials, nor material containing ice. Do not place concrete on frozen subgrade.
- D. Hot Weather Placing: Comply with ACI 305. Cool water and aggregates before mixing, maintain concrete temperature at time of placement below 90 degrees F. Cool reinforcing with wet burlap, keep steel temperature at or below ambient air temperature until embedment in concrete.
1. Use specified water reducer to control concrete temperature rise during adverse placing conditions.
- E. Curing: Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Begin final curing immediately following initial curing and before concrete has dried, and continue for seven days. Conform to ACI 308 and the following.
1. Moist Cure: Prevent drying of concrete, keep formwork and concrete continuously wet with water by flooding, fog spray or saturated absorptive cover.
 - a. Absorptive Cover: Place contiguously over concrete surfaces in widest widths practical, with edges lapped 4 inches.
 2. Moisture Retaining Cover: Place contiguously over concrete surfaces in widest widths practical, with edges lapped 4 inches and sealed with tape. Repair holes as they occur throughout curing period.
 3. Membrane Curing Compound: Apply to optimize retention of water-of-hydration to ensure thorough cure for high quality concrete.
 - a. Application: Within one hour of completion of final finishing operation. Maintain continuity of coating throughout curing period, recoat areas subject to heavy rainfall within three hours of initial application.

3.3 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right

angles to centerline, unless otherwise indicated.

- B. Construction Joints: Set construction joints at side and end terminations of concrete.
 - 1. Continue steel reinforcement across construction joints, unless otherwise indicated.
 - 2. Doweled Expansion Joints: Install dowel bars and support assemblies at expansion joints in concrete indicated on the Drawings. Lubricate, asphalt-coat, or provide proprietary plastic sleeve per manufacturer's directions, on one-half of dowel length to prevent concrete bonding to one side of joint.
 - 3. Doweled Joints: Install dowel bars where new concrete meets existing concrete. Drill and epoxy one-half of bar into existing concrete. Lubricate, asphalt-coat, or provide proprietary plastic sleeve per manufacturer's directions, on the half of dowel length embedded in new concrete to prevent concrete bonding to that side of joint.
- C. Expansion Joints: Form expansion/isolation joints of 1/2" preformed joint-filler strips abutting catch basins, manholes, inlets, light pole bases, structures, walks, other fixed objects, and where indicated on the Drawings.
 - 1. Doweled Expansion Joints: Install dowel bars and support assemblies at joints where indicated on the Drawings. Lubricate, asphalt coat, or provide proprietary plastic sleeve per manufacturer's directions on one-half of dowel length to prevent concrete bonding to one side of joint.
 - 2. Locate expansion joints at intervals of 20 feet maximum, unless otherwise indicated on the Drawings.
- D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated on the Drawings. Construct contraction joints for a depth equal to at least 1/4 of the concrete thickness, at intervals of 10 feet maximum, unless otherwise indicated on the Drawings, and as follows:
 - 1. Score Joints: Form score joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4 inch radius. Repeat grooving of score joints after applying surface finishes. Eliminate groover marks on concrete surfaces.
- E. Joints in Curbs: Space contraction joints in curbs and gutters at minimum 5-foot intervals with isolation joints at minimum 15-foot intervals or as shown on the Drawings. Isolation joints shall be struck vertically and full depth. Align joints in concrete curbs with joints in finish paving.
- F. Edging: Tool exposed edges of ramps, sidewalks, walkways and joints in concrete after initial floating with an edging tool to a 1/2 inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.4 FINISHING

- A. Formed Surfaces: As specified herein, and as defined in the referenced subsections of ACI 301 Chapter 5, apply at following locations.
 - 1. Rough Form Finish: 5.3.3.3.a; surfaces concealed by other construction, unless otherwise indicated.
 - 2. Smooth Form Finish: 5.3.3.4.a; surfaces with directly applied waterproofing, finish coatings, and coverings.

3. Grout Cleaned Finish: 5.3.3.4.b; exterior concrete stem wall surfaces exposed to view.
4. Adjacent Unformed Surfaces: 5.3.3.5
5. Cure: Moist cure.

B. Tunnel Lids, Stairs, and Sidewalks:

1. Broom Finish: 5.3.4.2.d; ramps and elsewhere as indicated, provide a 4 inch smooth margin at all edges and joints. Coordinate final finish with Engineer before application.
2. Cure: Contractor option using one of three methods specified.

3.5 MISCELLANEOUS CONCRETE ITEMS

- A. Filling-In: Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place and cure concrete as specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.
- B. Curbs: Monolithic finish, strip forms while concrete is still green, and steel-trowel to a hard, dense finish, radius corners, intersections and terminations one inch.
- C. Wash-Down of Concrete Supply Trucks and Related Equipment: Not permitted on Site except where Contractor demonstrates acceptable means for collection and containment of effluent for return to ready-mix plant by supply vehicle.

3.6 TOLERANCES

- A. Compliance With Tolerances: Determined after placement. Concrete that does not conform to tolerances will be determined to be non-compliant. The Contractor shall correct concrete work to eliminate defects and variations exceeding specified tolerances.
 1. General Tolerances : ACI 117 Section 4 except as otherwise required.
- B. Tunnel Lids and Sidewalks: Levelness requirements do not apply where sloped surface is required. Correct surfaces that do not conform to tolerance limitations shall be removed and replaced.
 1. Flatness and Level : ACI 117; Flat per Section 4.5.6 and ASTM E 1155.

3.7 REPAIRS AND PROTECTION

- A. Remove and replace concrete that is broken, damaged, or defective or that does not comply with requirements in this Section in complete sections from joint to joint, unless otherwise approved by Engineer at no additional cost to the Owner.
- B. Protect concrete from damage.
- C. Maintain concrete free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.
- D. Protect concrete from premature drying, temperature extremes, and mechanical injury. Comply

with Section 5.3.6.4 of ACI 301.

3.8 CLEANING

- A. Remove all excess material, debris, and equipment from site upon completion of work in this Section. Keep work area clean and in an orderly condition during the course of the Work.
- B. Do not dispose of waste concrete or wash out materials on the site unless otherwise directed by the Owner's Representative. Areas to be paved may be acceptable for concrete truck wash areas only as approved by the Owner's Representative.

3.9 FIELD QUALITY CONTROL

- A. The Owner will employ a testing laboratory to perform tests and to submit test reports.
- B. Sampling and testing for quality control during placement of concrete may include the following, as directed by Engineer.
 - 1. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.
 - 2. Slump: ASTM C 143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
 - 3. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231 pressure method for normal weight concrete; one for each day's pour of each type of air-entrained concrete.
 - 4. Concrete Temperature: Test hourly when air temperature is 40-degrees F and below, and when 80-degrees F and above; and each time a set of compression test specimens made.
 - 5. Compression Test Specimen: ASTM C 31; one set of 5 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.
 - 6. Compressive Strength Tests: ASTM C 39; one set for each 30-cubic yards or fraction thereof of each concrete class placed in any one day; one specimen tested at 7-days, three specimen tested at 28-days, and one specimen retained in reserve for later testing if required.
 - a. When total quantity of a given class of concrete is less than 10-cubic yards, strength tests may be waived by Engineer if, in his judgment, adequate evidence of satisfactory strength is provided.
 - b. When frequency of testing will provide less than 5 strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.
 - c. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive by more than 500 psi.
- C. Test results will be reported in writing to Engineer and Contractor within 24-hours that tests are made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28-days, concrete mix

proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day tests.

D. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.

E. Additional Tests:

1. The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Engineer.
2. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.
3. Contractor shall pay for such tests conducted, and any other additional testing as may be required; when unacceptable concrete is verified.

END OF SECTION

STEEL DECKING

05310

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Composite steel deck.
- B. Related Sections include the following:
 - 1. Division 03 "Cast-In-Place Concrete" for concrete fill.
 - 2. Division 05 Section "Metal Fabrications" for framing deck openings with miscellaneous steel shapes.

1.3 SUBMITTALS

- A. Product Data: For each type of deck, accessory, and product indicated.
- B. Shop Drawings: Show layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.
- C. Design calculations for each condition of use. Live load considered shall be the worst effect of a 24,000 pound axle load (12,000 pound wheel load) or uniform loading of 300 pounds per square foot. Distribute axle/wheel load in accordance with the most current IBC or AASHTO design specifications.
- D. Product Certificates: For each type of steel deck, signed by product manufacturer.
- E. Welding certificates.
- F. Field quality-control test and inspection reports.
- G. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that each of the following complies with requirements:
 - 1. Power-actuated mechanical fasteners.
 - 2. Acoustical roof deck.
 - 3. Screw fasteners.
- H. Research/Evaluation Reports: For steel deck.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Member in good standing of Steel Deck Institute (SDI).
 - 2. ISO 9001:2000 accredited by ANSI Registrar Accreditation Board (ANSI-RAB).
- B. Testing Agency Qualifications: An independent agency qualified according to ASTM E 329 for testing indicated.
- C. Welding: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."
- D. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of Steel Deck Institute - "Manual of Construction with Steel Deck" (SDI - MOC2).
- B. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.
- C. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.
 - 1. Protect and ventilate acoustical cellular roof deck with factory-installed insulation to maintain insulation free of moisture.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Steel Deck:
 - a. ASC Profiles, Inc.
 - b. Canam Steel Corp.;The Canam Manac Group.
 - c. Consolidated Systems, Inc.
 - d. DACS, Inc.
 - e. D-Mac Industries Inc.
 - f. Epic Metals Corporation.

- g. Marlyn Steel Decks, Inc.
- h. New Millennium Building Systems, LLC.
- i. Nucor Corp.; Vulcraft Division.
- j. Roof Deck, Inc.
- k. United Steel Deck, Inc.
- l. Valley Joist; Division of EBSCO Industries, Inc.
- m. Verco Manufacturing Co.
- n. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.

2.2 COMPOSITE STEEL DECK

- A. Composite Steel Deck: Fabricate panels, with integrally embossed or raised pattern ribs and nestible, interlocking, self-aligning with concealed fasteners, or full-depth positive registering side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 30, with the minimum section properties indicated, and with the following:
 - 1. Galvanized and Shop-Primed Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G90 zinc coating; cleaned, pretreated, and painted in accordance with the manufacturer's requirements.
 - 2. Profile Depth and Uncoated-Steel Thickness: Depth and thickness shall be as required for structural capacity for the conditions noted on plan. Minimum profile depth to be 2-inch, minimum thickness to be 0.0358-inch
 - 3. Span Condition: Simple span.

2.3 ACCESSORIES

- A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
- B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.
- C. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.
- D. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi (230 MPa), not less than 0.0358-inch (0.91-mm) design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.
- E. Pour Stops and Girder Fillers: Galvanized G-60 (Z180) minimum steel sheet, minimum yield strength of 33,000 psi (230 MPa), of thickness and profile recommended by SDI Publication No. 30 for overhang and slab depth.
- F. Column Closures, End Closures, Z-Closures, and Cover Plates: Galvanized G-60 (Z180) minimum steel sheet, of same thickness as deck, unless otherwise indicated.
- G. Piercing Hanger Tabs: Piercing steel sheet hanger attachment devices for use with steel deck.
- H. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, [0.0598 inch (1.52 mm)] [0.0747 inch (1.90 mm)] thick, with factory-punched hole of 3/8-inch (9.5-mm) minimum diameter.

- I. Galvanizing Repair Paint: ASTM A 780
- J. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.

3.2 INSTALLATION, GENERAL

- A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 30, manufacturer's written instructions, and requirements in this Section.
- B. Install temporary shoring before placing deck panels, if required to meet deflection limitations.
- C. Locate deck bundles to prevent overloading of supporting members.
- D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.
 - 1. Align cellular deck panels over full length of cell runs and align cells at ends of abutting panels.
- E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
- F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
- G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.
- H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
- I. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

3.3 DECK INSTALLATION

- A. Fasten deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated and as follows:
 - 1. Weld Diameter: 5/8 inch (16 mm), nominal.

2. Weld Spacing: Weld edge ribs of panels at each support. Space additional welds an average of 12 inches (305 mm) apart, but not more than 18 inches (457 mm) apart.
 3. Weld Spacing: Space and locate welds as indicated.
 4. Weld Washers: Install weld washers at each weld location.
- B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of half of the span or 24 inches (910 mm), and as follows:
1. Fasten with a minimum of 1-1/2-inch- (38-mm-) long welds.
- C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 3-inches, with end joints as follows:
1. End Joints: Lapped.
- D. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations, unless otherwise indicated.
- E. Steel-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Field welds will be subject to inspection.
- C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.
- D. Remove and replace work that does not comply with specified requirements.
- E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.5 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.
 1. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.
 2. Wire brushing, cleaning, and repair painting of bottom deck surfaces are included in Division 09 Section "<Insert title of applicable field-painting Section>."

- C. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION

METAL FABRICATIONS

SECTION 05500

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes metal fabrications not part of structural steel or other metal systems specified elsewhere, as indicated and scheduled.

1.2 SUBMITTALS

- A. Product Data: Manufacturer's specifications, and installation instructions for products used in Work of this Section.
- B. Shop Drawings: Plans, elevations, structural calculations, field measurements, and details of sections, anchorages and accessories.
 - 1. Engineer's Stamp: Required on shop drawings and calculations.
 - 2. Templates: Provide for installation of anchors and bolts.
- C. Certificate of welding operator qualification.

1.3 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Engineer: Licensed professional in State where project is located.
 - 2. Welding Process and Operator: AWS D1.1, D1.2, and D1.3, AWS Code for manual shielded metal-arc welding, and remedial work.
- B. Certify welding operators have passed AWS qualification tests.

1.4 PROJECT CONDITIONS

- A. Field Measurements: Made prior to preparation of shop drawings, verify dimensions indicated, coordinate fabrication and construction schedules to avoid delay.

1.5 SEQUENCING AND SCHEDULING

- A. Prevent delays, coordinate with other trades delivery and installation of anchors, inserts, and finished Work. Provide setting drawings, templates, and instructions for installation of items built into other assemblies.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Steel: Smooth, free of surface blemishes, pitting, seam marks, roller marks, and rolled trade names, Class, Grade, coatings and finish as indicated, unless otherwise required. Comply with the following.
 - 1. Plates, Shapes and Bars: ASTM A 36.
 - 2. Structural Sheet: Hot-rolled, ASTM A 1011; cold-rolled ASTM A 1008, Grade A.

3. Pipe: ASTM A53
 4. Wire: ASTM A 510.
- B. Concrete and Grout: As specified in Section 03300.
- C. Fasteners: Type, grade and class required, same metal as material fastened, except provide stainless steel fasteners for aluminum connections. Provide ASTM B 633 Class Fe/Zn 5 fasteners for exterior use, and fasteners in exterior walls except where stainless steel is required.
1. Steel Bolts and Nuts: ASTM A 307, Grade A, hexagon head, ASTM A 563.
 2. Lag Bolts: ASME B18.2.1.
 3. Machine Screws: ASME B18.6.3
 4. Anchor Bolts: ASTM F 1554, Grade 36, galvanized where required.
 5. Threaded and Wedge Type Concrete Anchors: ASTM A 47 malleable iron, ASTM A 27 cast steel with bolts, washers, and shims as necessary; hot-dip galvanized all components per ASTM A 153.
 6. Expansion Anchors: Exterior applications provide ASTM F 593 stainless steel bolts and ASTM F 594 stainless steel nuts.
 7. Plain Washers: ASME 18.22.1, carbon steel, round.
 8. Lock Washers: ASME B18.21.1, carbon steel, helical spring.

2.2 FABRICATION

- A. Shop Assembly: Required, minimize field assembly, disassemble only as necessary due to limitations of shipping and handling; mark units for reassembly and installation.
- B. Material Size and Thickness: As indicated, and required for strength and durability in finished product for use intended. Use structural steel shapes, plates and bars, unless otherwise required.
- C. Form Work true to line and level with accurate angles and surfaces and straight sharp edges.
- D. Radius exposed edges approximately 1/32 inch unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- E. Weld corners, joints, and seams continuously. Comply with AWS standards. Grind exposed welds smooth, and flush; match adjoining surfaces.
- F. Exposed Connections: Welded to greatest extent possible, otherwise, use concealed fasteners, and provide hairline joints, flush and smooth.
 1. Where exposed fasteners must be used and are approved, use phillips flat-head (countersunk) screws, unless otherwise indicated.
 2. Joints Exposed to Weather: Resistant to intrusion of water, weep locations where water could accumulate.
- G. Provide brackets, flanges, fittings, and anchors of type and spacing required, and as necessary; coordinate with supporting structure. Furnish inserts to be installed in concrete.

1. Sleeves For Work Set in Concrete: Galvanized steel pipe or tube, 6 inches long and 0.5 inch ID oversize; hold top of sleeve 0.5 inch below concrete surface, close bottom with 1 inch oversized plate.
 2. Cut, reinforce, drill and tap metal fabrications for penetrations, and to receive hardware, anchors, and attachments.
- H. Rough Hardware: Custom fabricated miscellaneous steel and iron shapes, bolts, plates anchors, hangers, and dowels; provide as indicated.
1. Washers: Malleable-iron for connections bearing on structural wood.
- I. Loose Bearing and Leveling Plates: Flat, thickness, bearing, and anchorage required, for steel items bearing on masonry, and concrete.

2.3 FINISHING

- A. Galvanizing: Required after fabrication for exposed assemblies, such as shelf angles and similar supports, items in contact with concrete as indicated. Coating thickness shall be 3.0 oz/square foot.
1. Iron and Steel Hardware: ASTM A 153.
 2. Steel Shapes, and Assembled Products: ASTM A 123.
 3. Structural Steel: ASTM A 123.
 4. Steel Pipes: ASTM A 123.
 5. Steel Sheet: ASTM A 653 G90 or equivalent.
- B. Shop Painting: Provide for items exposed to view in completed work, complying with SSPC-PAL Specification 1.
1. Surface Preparation: Galvanized components, provide pre-treatment for painting.
 2. Galvanizing Repair Paint: SSPC-Paint-20.

2.4 ACCESS HATCH

- A. Exterior type waterproof, aluminum 6061 T6, double-leaf over 3 feet in width and single-leaf 3 feet and under in width. Where traffic loads are not required the design live load shall be 300 pounds per square foot.
- B. Component Fabrication
1. Access Door Leaf(s): 1/4" minimum diamond pattern plate with reinforcing on underside
 2. Channel Frame: 3/8-inch with full anchor flange around perimeter.
 3. Equip door(s) with heavy forged brass or stainless steel hinges with stainless steel pins. Provide flush steel drop handle.
 4. Hinges: Through-bolt to cover with tamper-proof stainless steel bolts or "lock bolts" to resist vandalism, and through-bolted to frame with stainless steel bolts and fiber locknuts.
 5. Equip doors with fully enclosed and lubricated compression springs with lower enclosing telescopic tube locked into supporting "boot" firmly attached to frame to

retard downward motion of door leaves or corrosion-resistant stainless steel gas springs designed to limit to 17 pounds the lifting force required to open.

6. Equip doors with hold-open arm with positive locking device with conveniently positioned release handle for easy and controlled closing.
7. Furnish stainless steel snap lock mounted on bottom of leaf with removable topside handle and socket recessed in cover and provided with threaded plug for flush surface with handle removed.
8. Locate 1½-inch drainage coupling in one corner of channel frame.
9. Hardware: AISI Type 304 stainless steel.
10. Equip with recessed hasp for padlock that is covered by a hinged lid flush with the surface.
11. All access hatches shall be provided with underlying fiberglass safety grates to allow inspection of the vault while providing fall-through protection. Safety grates shall be designed to withstand a live load of 300 lb/ft² with a maximum deflection of 1/150 of the span. Grates shall be provided with a hinging system that will lock the grate in the 90° open position. Each grate shall be provided with an open arm with red vinyl grip. Safety grates shall be safety orange.

C. Manufacturers

1. Bilco Co., New Haven, CT.
2. USF Fabrication, Hialeah, Florida.
3. Thompson Fabricating Co., Birmingham, AL.
4. Or Equal.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Installer shall examine conditions for installation of Work, and notify Contractor of conditions detrimental to proper and timely completion. Do not proceed until unsatisfactory conditions are corrected. Start of installation interpreted as installer's acceptance of conditions.
 1. Coordinate work of this Section with field conditions to ensure proper fit with actual constructed assemblies. Provide clearances necessary for proper operation of moving parts and equipment and as necessary for servicing and maintenance of adjacent work.

3.2 INSTALLATION

- A. Set Work accurately in location, and elevation; align, plumb, level, true and free of rack, measured from established lines and levels. Cut, drill, and fit as necessary for required installation. Brace, support, and anchor Work during installation as necessary.
- B. Align connections accurately, form tight hairline joints. Unless otherwise required, weld connections which could not be shop welded due to shipping limitations. Grind exposed joints smooth and touch-up shop finish. Do not weld, cut or abrade units intended for bolted, and screwed field connections.

- C. Permanently secure work to in-place construction, use lead expansion shields for anchors in concrete walls. Provide flanges, collars, and sleeves to conceal joints, and as permanent obstructions.
- D. Install Work in accordance with product manufacturer's recommendations unless otherwise indicated. Fit rails, guards, and gratings around building structure, mechanical systems, and permanent obstructions.
- E. Grouting: Place in accordance with manufacturer's instructions. Remove bond-reducing contaminants from bearing surfaces, and roughen to improve bond. Support loose plates on wedges, or shims cut-off flush with plate edge before grouting. Pack grout solidly into annular spaces, and between bearing surfaces, ensure that no voids remain.
- F. Repair of Shop Applied Coatings: Immediately after erection, prepare field welds, and damaged areas of shop applied coatings, and recoat with material originally used.

END OF SECTION

SELF-ADHERING SHEET WATERPROOFING

SECTION 07131

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: This Section specifies the following.

1. Rubberized-asphalt sheet waterproofing.
2. HDPE sheet waterproofing.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Section 01330 - Submittals
2. Section 03330 – Cast-in-Place Concrete

1.2 PERFORMANCE REQUIREMENTS

A. Provide waterproofing that prevents the passage of water.

1.3 SUBMITTALS

A. Product Data: Include manufacturer's written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties of waterproofing.

B. Shop Drawings: Show locations and extent of waterproofing. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

C. Samples: For the following products:

1. 12-by-12-inch square of waterproofing and flashing sheet.
2. 12-by-12-inch square of insulation.
3. 4-by-4-inch square of drainage panel.

D. Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.

E. Qualification Data: For Installer and for Testing and Inspection Agency.

F. Product Test Reports: From a qualified independent testing agency indicating and interpreting test results of waterproofing for compliance with requirements, based on comprehensive testing of current waterproofing formulations.

G. Test Reports: From Testing and Inspection Agency.

H. Sample Warranty: Copy of special waterproofing manufacturer's and Installer's warranty stating obligations, remedies, limitations, and exclusions before starting waterproofing.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who is acceptable to waterproofing manufacturer to install manufacturer's products.
- B. Qualifications of Testing and Inspection Agency: Experienced testing and inspection agency acceptable to the Authority.
- C. Source Limitations: Obtain waterproofing materials, protection course, and molded-sheet drainage panels through one source from a single manufacturer.
- D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1. Review requirements for waterproofing, including surface preparation specified under other Sections, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details and sheet flashings, installation procedures, testing and inspection procedures, and protection and repairs.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver liquid materials to Project site in original packages with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by waterproofing manufacturer.
- C. Remove and replace liquid materials that cannot be applied within their stated shelf life.
- D. Store rolls according to manufacturer's written instructions.
- E. Protect stored materials from direct sunlight.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended by waterproofing manufacturer. Do not apply waterproofing to a damp or wet substrate.
 - 1. Do not apply waterproofing in snow, rain, fog, or mist.
- B. Maintain adequate ventilation during preparation and application of waterproofing materials.

1.7 WARRANTY

- A. Special Manufacturer's Warranty: Written warranty, signed by waterproofing manufacturer agreeing to replace waterproofing material that does not comply with requirements or that does not remain watertight during specified warranty period.

1. Warranty does not include failure of waterproofing due to failure of substrate prepared and treated according to requirements or formation of new joints and cracks in substrate exceeding 1/16 inch in width.
2. Warranty Period: Five years after date of Substantial Completion.
3. Warranty includes removing and reinstalling protection board, drainage panels, and overburden materials.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Rubberized-Asphalt or HDPE Sheet Waterproofing:
 - a. American Hydrotech, Inc.; VM 75.
 - b. Carlisle Corporation, Carlisle Coatings & Waterproofing Div.; CCW 701.
 - c. Cetco; Envirosheet.
 - d. W. R. Grace & Co.; Bituthene.
 - e. W. R. Grace & Co.; Preprufe 160 for vertical surfaces and Preprufe 300 for horizontal surfaces.
 - f. W. R. Meadows, Inc.; Mel-Rol.

2.2 RUBBERIZED-ASPHALT SHEET WATERPROOFING

A. Rubberized-Asphalt Sheet: 60-mil-thick, self-adhering sheet consisting of 56 mils of rubberized asphalt laminated to a 4-mil-thick, polyethylene film with release liner on adhesive side.

1. Physical Properties: As follows, measured per standard test methods referenced:
 - a. Tensile Strength: 250 psi minimum; ASTM D 412, Die C, modified.
 - b. Ultimate Elongation: 300 percent minimum; ASTM D 412, Die C, modified.
 - c. Low-Temperature Flexibility: Pass at minus 20 deg F ASTM D 1970.
 - d. Crack Cycling: Unaffected after 100 cycles of 1/8-inch (movement; ASTM C 836.
 - e. Puncture Resistance: 40 lbf minimum; ASTM E 154.
 - f. Hydrostatic-Head Resistance: 150 feet (minimum; ASTM D 5385.
 - g. Water Absorption: 0.15 percent weight-gain maximum after 48-hour immersion at 70 deg F; ASTM D 570.
 - h. Vapor Permeance: 0.05 perms; ASTM E 96, Water Method.

2.3 HDPE SHEET WATERPROOFING

A. HDPE Sheet for Vertical Applications: 42-mil-thick, uniform, flexible sheets consisting of 16-mil-thick, HDPE sheet coated with a pressure-sensitive rubber adhesive, a protective adhesive coating, and a release liner.

B. HDPE Sheet for Horizontal Applications: 56-mil-thick, uniform, flexible sheets consisting of 30-mil-thick, HDPE sheet coated with a pressure-sensitive rubber adhesive, a protective

adhesive coating, a detackifying surface treatment, an uncoated self-adhering side lap strip, and a release liner.

C. Physical Properties: As follows, measured per standard test methods referenced:

1. Tensile Strength, Film: 4000 psi minimum; ASTM D 412.
2. Low-Temperature Flexibility: Pass at minus 10 deg F; ASTM D 1970.
3. Peel Adhesion to Concrete: 5 lbf/in.; ASTM D 903, modified.
4. Lap Adhesion: 2.5 lbf/in.; ASTM D 1876, modified.
5. Hydrostatic-Head Resistance: 231 feet; ASTM D 5385, modified.
6. Vapor Permeance: 0.01 perms; ASTM E 96, Water Method.

2.4 AUXILIARY MATERIALS

A. General: Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.

1. Furnish liquid-type auxiliary materials that comply with VOC limits of authorities having jurisdiction.

B. Primer: Liquid primer recommended for substrate by manufacturer of sheet waterproofing material.

C. Surface Conditioner: Liquid, waterborne surface conditioner recommended for substrate by manufacturer of sheet waterproofing material.

D. Sheet Strips: Self-adhering, rubberized-asphalt composite sheet strips of same material and thickness as sheet waterproofing.

E. Liquid Membrane: Elastomeric, two-component liquid, cold fluid applied, trowel grade or low viscosity.

F. Substrate Patching Membrane: Low-viscosity, two-component, asphalt-modified coating.

G. Mastic, Adhesives, and Tape: Liquid mastic and adhesives, and adhesive tapes recommended by waterproofing manufacturer.

1. Detail Tape: Two-sided, pressure-sensitive, self-adhering reinforced tape, 4-1/2 inches wide, with a tack-free protective adhesive coating on one side and release film on self-adhering side.

H. Metal Termination Bars: Aluminum bars, approximately 1 by 1/8 inch thick, predrilled at 9-inch centers.

I. Protection Course: Fan-folded, extruded-polystyrene board insulation, unfaced, nominal thickness 3/8 inch.

2.5 MOLDED-SHEET DRAINAGE PANELS

A. Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel: Manufactured composite subsurface drainage panels consisting of a nonwoven, needle-punched geotextile facing with

an apparent opening size not exceeding No. 70 (0.21-mm) sieve laminated to 1 side and a polymeric film bonded to the other side of a 3-dimensional, nonbiodegradable, molded-plastic-sheet drainage core, with a vertical flow rate of 9 to 15 gpm per ft. (112 to 188 L/min. per m).

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Carlisle Sure-Drain V.
 - b. W. R. Grace Hydroduct 2 or HZ
 - c. Miradri Miradrain 6200 or 6200XL

2.6 INSULATION

A. Board Insulation: Extruded-polystyrene board insulation complying with ASTM C 578, square edged of type, density, and compressive strength indicated below:

1. For vertical applications, Type IV, 1.6-lb/cu. ft. minimum density and 25-psi minimum compressive strength.
2. For horizontal applications, pedestrian traffic, Type VII, 2.2-lb/cu. ft. minimum density and 60-psi minimum compressive strength.
3. For horizontal applications, vehicular traffic, Type V, 3-lb/cu. ft. minimum density and 100-psi minimum compressive strength.
4. Thickness: 2 inches unless indicated otherwise on the Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.

1. For rubberized-asphalt membrane, verify that concrete has cured and aged for minimum time period recommended by waterproofing manufacturer. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
2. For HDPE sheet, verify that compacted subgrade is dry, smooth, and sound, ready to receive sheet.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.

B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.

- C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
- D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids.
- E. Prepare, fill, prime, and treat joints, bugholes and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D 4258.
- F. Bridge and cover isolation joints, expansion joints and discontinuous deck-to-wall and deck-to-deck joints with overlapping sheet strips.
 - 1. Invert and loosely lay first sheet strip over center of joint. Firmly adhere second sheet strip to first and overlap to substrate.
- G. Corners: Prepare, prime, and treat inside and outside corners according to ASTM D 6135.
 - 1. Install membrane strips centered over vertical inside corners. Install 3/4-inch fillets of liquid membrane on horizontal inside corners and as follows:
 - a. At footing-to-wall intersections, extend liquid membrane each direction from corner or install membrane strip centered over corner.
 - b. At plaza deck-to-wall intersections, extend liquid membrane or sheet strips onto deck waterproofing and to finished height of sheet flashing.
- H. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through waterproofing and at drains and protrusions according to ASTM D 6135.

3.3 RUBBERIZED-ASPHALT SHEET APPLICATION

- A. Install self-adhering sheets according to waterproofing manufacturer's written instructions and recommendations in ASTM D 6135.
- B. Apply primer to substrates at required rate and allow to dry. Limit priming to areas that will be covered by sheet waterproofing in same day. Reprime areas exposed for more than 24 hours.
- C. Apply and firmly adhere sheets over area to receive waterproofing. Accurately align sheets and maintain uniform 2-1/2-inch-minimum lap widths and end laps. Overlap and seal seams and stagger end laps to ensure watertight installation.
 - 1. When ambient and substrate temperatures range between 25 and 40 deg F, install self-adhering, rubberized-asphalt sheets produced for low-temperature application. Do not use low-temperature sheets if ambient or substrate temperature is higher than 60 deg F.
- D. Horizontal Application: Apply sheets from low point to high point of decks to ensure that side laps shed water.
- E. Apply continuous sheets over sheet strips bridging substrate cracks, construction, and contraction joints.

- F. Seal exposed edges of sheets at terminations not concealed by metal counterflashings or ending in reglets with mastic or sealant.
- G. Install sheet waterproofing and auxiliary materials to tie into adjacent waterproofing as applicable.
- H. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Slit and flatten fishmouths and blisters. Patch with sheets extending 6 inches beyond repaired areas in all directions.
- I. Correct deficiencies in or remove sheet waterproofing that does not comply with requirements, repair substrates, reapply waterproofing, and repair sheet flashings.

3.4 HDPE SHEET APPLICATION

- A. Install HDPE sheets according to waterproofing manufacturer's written instructions.
- B. Vertical Applications: Install sheet membrane with HDPE face against substrate. Accurately align sheets and maintain uniform 3-inch-minimum lap widths and end laps. Overlap and seal seams and stagger and tape end laps to ensure watertight installation. Mechanically fasten to substrate.
 - 1. Securely fasten top termination of membrane with continuous metal termination bar anchored into substrate and cover with detailing tape.
- C. Horizontal Applications: Install sheet membrane with HDPE face against substrate. Accurately align sheets and maintain uniform 3-inch-minimum lap widths and end laps. Overlap and seal seams. Overlap, stagger, and seal end laps with detail tape to ensure watertight installation.
- D. Corners: Seal lapped terminations and cut edges of sheet waterproofing at inside and outside corners with detail tape.
- E. Seal penetrations through sheet waterproofing to provide watertight seal with detail tape patches or wraps and a liquid-membrane troweling.
- F. Install sheet waterproofing and auxiliary materials to produce a continuous watertight tie into adjacent waterproofing.
- G. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Tape perimeter of damaged or nonconforming area extending 6 inches beyond repaired areas in all directions. Apply a patch of sheet membrane and firmly secure with detail tape.
- H. Correct deficiencies in or remove waterproofing that does not comply with requirements, repair substrates, reapply waterproofing, and repair sheet flashings.

3.5 PROTECTION COURSE INSTALLATION

- A. For sheet membrane, install protection course within 24 hours of waterproofing application, with butted joints over waterproofing membrane before starting subsequent construction operations.

1. Drainage panels may be used in place of a separate protection course to vertical applications when approved by waterproofing manufacturer.

3.6 INSULATION INSTALLATION

- A. Install insulation drainage panels over waterproofed surfaces. Cut and fit to within 3/4 inch of projections and penetrations.
- B. On vertical surfaces, set insulation units in adhesive or tape applied according to manufacturer's written instructions.
- C. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.

3.7 FIELD QUALITY CONTROL

- A. Flood Testing: Flood test each deck area for leaks, according to recommendations in ASTM D 5957, after completing waterproofing but before overlying construction is placed. Install temporary containment assemblies, plug or dam drains, and flood with potable water.
 1. Flood to an average depth of 2-1/2 inches with a minimum depth of 1 inch and not exceeding a depth of 4 inches. Maintain 2 inches of clearance from top of sheet flashings.
 2. Flood each area for 24 hours.
 3. After flood testing, repair leaks, repeat flood tests, and make further repairs until waterproofing installation is watertight. Repair procedures shall be in strict accordance with manufacturer's recommendations.
- B. Engage an independent testing agency to observe flood testing and examine underside of decks and terminations for evidence of leaks during flood testing.

3.8 PROTECTION AND CLEANING

- A. Do not permit foot or vehicular traffic on unprotected membrane.
- B. Protect waterproofing from damage and wear during remainder of construction period.
- C. Protect installed insulation from damage due to ultraviolet light, harmful weather exposures, physical abuse, and other causes. Provide temporary coverings where insulation will be subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.
- D. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION

SNOW MELTING SYSTEM

SECTION 15770

PART 1 GENERAL

1.1 SCOPE

- A. Furnish and install tubing, manifolds, and valve boxes for a snow melting system to be connected to Owner's geothermal piping at a future date.

1.2 WARRANTY

- A. Manufacturer shall warranty the tubing for twenty (20) years, and eighteen (18) months for other parts of the system from the date of substantial completion. If products are defective the manufacturer shall repair or replace the product as necessary to provide a complete and operational system.

PART 2 PRODUCTS

2.1 GENERAL

- A. Furnish and install materials for the future connection of a snow melting system. Provide all materials as required. System shall include the system design, tubing, manifolds, pipe tie wires and valve boxes. Where indicated on the Drawings, tubing shall penetrate the existing geothermal tunnel located under the existing sidewalks. Contractor shall submit a design along with shop drawings for Owner approval. Contractor shall submit qualifications for design and installation of geothermal snow melt system. Pre-approved Contractors are Powley Plumbing Inc., Pacific Plumbers Corp., and Card Plumbing & Heating.

2.2 TUBING

- A. Tubing buried in concrete sidewalks: ASTM F876, ASTM D3350 cross-linked polyethylene with an integral oxygen diffusion barrier to reduce the potential for system corrosion. Tubing shall be 5/8". Tubing shall be rated for a pressure of 100 psi at 180°F. Tubing shall have an oxygen diffusion barrier capable of limiting oxygen diffusion through the tube to no greater than 0.10 g/m³/day @ 104°F water temperature. The minimum bend radius for cold bending of the tube shall not be less than six (6) times the outside diameter. Bends with a radius less than stated shall require the use of a bend support as supplied by the tubing manufacturer. Manufactured by Wirsbo, or approved.
- B. Tubing not in concrete sidewalks:
 - 1. General: Prefabricated piping system consisting of carrier pipe, insulation, and outer jacket.
 - 2. Carrier Piping: ASTM F876, ASTM D3350 cross-linked polyethylene, continuous length, no couplings. or ASTM D3035 high density polyethylene piping with heat fusion welded joints.
 - 3. Insulation: Spray applied, two pound per cubic foot density, polyurethane foam, two inch thickness. Closed cell content - 90-95 % in accordance with MIL-I-24172 and ASTM C- 591. Completely fill annular space between carrier pipe and jacketing.
 - 4. Outer Jacket: Polyethylene.

2.3 MANIFOLDS

- A. Manifolds shall be of cast brass construction, manufactured of alloys to prevent dezincification, and shall have integral circuit balancing valves.
- B. Manufactured by Tour & Anderson or approved equal.

2.4 FITTINGS

- A. Fittings shall be manufactured of dezincification resistant brass. These fittings must be supplied by the tube manufacturer. The fittings shall consist of a barbed insert, a compression ring, and a compression nut.

2.5 MANIFOLD BOXES

- A. Manifold boxes shall be 12" deep rectangular HDPE plastic valve box with green colored locking lid. Minimum inside dimensions shall be 15" x 21".

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that site is ready to receive tubing.

3.2 INSTALLATION

- A. Install all snow melt system components in strict accordance with manufacturer's instructions.
- B. Tubing shall be attached to woven wire fabric placed on top of the aggregate base rock (sidewalks) in accordance with manufacturer's instructions. Tubing shall be installed in a counterflow spiral layout pattern.
- C. Hydronic snow-melt tubing loops shall be installed in accordance with the manufacturer's recommendations.
- D. All fittings should be accessible for maintenance. Tubing loops shall be installed without splices, as a minimum, from the point at which the tubing enters the panel to the point at which it exits the panel.
- E. Installation shall follow the shop drawings for tubing layout, tube spacing, manifold configuration, manifold, and location. All notes on the drawing shall be followed.
- F. The tubing system shall be pressurized, with air, in accordance with applicable codes, or to a pressure of 60 psig 24 hours prior to encasement in the radiant panel. The tubing system shall remain at this pressure during the panel installation, and for a minimum of 24 hours thereafter to ensure system integrity. The contractor shall provide the air for the pressurization of the tubing system. The contractor assumes all liabilities for suitable safety precautions and testing, including the use of compressed air when applicable.

3.3 START-UP SERVICE

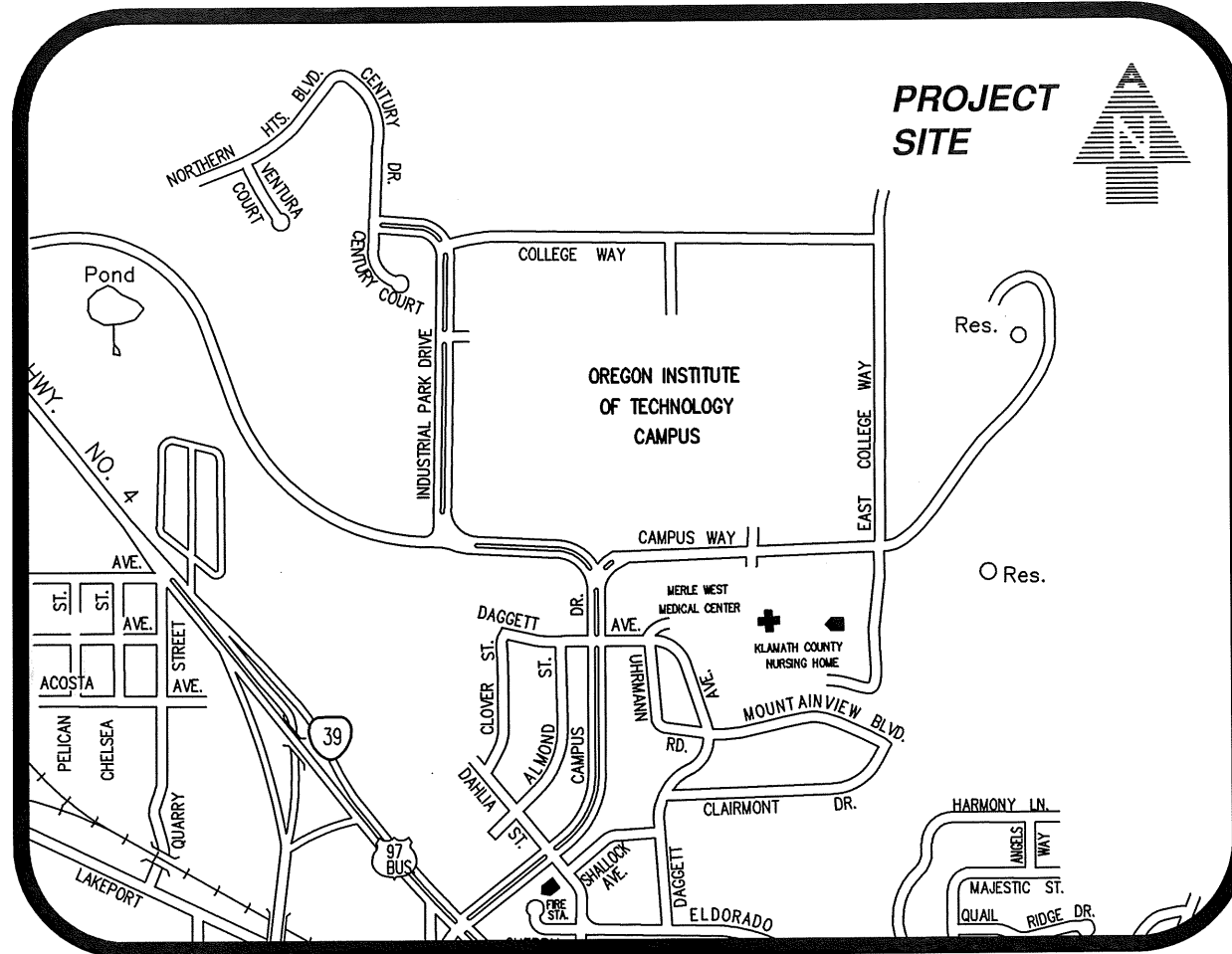
- A. A manufacturer's representative shall inspect the tubing installation and observe the testing of the tubing prior to installation of the concrete sidewalks.

END OF SECTION

TUNNEL LID REPLACEMENT PROJECT FOR OREGON INSTITUTE OF TECHNOLOGY KLAMATH FALLS, OREGON

LEGEND

EXISTING	
	SEWER MANHOLE
	STORM MANHOLE
	BUILDING EDGE/OVERHANG
	STORM - AREA DRAIN
	SIDEWALK
	STAIRS/SIDEWALK/ASPHALT TO BE REMOVED
	TREE
	SHRUB
	LANDSCAPING
	STAIRS
	CURB
PROPOSED	
	STAIRS
	SIDEWALK
	ASPHALT
	SNOWMELT MANIFOLD BOX
	SIDEWALK ELEVATION
	CURB



VICINITY MAP
N.T.S.

SHEET INDEX

SHEET CS	- COVER SHEET
SHEET C1	- KEY PLAN/SHEET INDEX
SHEET C2-2.C	- OWENS WEST TUNNEL
SHEET C3-3.B	- SNELL HALL/COLLEGE UNION TUNNEL
SHEET C4-4.A	- COLLEGE UNION (SE) TUNNEL
SHEET C5-5.A	- COLLEGE UNION (NE) TUNNEL & STAIRS
SHEET C6	- COLLEGE UNION (S) COURTYARD
SHEET C7	- CONCRETE STAIR DETAILS
SHEET C8	- CONCRETE & ASPHALT DETAILS
SHEET C9	- ADDITIVE AND ALTERNATE DETAILS

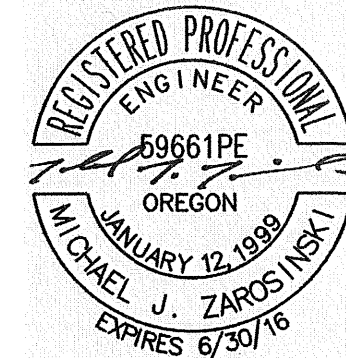
PROJECT TEAM

OWNER
OREGON INSTITUTE OF TECHNOLOGY
3201 CAMPUS DRIVE
KLAMATH FALLS, OREGON 97601
(541) 885-1600

PROJECT ENGINEER & SURVEYOR
ADKINS CONSULTING ENGINEERING, LLP
2950 SHASTA WAY
KLAMATH FALLS, OR 97603
(541) 884-4666

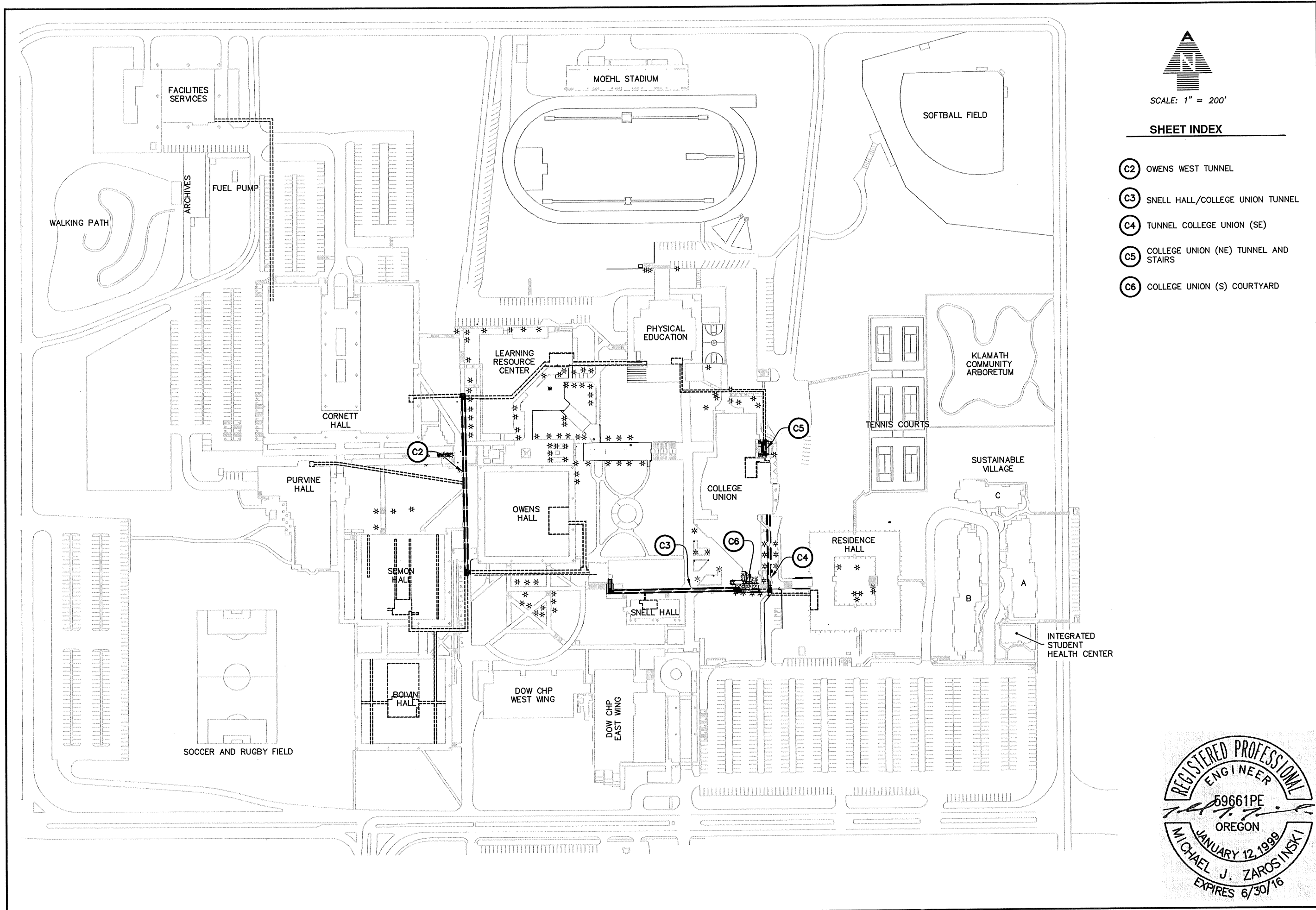
NOTES

- CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES & STRUCTURES BY ANY MEANS AVAILABLE WITHIN THE CONSTRUCTION AREA. CONTRACTOR TO COORDINATE WITH OIT FACILITIES / MAINTENANCE STAFF.
- PROJECT DIMENSIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD VERIFIED BY CONTRACTOR. MINOR ADJUSTMENTS TO WIDTHS, ETC. SHALL BE ANTICIPATED BY THE CONTRACTOR AND ARE INCIDENTAL TO THE BID ITEM WORK.
- CONTRACTOR TO CONSTRUCT ALL AREAS ADJACENT TO WORK AREA WITH COMPACTED NATIVE BACKFILL MATERIAL AND 12" OF TOPSOIL. THE CONTRACTOR SHALL PERFORM ALL SURFACE RESTORATION WORK AS REQUIRED TO PROVIDE SMOOTH TRANSITIONS FROM THE NEW SIDEWALKS AND STAIRS TO EXISTING GROUND WITH SLOPES 1V:4H OR FLATTER. SEED GRASS AREAS DISTURBED DURING CONSTRUCTION. CONTRACTOR SHALL KEEP DISTURBED AREA TO A MINIMUM.
- CONTRACTOR SHALL REPAIR UNDERGROUND IRRIGATION IF DISTURBED DURING CONSTRUCTION. THIS WORK SHALL BE CONSIDERED INCIDENTAL.
- TUNNEL AREAS EXPOSED SHALL BE SECURED DURING CONSTRUCTION TO PREVENT INTRUSION INTO TUNNEL AND BUILDING FACILITIES



TUNNEL LID REPLACEMENT PROJECT FOR OREGON INSTITUTE OF TECHNOLOGY KLAMATH FALLS, OREGON	COVER SHEET
DATE: 05-05-14 PROJECT: 1090-30 FILE: CS-C8.dwg DESIGNED BY: MJZ DRAWN BY: SJM CHECKED BY: MJZ SURVEYED BY: ACE SCALE: AS SHOWN SHEET: 1 OF 17	
CS	

HA1090-30 OIT Tunnel Lid Replacement\dwg\DWG REVISION FEB 2015\CS - C8.DWG, 4/6/2015 3:37:07 PM, Sking



SCALE: 1" = 200'

SHEET INDEX

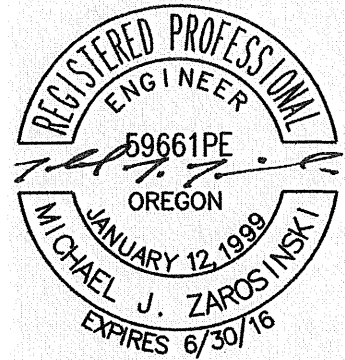
- (C2) OWENS WEST TUNNEL
- (C3) SNELL HALL/COLLEGE UNION TUNNEL
- (C4) TUNNEL COLLEGE UNION (SE)
- (C5) COLLEGE UNION (NE) TUNNEL AND STAIRS
- (C6) COLLEGE UNION (S) COURTYARD

No.	REVISION	DATE	BY

TUNNEL LID REPLACEMENT PROJECT
 FOR
OREGON INSTITUTE OF TECHNOLOGY
KLAMATH FALLS, OREGON
KEY PLAN/SHEET INDEX

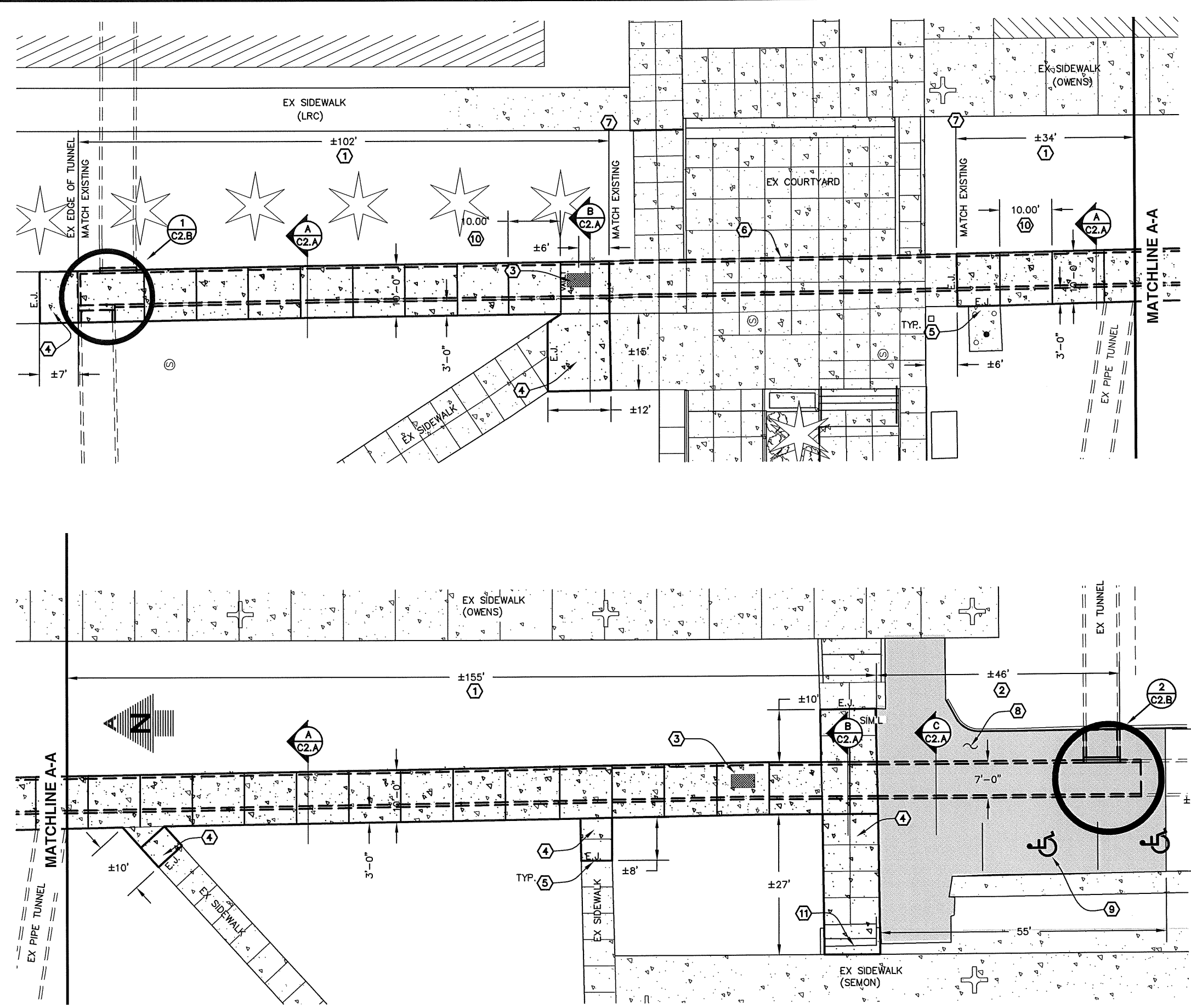
ADKINS
 CONSULTING
 ENGINEERING, LLP
2950 Sheeta Way · Klamath Falls, Oregon 97603 · (541) 884-4686 · FAX (541) 884-5335
Oregon · California
 Engineers ▲ Planners ▲ Surveyors
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DESIGNED BY:	JMM
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CHECKED BY:	MJZ
SURVEYED BY:	ACE
SCALE:	AS SHOWN
SHEET:	2 OF 17



C1

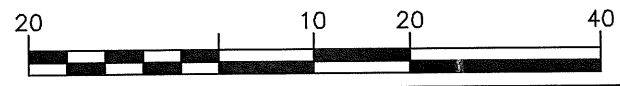
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- ### CONSTRUCTION NOTES
- ① REMOVE EXISTING SIDEWALK & REPLACE TUNNEL LID. PROVIDE 1" DEEP TRANSVERSE SAWCUT CONTRACTION JOINTS 10' O.C. SIMILAR TO 3/C8. FILL JOINTS WITH SEMI-RIGID SEALANT
 - ② SAWCUT AC AND REMOVE AND REPLACE EXISTING TUNNEL LID. PAVE WITH FULL-DEPTH ASPHALT TO MATCH EXISTING GRADES
 - ③ INSTALL ACCESS HATCH PER DETAIL 3/C2.B
 - ④ REMOVE AND REPLACE EXISTING SIDEWALK (SAWCUT AT EXISTING PANEL JOINTS). MODIFY GRADES AS NEEDED TO MATCH RAISED TUNNEL LID, 2% MAX SLOPE. SEE C8 FOR SIDEWALK CONSTRUCTION DETAILS (CONNECT TO EXISTING GEOTHERMAL SYSTEM). PROTECT EXISTING HANDRAIL IN PLACE (WHERE OCCURS).
 - ⑤ EXPANSION JOINT (E.J.) BETWEEN NEW AND EXISTING SIDEWALK PER DETAIL 3/C8.
 - ⑥ PROTECT EXISTING TUNNEL IN-PLACE
 - ⑦ CONNECT PROPOSED LID TO EXISTING WITH #5x2'-0" DOWELS @ 12" O.C. EPOXY 12" INTO EXST'G SLAB, DEVELOP 12" INTO PROPOSED (SEE C2.B FOR SIMILAR DETAIL)
 - ⑧ RE-CONSTRUCT EXISTING ASPHALT PAVEMENT WITH 3" AC OVER 8" 3/4"-0" CRUSHED ROCK OVER GEOTEXTILE OVER FIRM, UNYIELDING SUBGRADE
 - ⑨ RE-STRIPE SPACES TO EXISTING CONFIGURATION WITH 4" WHITE PAINTED STRIPE AND STANDARD HANDICAP SYMBOL
 - ⑩ TRANSITION TO MATCH EXISTING TOP OF TUNNEL LID ELEVATION (REDUCE INTERIOR TUNNEL HEIGHT 2")
 - ⑪ REMOVE AND REPLACE EXISTING STAIRS, SEE SHEET C2.C

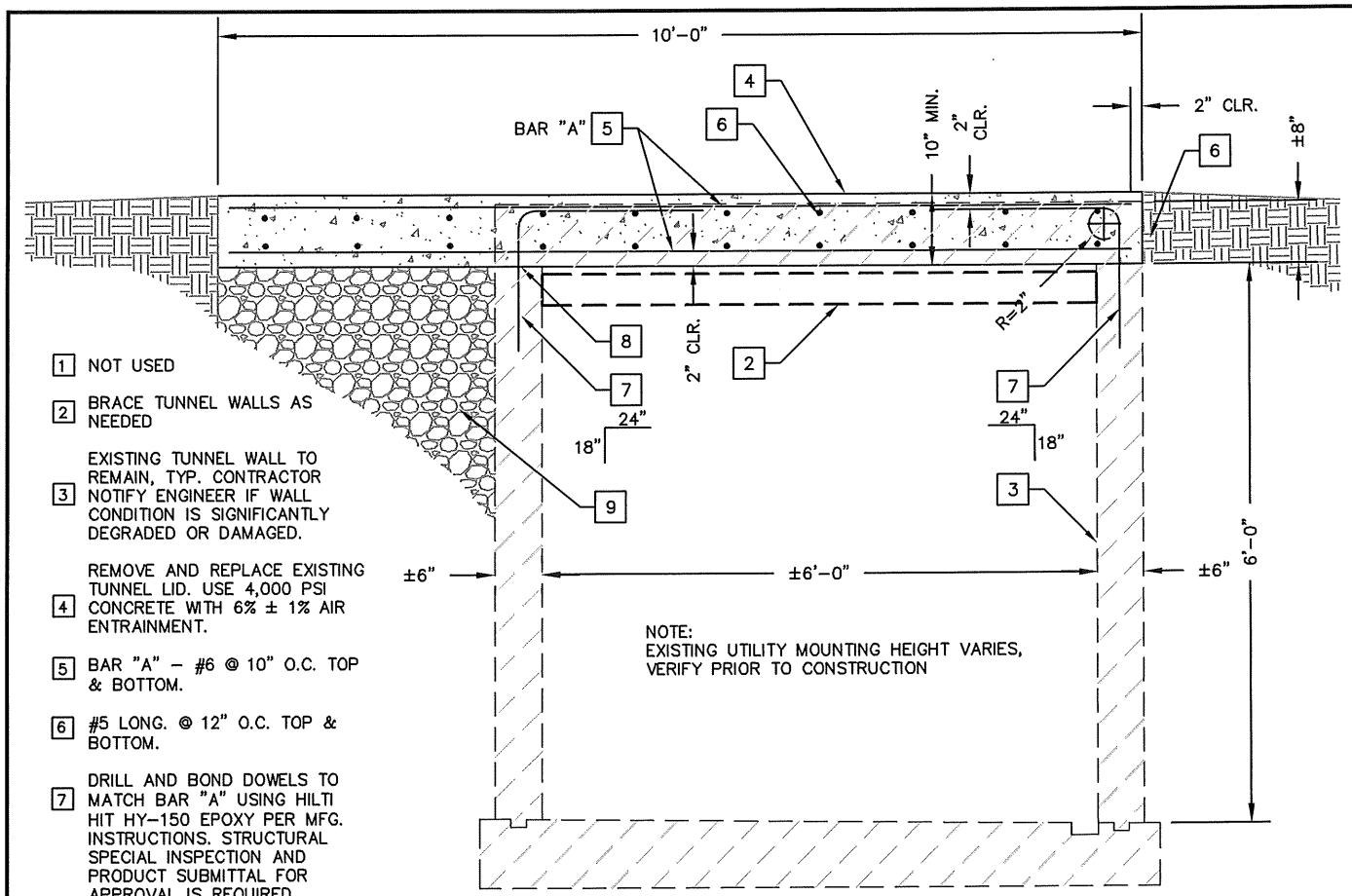
* - ELEVATION OF NEW LID ±2" HIGHER THAN EXISTING (U.N.O.). BACKFILL AND BLEND AS NEEDED TO MATCH EXISTING AND MAINTAIN EXISTING DRAINAGE PATTERNS. RE-SEED/VEGETATE TO RESTORE SURFACING TO EXISTING CONDITIONS.

OWENS WEST TUNNEL LID REPLACEMENT



<p>TUNNEL LID REPLACEMENT PROJECT FOR OREGON INSTITUTE OF TECHNOLOGY KLAMATH FALLS, OREGON</p>	<p>OWENS WEST TUNNEL PLAN</p>
<p>ADKINS CONSULTING ENGINEERING, LLP 2950 Shasta Way · Klamath Falls, Oregon 97603 · (541) 884-4666 · FAX (541) 884-5335 Oregon · California</p>	
<p>DATE: 05-05-14 PROJECT: 1090-30 FILE: CS-C8DWG DESIGNED BY: MJZ DRAWN BY: MJZ CHECKED BY: MJZ SURVEYED BY: ACE SCALE: AS SHOWN SHEET: 3 OF 17</p>	
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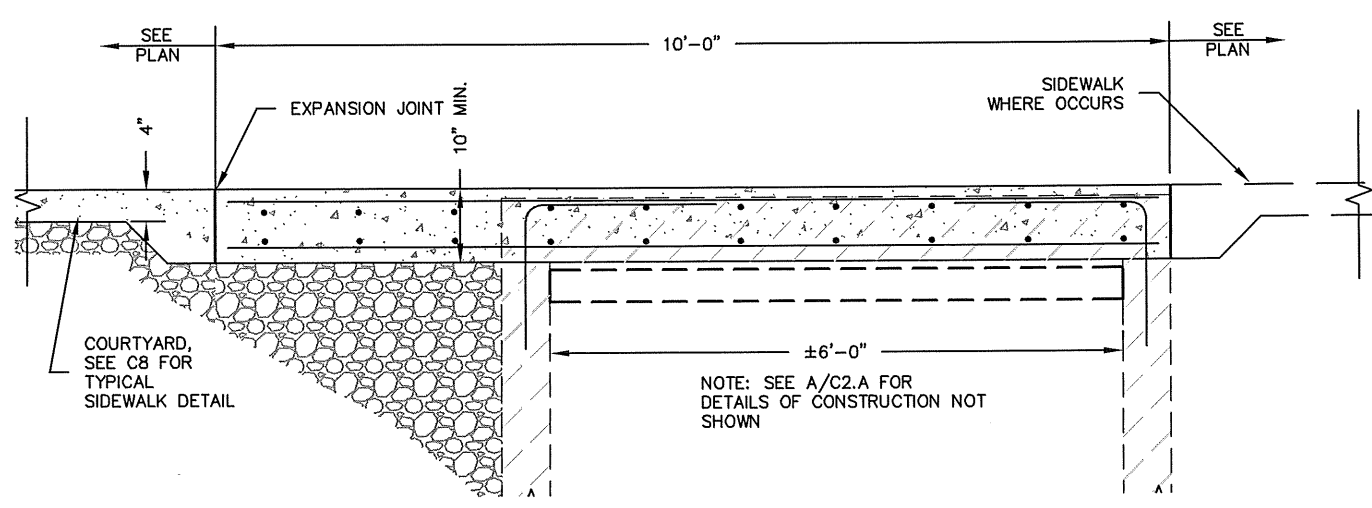
C2



- 1 NOT USED
- 2 BRACE TUNNEL WALLS AS NEEDED
- 3 EXISTING TUNNEL WALL TO REMAIN, TYP. CONTRACTOR NOTIFY ENGINEER IF WALL CONDITION IS SIGNIFICANTLY DEGRADED OR DAMAGED.
- 4 REMOVE AND REPLACE EXISTING TUNNEL LID. USE 4,000 PSI CONCRETE WITH 6% ± 1% AIR ENTRAINMENT.
- 5 BAR "A" - #6 @ 10" O.C. TOP & BOTTOM.
- 6 #5 LONG. @ 12" O.C. TOP & BOTTOM.
- 7 DRILL AND BOND DOWELS TO MATCH BAR "A" USING HILTI HIT HY-150 EPOXY PER MFG. INSTRUCTIONS. STRUCTURAL SPECIAL INSPECTION AND PRODUCT SUBMITTAL FOR APPROVAL IS REQUIRED.
- 8 3" CONTINUOUS BEAD OF HYDROPHILIC CAULK. (SUBMIT PRODUCT FOR APPROVAL PRIOR TO CONSTRUCTION), OR EXTERIOR MOISTURE PROTECTION EXTENDING 8" BOTH SIDES OF JOINT
- 9 12" OF 3/4"-0" CRUSHED ROCK COMPACTED TO 98% OF MAX DENSITY PER ASTM D698 OVER COMPACTED, UNYIELDING SUBGRADE (USE LIGHT-WEIGHT COMPACTION EQUIPMENT ADJACENT TO STRUCTURE)

NOTE:
EXISTING UTILITY MOUNTING HEIGHT VARIES,
VERIFY PRIOR TO CONSTRUCTION

A
TYPICAL TUNNEL SECTION OWENS WEST
1" = 2'



B
TUNNEL SECTION OWENS WEST @ SIDEWALK RE-CONSTRUCTION
1" = 2'

STRUCTURAL GENERAL NOTES

- DESIGN CRITERIA**
- ALL DESIGN SHALL BE IN ACCORDANCE WITH THE 2014 OREGON STRUCTURAL SPECIALTY CODE. TUNNEL LIDS DESIGNED FOR A VEHICLE LOAD OF 80,000 LB G.V.W.
 - SEISMIC DESIGN BASED ON $S_1=0.44g$ AND $S_{ds}=0.81g$ (SDC D), WIND DESIGN VELOCITY (3 SEC GUST) = 95 MPH EXPOSURE B

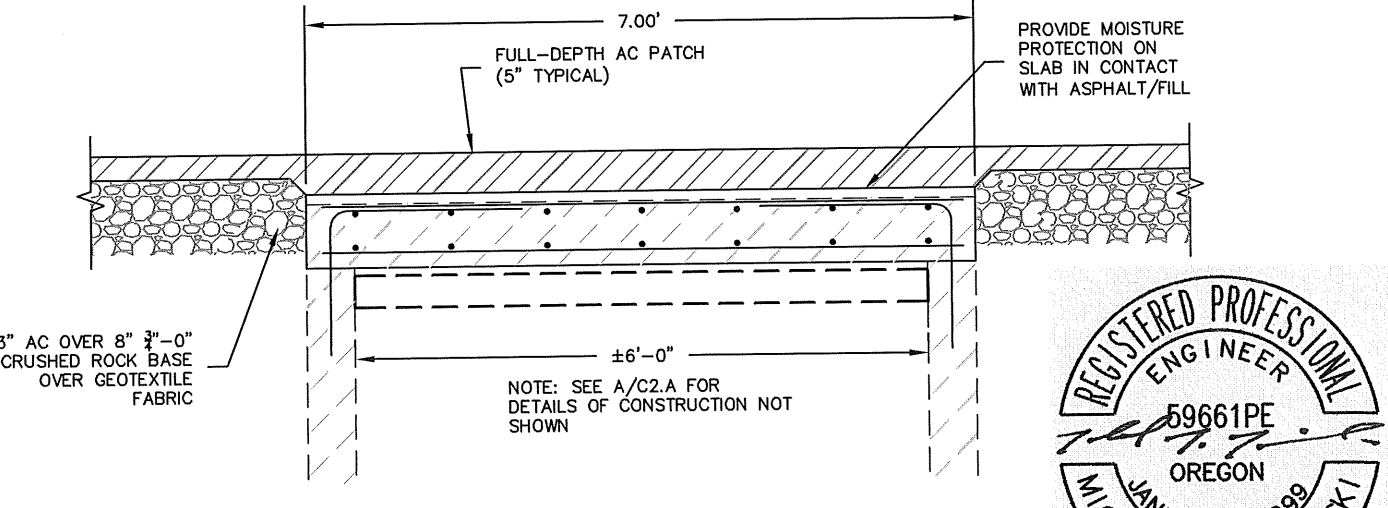
- TESTS & INSPECTIONS**
1. SPECIAL INSPECTION SHALL BE PROVIDED BY THE OWNER BASED ON THE REQUIREMENTS OF THE 2014 OREGON STRUCTURAL SPECIALTY CODE AS SUMMARIZED IN THE TABLE BELOW. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF 24 HOURS NOTICE AND ACCESS FOR THE SPECIAL INSPECTOR TO PERFORM THESE INSPECTIONS.

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>TESTS:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> FILL COMPACTION <input type="checkbox"/> REINFORCING STEEL <input checked="" type="checkbox"/> CONCRETE <input type="checkbox"/> STRUCTURAL STEEL <input type="checkbox"/> MASONRY <input type="checkbox"/> GROUT AND MORTAR <input type="checkbox"/> EPOXY & EXPANSION ANCHORS <input type="checkbox"/> SHOTCRETE | <p>INSPECTIONS:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> GRADING, EXCAVATION, AND FILLING <input type="checkbox"/> PILE/PIER INSTALLATION <input checked="" type="checkbox"/> REINFORCING STEEL <input checked="" type="checkbox"/> CONCRETE PLACEMENT <input type="checkbox"/> SPECIAL MOMENT RESISTING CONCRETE FRAME <input type="checkbox"/> STRUCTURAL WELDING <input type="checkbox"/> HIGH STRENGTH BOLTING <input type="checkbox"/> STRUCTURAL MASONRY <input checked="" type="checkbox"/> EPOXY & EXPANSION ANCHORS |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

- FOUNDATIONS**
1. FOUNDATION DESIGN WAS BASED UPON A MINIMUM ALLOWABLE SOIL BEARING PRESSURE OF 1500 PSF. CONTACT ENGINEER IF SOFT AND UNSUITABLE MATERIALS ARE ENCOUNTERED.

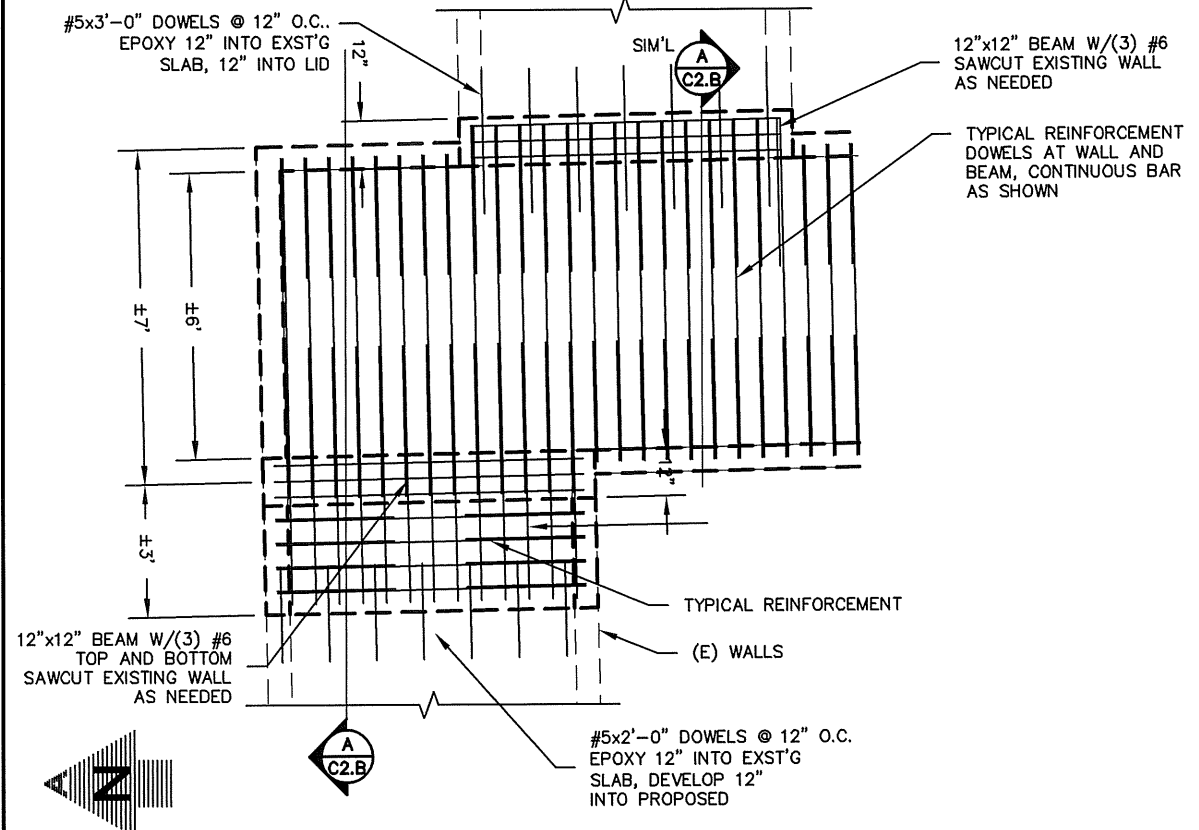
- CONCRETE**
- ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 5000 P.S.I. AT 28 DAYS. CEMENT SHALL CONFORM TO ASTM C 150 (TYPE I OR II), MAX AGGREGATE SIZE SHALL BE 3/4", MAX W/C RATIO SHALL BE 0.45, AND AIR CONTENT OF MIX SHALL BE 6%.
 - ALL SAW CUTTING SHALL BE DONE AFTER INITIAL SET HAS OCCURRED TO AVOID TEARING OR DAMAGE BY THE SAWBLADE, BUT BEFORE INITIAL SHRINKAGE HAS OCCURRED.
 - BOND NEW CONCRETE TO OLD BY ROUGHENING EXISTING SURFACE AND TREATING W/"WELD-CRETE" (O.A.E.)

- REINFORCING STEEL**
- REINFORCEMENT SHALL CONSIST OF GRADE 60 BARS, CONFORMING TO THE REQUIREMENTS OF ASTM A 615. PRIOR TO PLACEMENT, REINFORCEMENT SHALL BE FREE FROM LOOSE OR FLAKY RUST AND MILL SCALE, EXCEPT TIGHT MILL SCALE, OR ANY OTHER COATING WHICH MIGHT REDUCE THE BOND TO CONCRETE.
 - ALL REINFORCING STEEL TO BE PREHEATED OR WELDED SHALL CONFORM TO ASTM A 706 & AWS D1.4 LATEST EDITION GRADE 60 AND SHALL BE CONTINUOUSLY INSPECTED BY A QUALIFIED LABORATORY. CONTRACTOR SHALL FURNISH TO THE LABORATORY, REBAR MILL CERTIFICATES.
 - REINFORCING STEEL SHALL BE FABRICATED ACCORDING TO "MANUAL OF STANDARD PRACTICE FOR REINFORCED CONCRETE CONSTRUCTION".
 - DIMENSIONS SHOWN FOR LOCATION OF REINFORCING ARE TO THE FACE OF MAIN BARS AND DENOTE CLEAR COVERAGE. CONCRETE COVERAGE SHALL BE 3" FROM SOIL, 2" TYPICAL UNLESS OTHERWISE NOTED ON PLANS

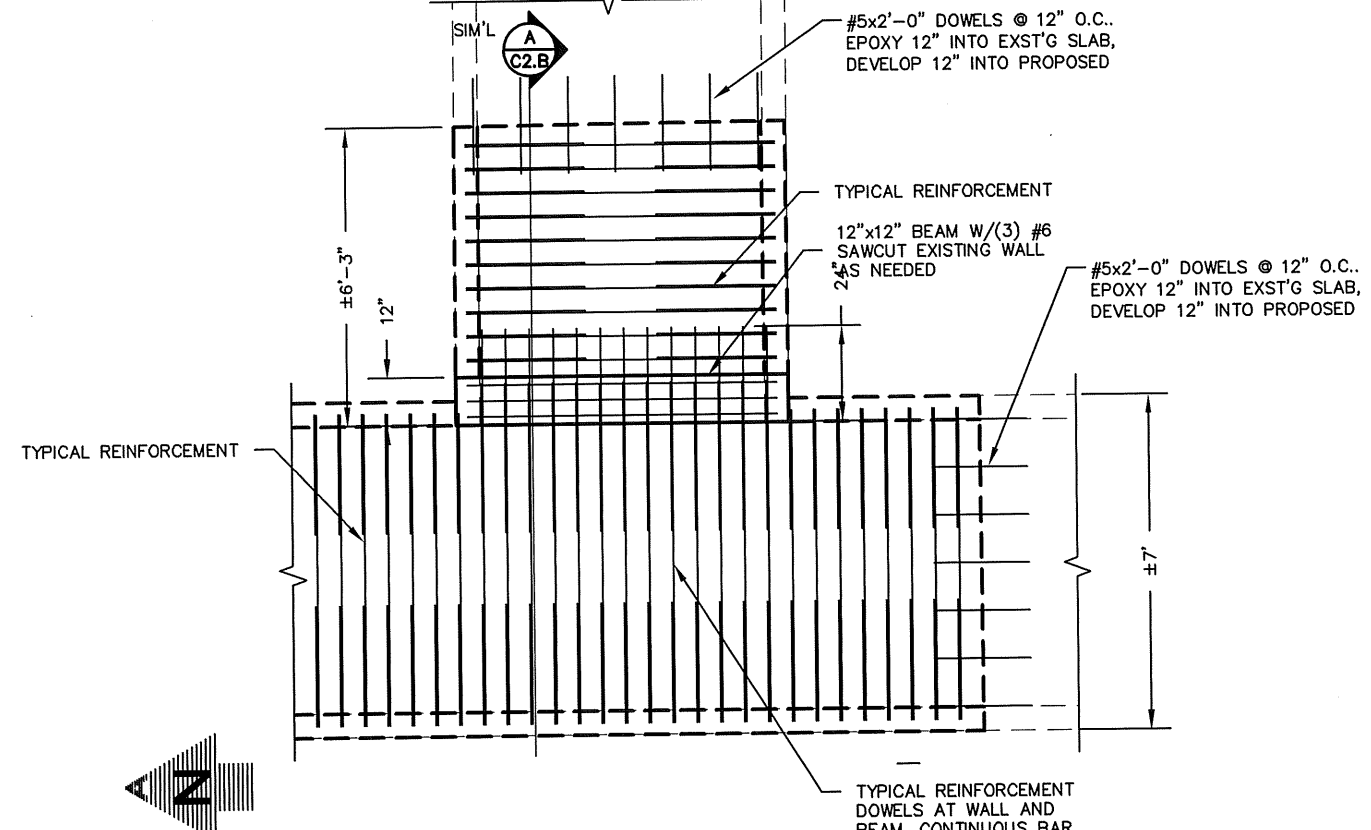


C
TUNNEL SECTION OWENS WEST @ AC PAVING
1" = 2'

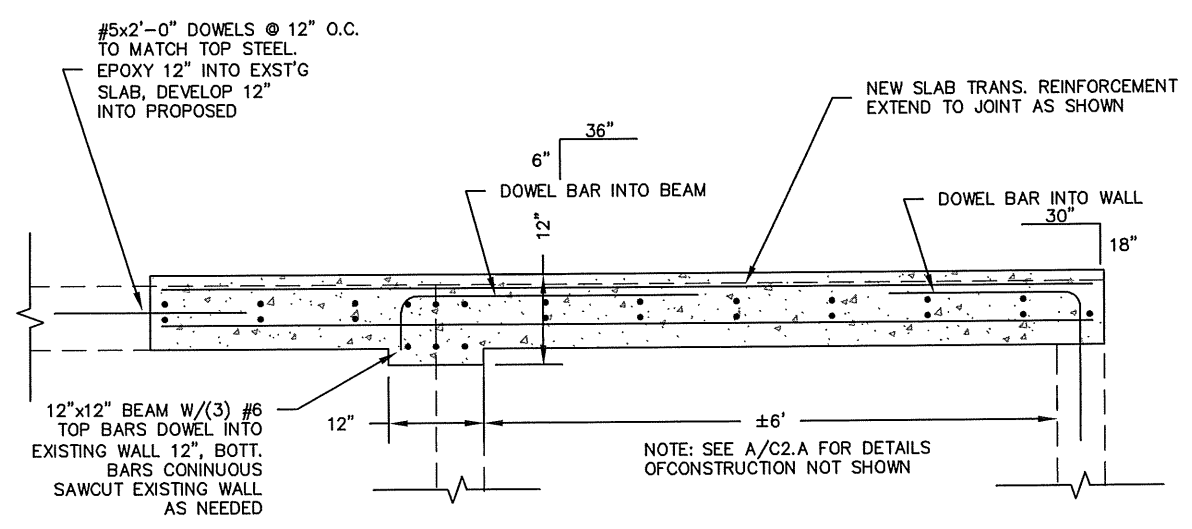
<p>TUNNEL LID REPLACEMENT PROJECT FOR OREGON INSTITUTE OF TECHNOLOGY KLAMATH FALLS, OREGON</p>	<p>OWENS WEST TUNNEL SECTIONS</p>
<p>ADKINS CONSULTING ENGINEERING, LLP 2950 Shasta Way - Klamath Falls, Oregon 97603 · (541) 884-4686 · FAX (541) 884-5335 Oregon · California</p>	
<p>PLANNERS & SURVEYORS ENGINEERS & ARCHITECTS © 2015 ADKINS CONSULTING ENGINEERS, LLP</p>	
<p>DATE: 05-05-14 PROJECT: 1090-30 FILE: CS-C8.DWG DESIGNED BY: MJZ DRAWN BY: MJZ CHECKED BY: MJZ SURVEYED BY: ACE SCALE: AS SHOWN SHEET: 4 OF 17</p>	
<p>REGISTERED PROFESSIONAL ENGINEER 59661PE OREGON MICHAEL J. ZAROSINSKI JANUARY 12, 1999 EXPIRES 6/30/16</p>	
<p>C2.A</p>	



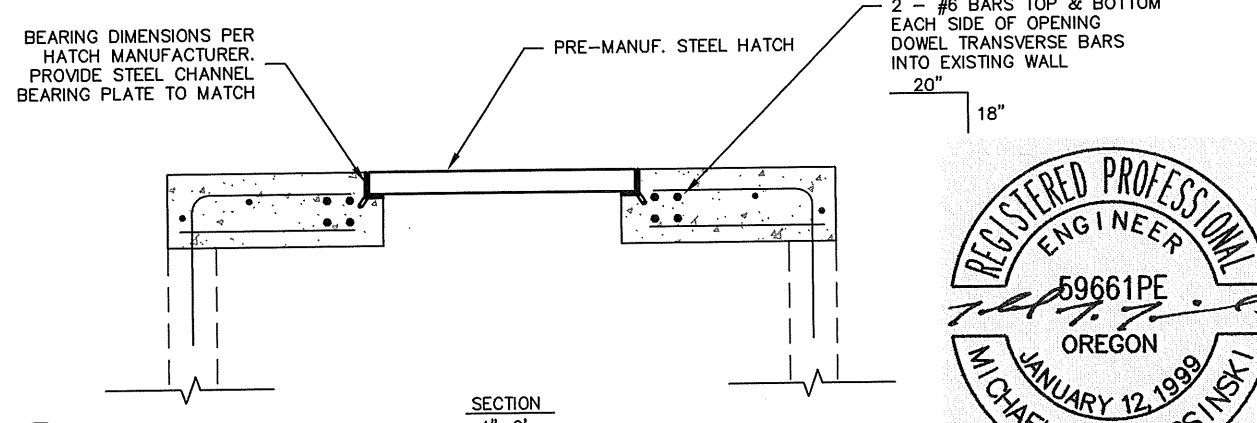
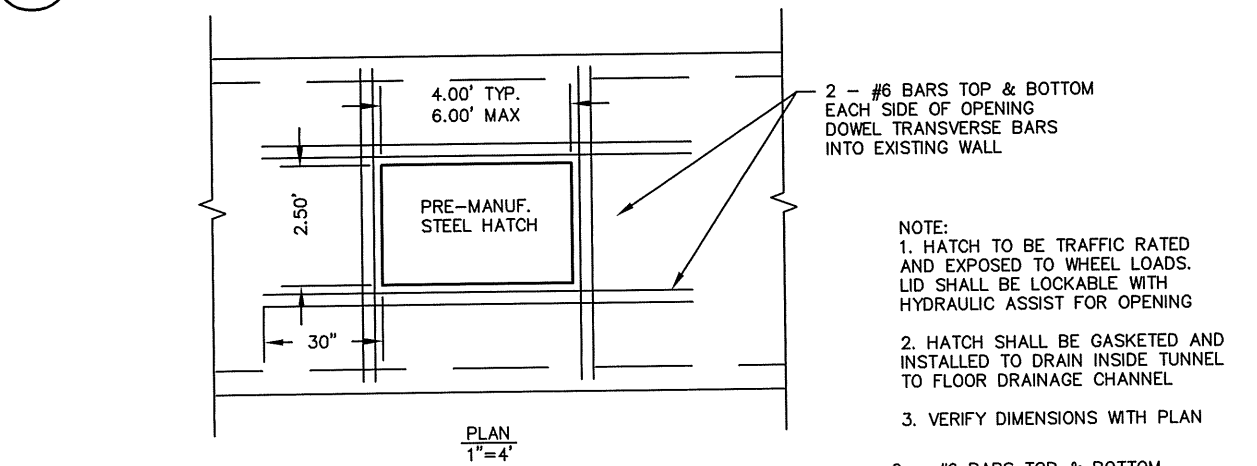
1
C2.B NORTH END TUNNEL CONNECTION (PLAN)
1" = 4'



2
C2.B SOUTH END TUNNEL CONNECTION (PLAN)
1" = 4'



A
C2.B TUNNEL SECTION OWENS WEST @ EXISTING CONNECTION
1" = 2'

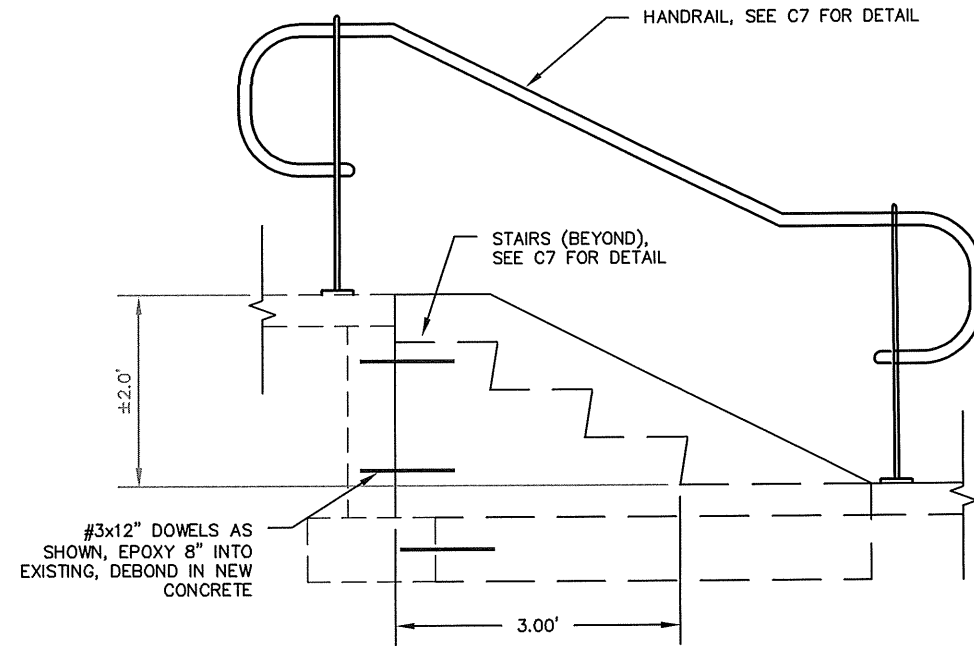


3
C2.B HATCH ACCESS
SCALE: AS NOTED

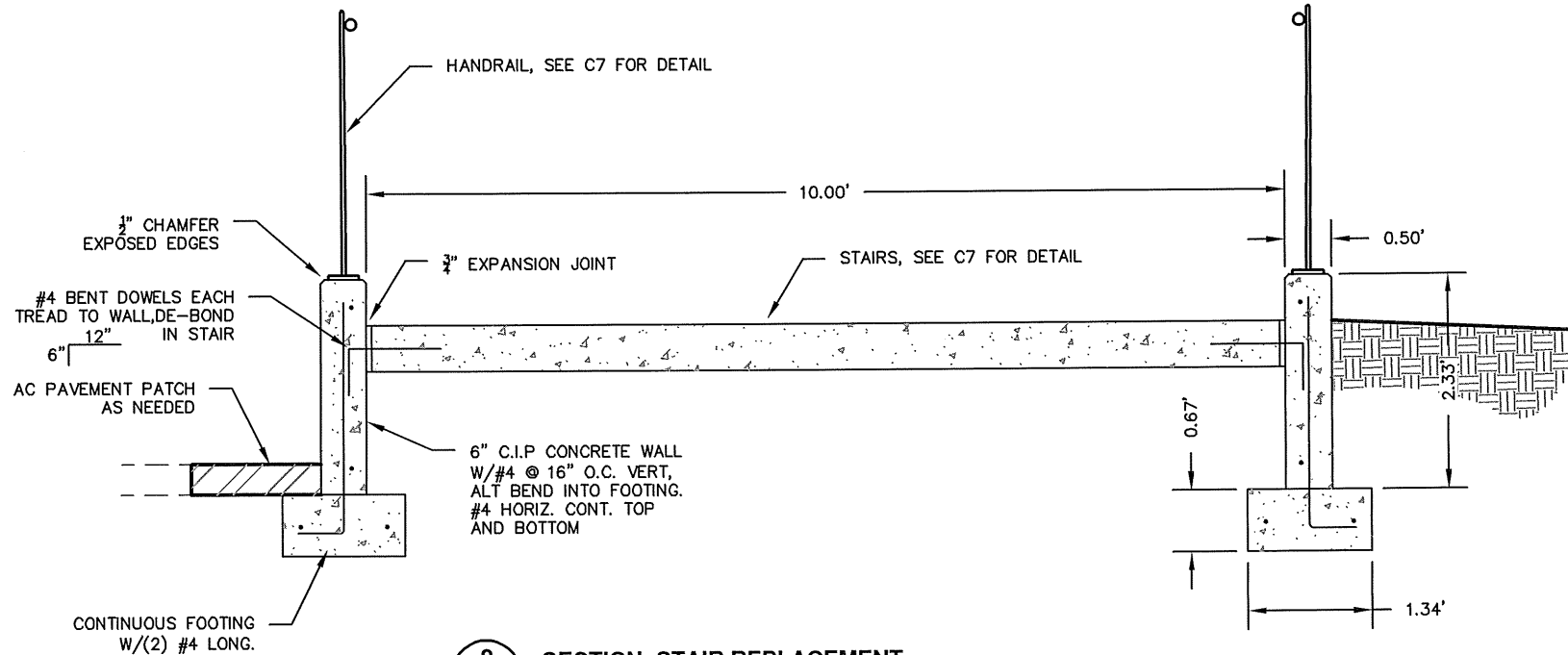
TUNNEL LID REPLACEMENT PROJECT		REVISION	DATE
OREGON INSTITUTE OF TECHNOLOGY KLAMATH FALLS, OREGON		No.	
OWENS WEST TUNNEL DETAILS			
Engineers ▲ Planners ▲ Surveyors 2950 Sheeta Way · Klamath Falls, Oregon 97603 · (541) 884-4686 · FAX (541) 884-5335 Oregon · California			
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DATE:	05-05-14		
PROJECT:	1090-30		
FILE:	CS-C8.DWG		
DESIGNED BY:	MJZ		
DRAWN BY:	MJZ		
CHECKED BY:	MJZ		
SURVEYED BY:	ACE		
SCALE:	AS SHOWN		
SHEET:	5 OF 17		
C2.B			

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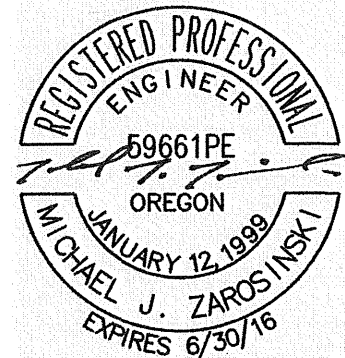
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1 SIDE ELEVATION: STAIR REPLACEMENT
C2.C SCALE: 1"=2'



2 SECTION: STAIR REPLACEMENT
C2.C SCALE: 1"=2'



NO.	REVISION	DATE	BY

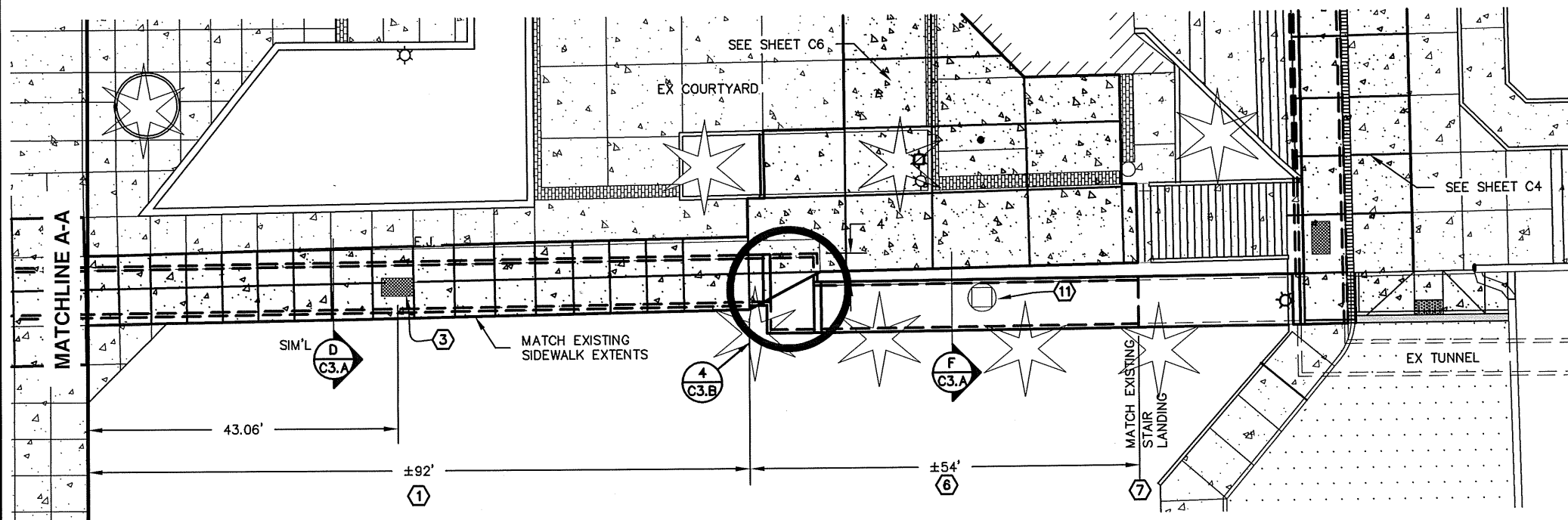
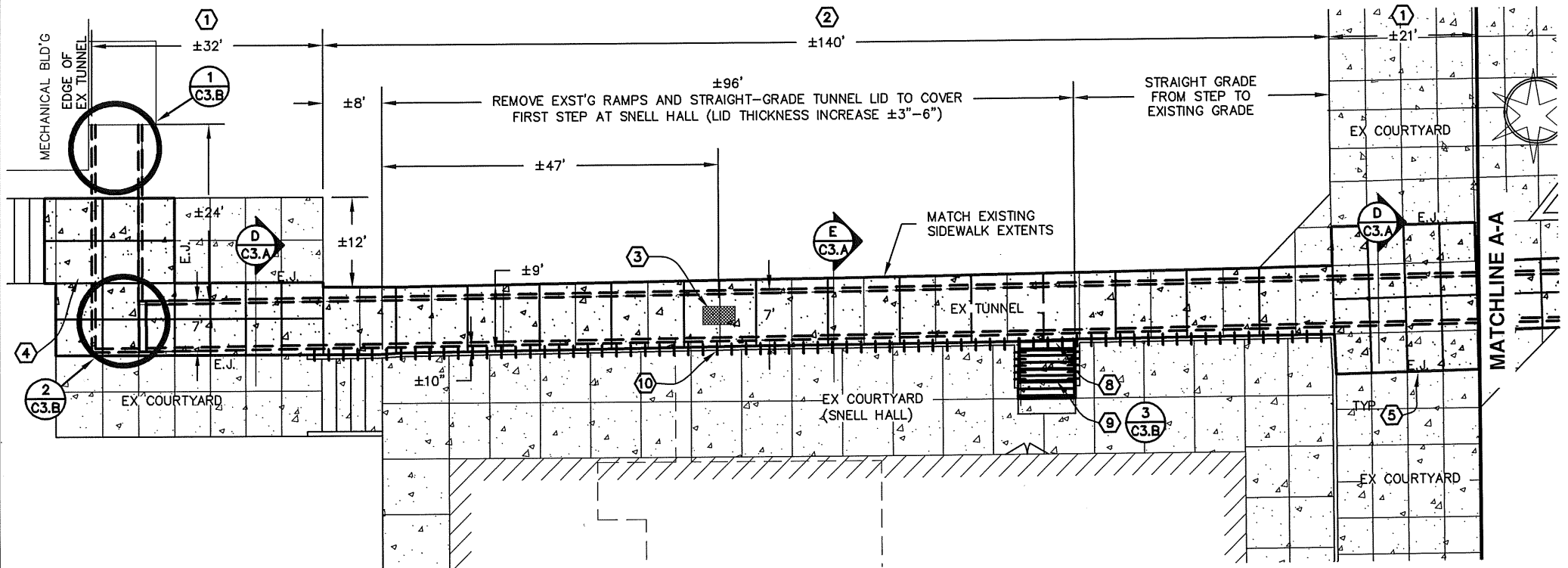
TUNNEL LID REPLACEMENT PROJECT
FOR
OREGON INSTITUTE OF TECHNOLOGY
KLAMATH FALLS, OREGON
OWENS WEST STAIRS

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DATE: 05-05-14
PROJECT: 1090-30
FILE: CS-C8.DWG
DESIGNED BY: MJZ
DRAWN BY: MJZ
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SCALE: AS SHOWN
SHEET: 6 OF 17

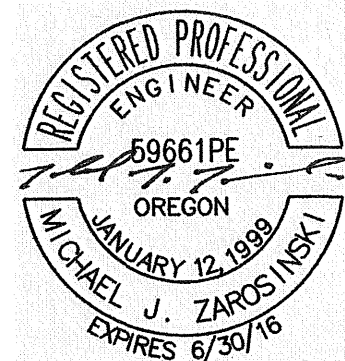
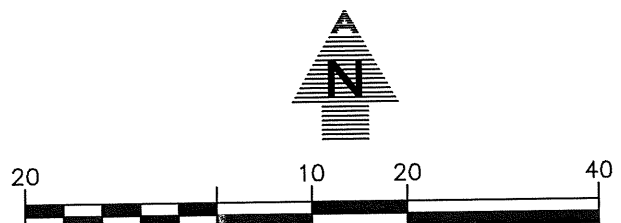
C2.C

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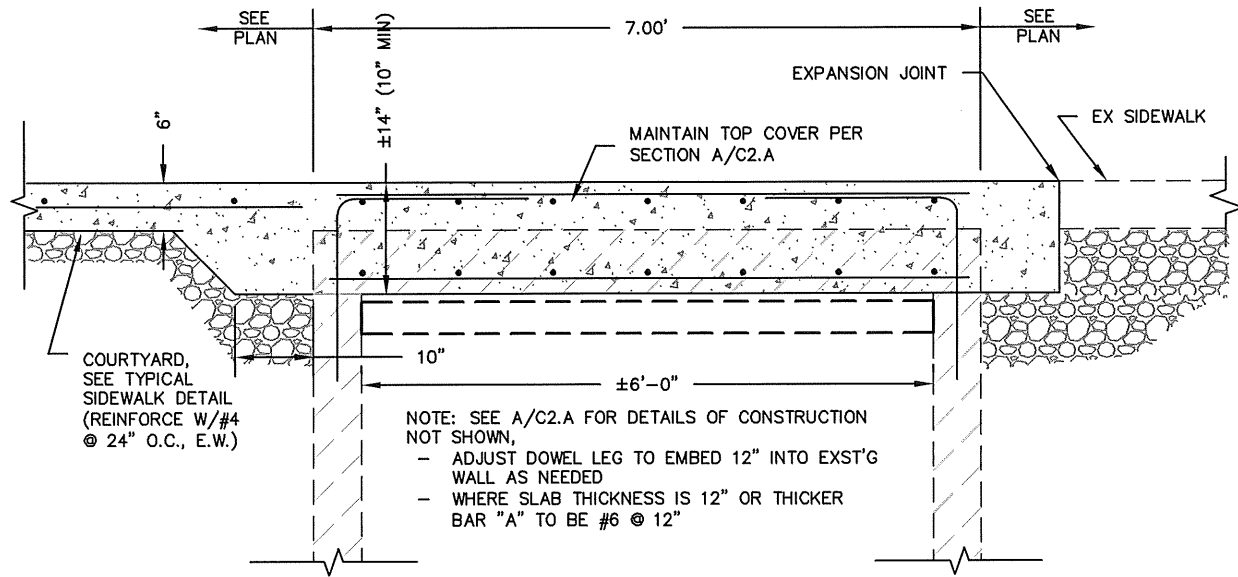


- CONSTRUCTION NOTES**
- ① REMOVE EXISTING COURTYARD & REPLACE TUNNEL LID. PROVIDED THICKENED TUNNEL LID TO MATCH EXISTING GRADES. PROVIDE CONTRACTION JOINTS IN LID TO MATCH EXISTING PATTERN, SIMILAR TO 3/C8. FILL JOINTS WITH SEMI-RIGID SEALANT
 - ② REMOVE EXISTING SIDEWALK & REPLACE TUNNEL LID. PROVIDED THICKENED TUNNEL LID TO MATCH PROPOSED GRADES. PROVIDE CONTRACTION JOINTS IN LID TO MATCH EXISTING PATTERN, SIMILAR TO 3/C8. FILL JOINTS WITH SEMI-RIGID SEALANT. PROTECT EXISTING RETAINING WALL IN-PLACE.
 - ③ INSTALL ACCESS HATCH PER DETAIL 3/C2.B
 - ④ REMOVE AND REPLACE EXISTING SIDEWALK (SAWCUT AT EXISTING PANEL JOINTS). MODIFY GRADES AS NEEDED TO MATCH RAISED TUNNEL LID, 2% MAX SLOPE. SEE C8 FOR SIDEWALK CONSTRUCTION DETAILS (CONNECT TO EXISTING GEOTHERMAL SYSTEM)
 - ⑤ EXPANSION JOINT (E.J.) BETWEEN NEW AND EXISTING SIDEWALK PER DETAIL 3/C8.
 - ⑥ REPLACE TUNNEL LID (RESTORE SURFACE CONDITIONS TO EXISTING). PROTECT EXISTING TREES IN-PLACE
 - ⑦ CONNECT PROPOSED LID TO EXISTING WITH #5x2'-0" DOWELS @ 12" O.C. EPOXY 12" INTO EXST'G SLAB, DEVELOP 12" INTO PROPOSED (SEE C2.B FOR SIMILAR DETAIL)
 - ⑧ FINAL GRADE AT STAIRS RAISED TO MATCH FIRST EXISTING STEP HEIGHT
 - ⑨ REMOVE AND REPLACE EXISTING STAIRS (SEE 3/C3.B). PROTECT EXISTING WALL AND GUARD RAIL IN-PLACE
 - ⑩ DOWEL TUNNEL TO RETAINING WALL, SEE SECTIONS
 - ⑪ REMOVE EXISTING STORM DRAIN (DO NOT REPLACE)
- NOTE:
COORDINATE EXTENTS OF OF SIDEWALK/COURTYARD REMOVAL AND REPLACEMENT IN FIELD WITH ENGINEER AND OIT STAFF. GRIND EXISTING PANEL EDGES AS NEEDED TO BE FLUSH WITH NEW CONSTRUCTION.

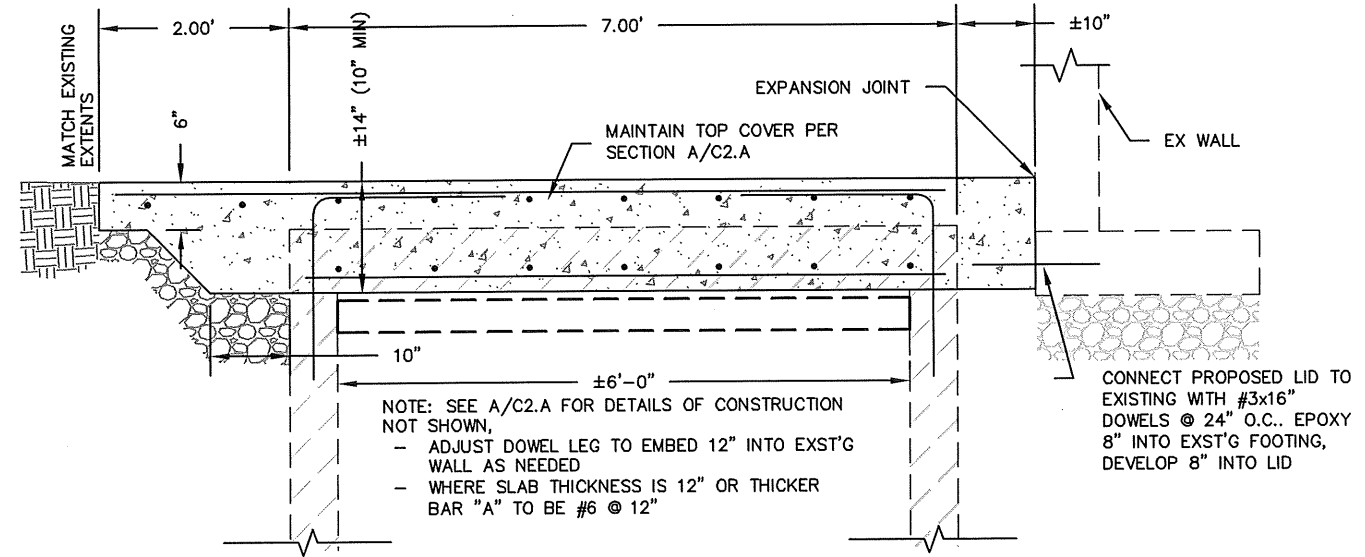
SNELL HALL/COLLEGE UNION TUNNEL LID REPLACEMENT



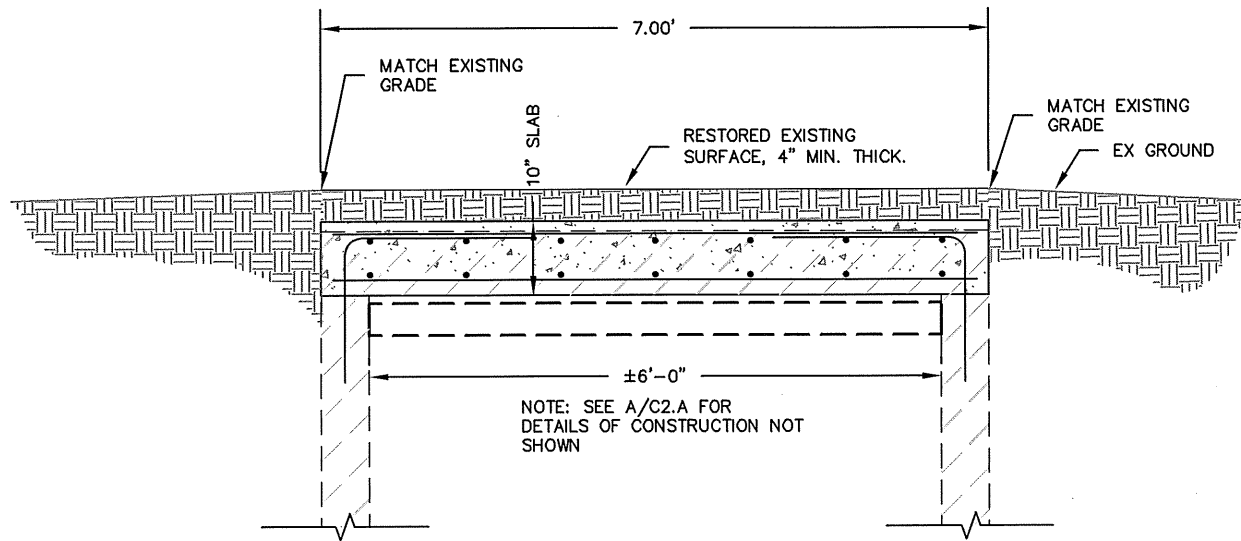
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<p>TUNNEL LID REPLACEMENT PROJECT FOR OREGON INSTITUTE OF TECHNOLOGY KLAMATH FALLS, OREGON</p>	
<p>SNELL HALL/C.U. TUNNEL PLAN</p>	
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SHEET:	7 OF 17
<p>C3</p>	
REVISION	DATE
No.	



D TUNNEL SECTION AT COURTYARD
 C3.A 1" = 2'



E TUNNEL SECTION AT SNELL HALL
 C3.A 1" = 2'



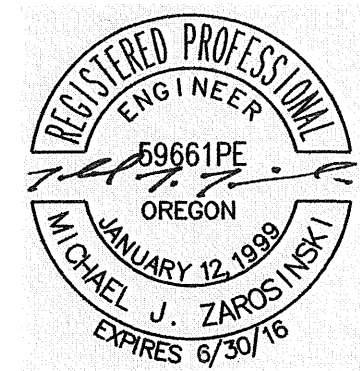
F TUNNEL SECTION AT LANDSCAPING
 C3.A 1" = 2'

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TUNNEL LID REPLACEMENT PROJECT
 FOR
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 KLAMATH FALLS, OREGON
SNELL HALL/C.U. TUNNEL SECTIONS

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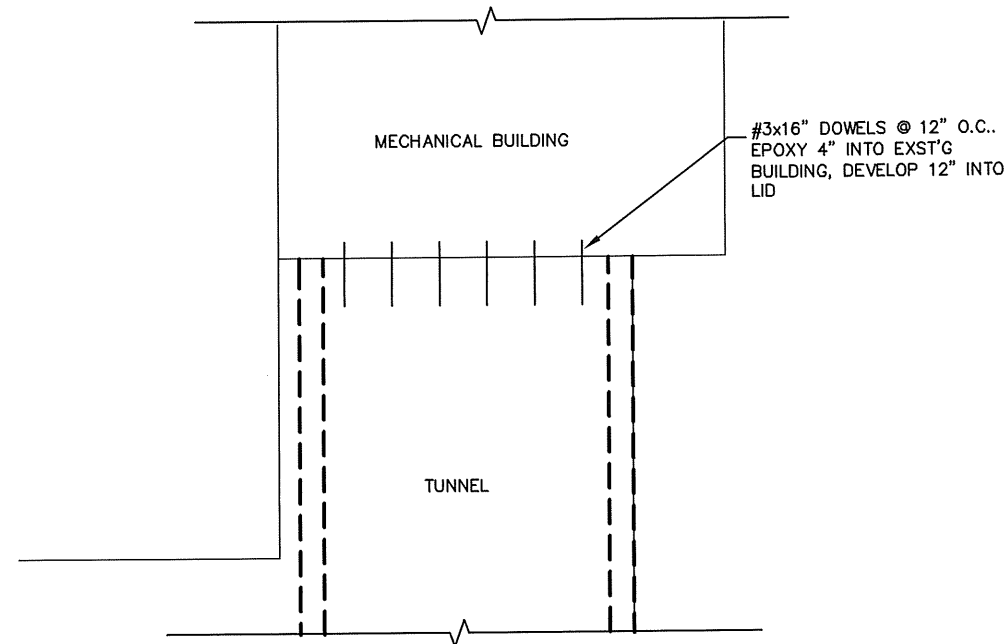
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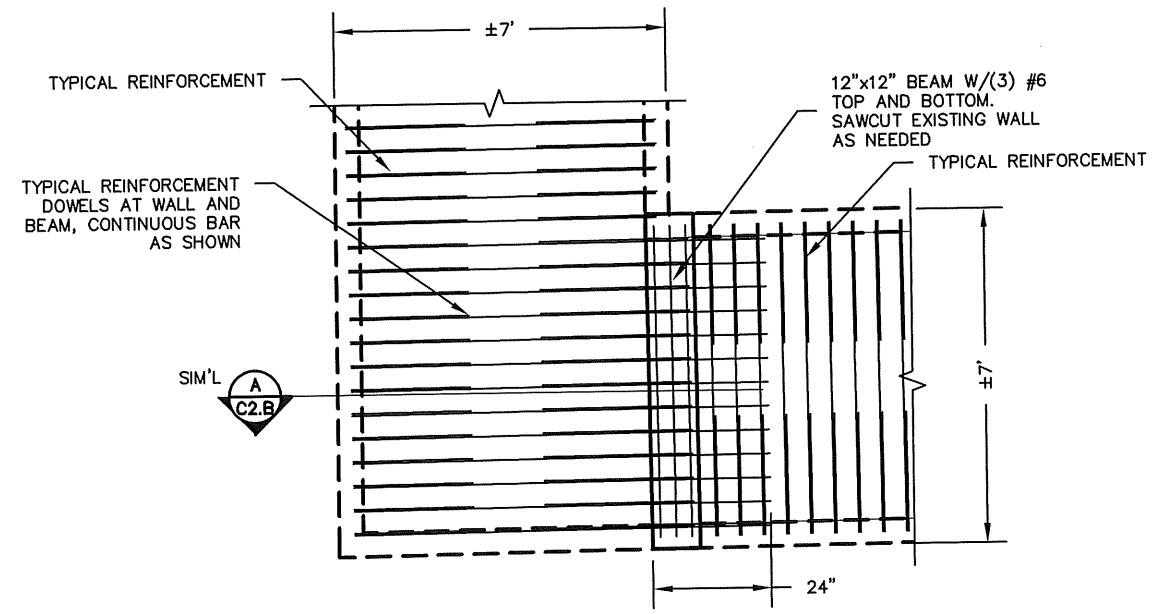
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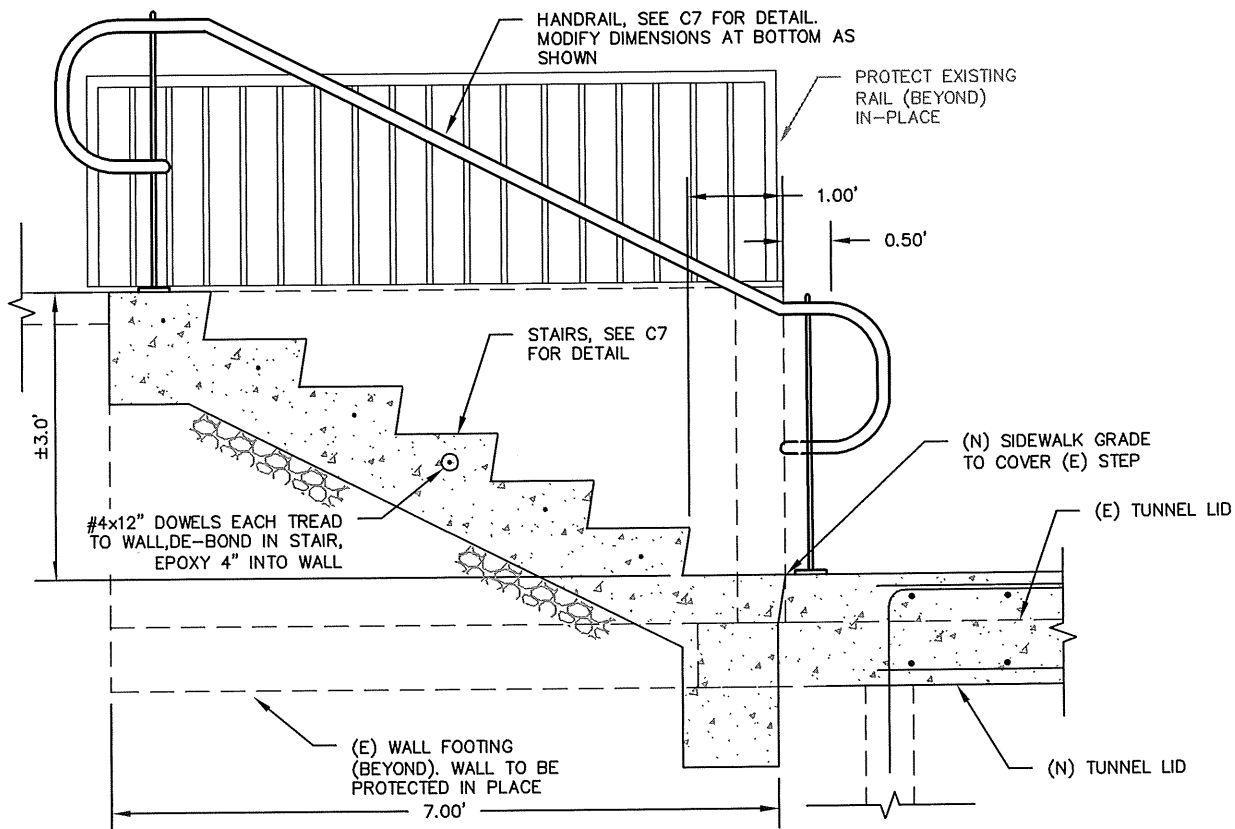
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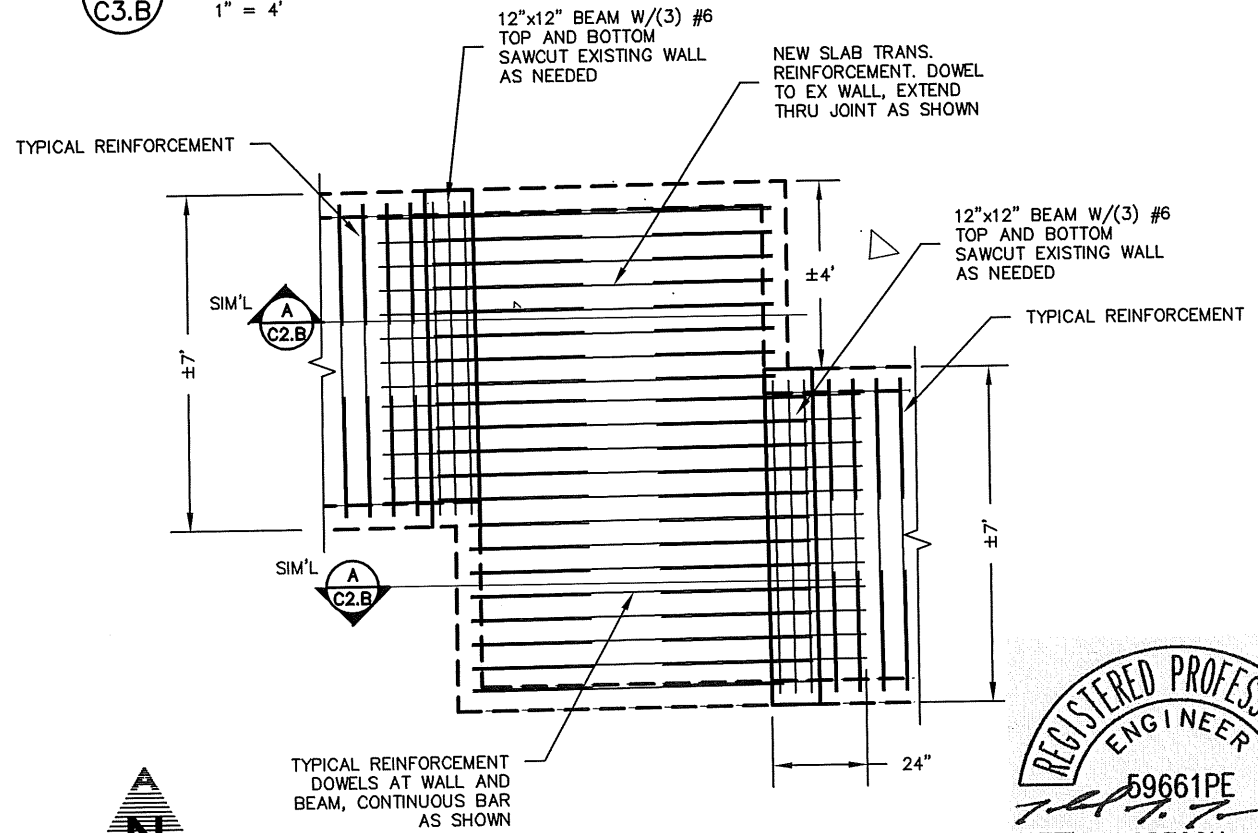
1 TUNNEL CONNECTION AT MECHANICAL BUILDING (PLAN)
1" = 4'



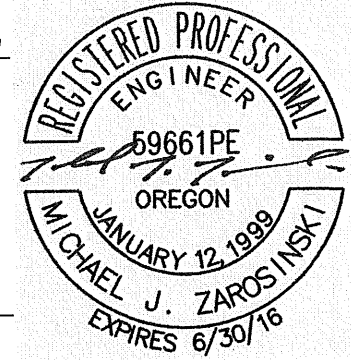
2 TUNNEL INTERSECTION (PLAN)
1" = 4'



3 SECTION: SNELL HALL STAIR REPLACEMENT
1" = 2'



4 TUNNEL INTERSECTION (PLAN)
1" = 4'



TUNNEL LID REPLACEMENT PROJECT FOR OREGON INSTITUTE OF TECHNOLOGY KLAMATH FALLS, OREGON	REVISION	DATE	BY
SNELL HALL/C.U. TUNNEL DETAILS	No.		

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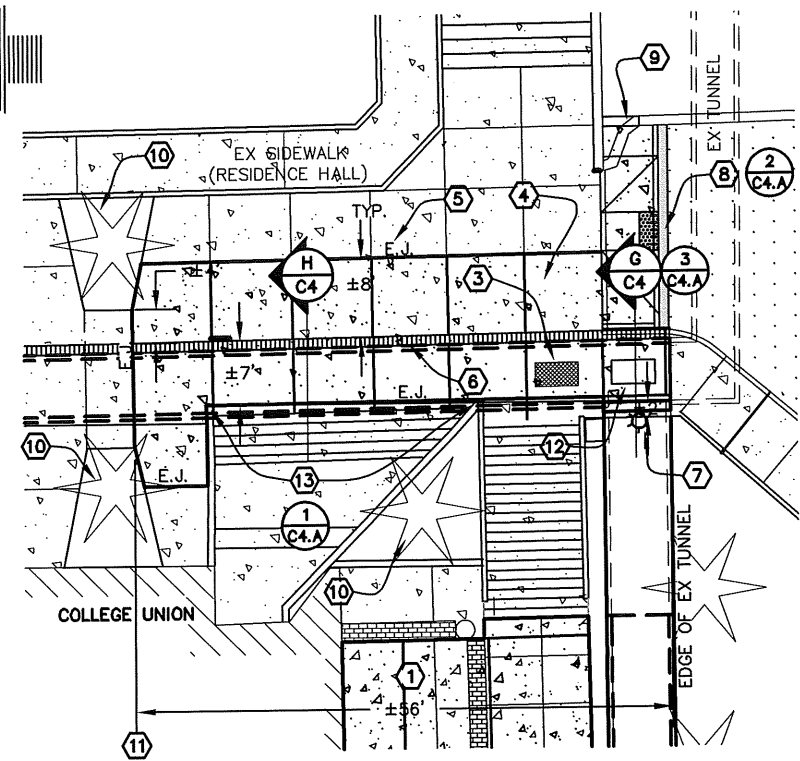
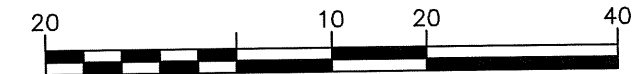
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C3.B

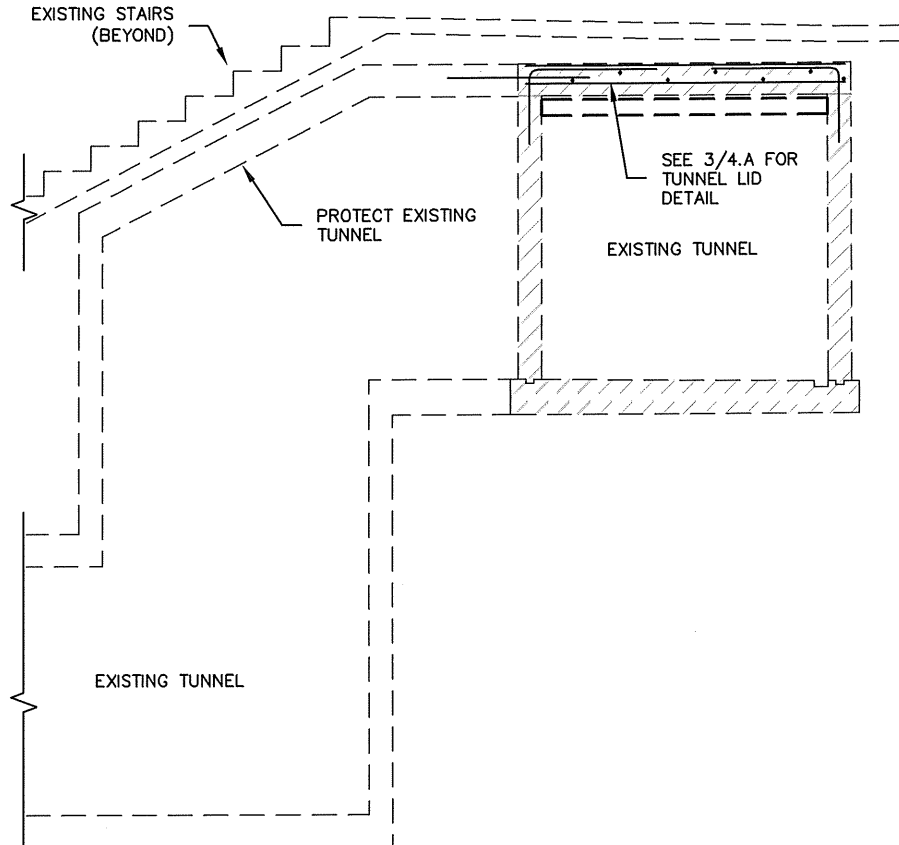
CONSTRUCTION NOTES

- 1 REMOVE EXISTING COURTYARD & REPLACE TUNNEL LID. PROVIDED THICKENED TUNNEL LID TO MATCH EXISTING GRADES. PROVIDE CONTRACTION JOINTS IN LID TO MATCH EXISTING PATTERN, SIMILAR TO 3/C8. FILL JOINTS WITH SEMI-RIGID SEALANT
- 2 NOT USED
- 3 INSTALL ACCESS HATCH PER DETAIL 3/C2.B
- 4 REMOVE AND REPLACE EXISTING SIDEWALK (SAWCUT AT EXISTING PANEL JOINTS). MODIFY GRADES AS NEEDED TO MATCH RAISED TUNNEL LID, 2% MAX SLOPE. SEE C8 FOR SIDEWALK CONSTRUCTION DETAILS (CONNECT TO EXISTING GEOTHERMAL SYSTEM AT STAIR JUNCTION BOX)
- 5 EXPANSION JOINT (E.J.) BETWEEN NEW AND EXISTING SIDEWALK PER DETAIL 3/C8.
- 6 REMOVE AND REPLACE TRENCH DRAIN PER (SEE H/C.4). MATCH EXISTING GRADES, PROTECT EXISTING SUMP & ALL OTHER DRAINAGE FEATURES)
- 7 PROTECT EXISTING LIGHT IN-PLACE
- 8 CONSTRUCT SIDEWALK, H/C RAMP, C&G, PAVEMENT PATCH AND ALL OTHER INCIDENTAL ITEMS AS SHOWN
- 9 RE-CONSTRUCT EX CONCRETE SEGMENTAL RETAINING WALL AS SHOWN
- 10 PROTECT EXISTING TREE
- CONNECT PROPOSED LID TO EXISTING WITH #5x2'-0" DOWELS @ 12" O.C.. EPOXY 12" INTO EXST'G SLAB, DEVELOP 12" INTO PROPOSED (SEE C2.B FOR SIMILAR DETAIL)
- 12 EXISTING HATCH TO BE RELOCATED
- 13 COORDINATE REMOVAL OF EXISTING FOOTINGS THRU TUNNEL IN FIELD W/ENGINEER (RE-CONSTRUCT FIRST STEP AS NEEDED)

NOTE: PROVIDE PROTECTED ACCESS FOR PEDESTRIAN ACCESS FROM RESIDENCE HALL TO SIDEWALK DURING CONSTRUCTION

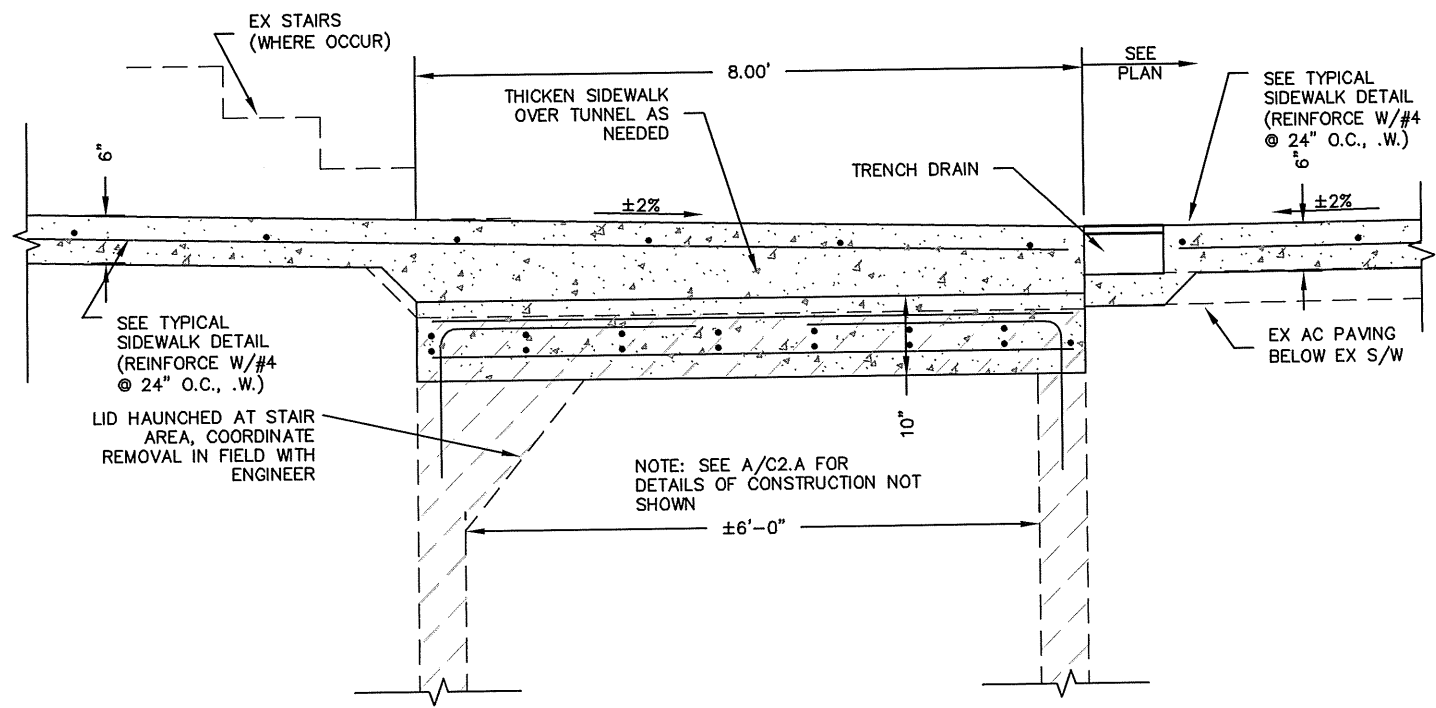


COLLEGE UNION TUNNEL (SE) LID REPLACEMENT



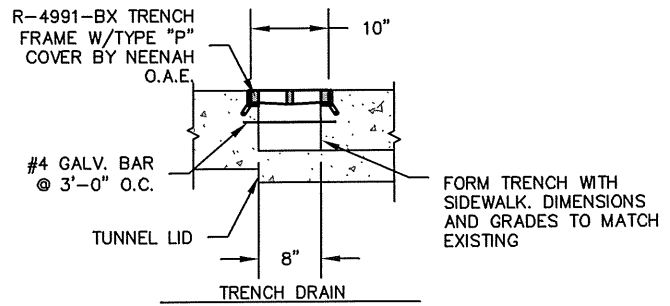
SECTION AT STAIRS

1" = 4'



TYPICAL TUNNEL SECTION AT STAIRS

1" = 2'

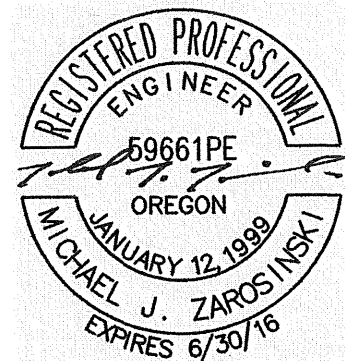


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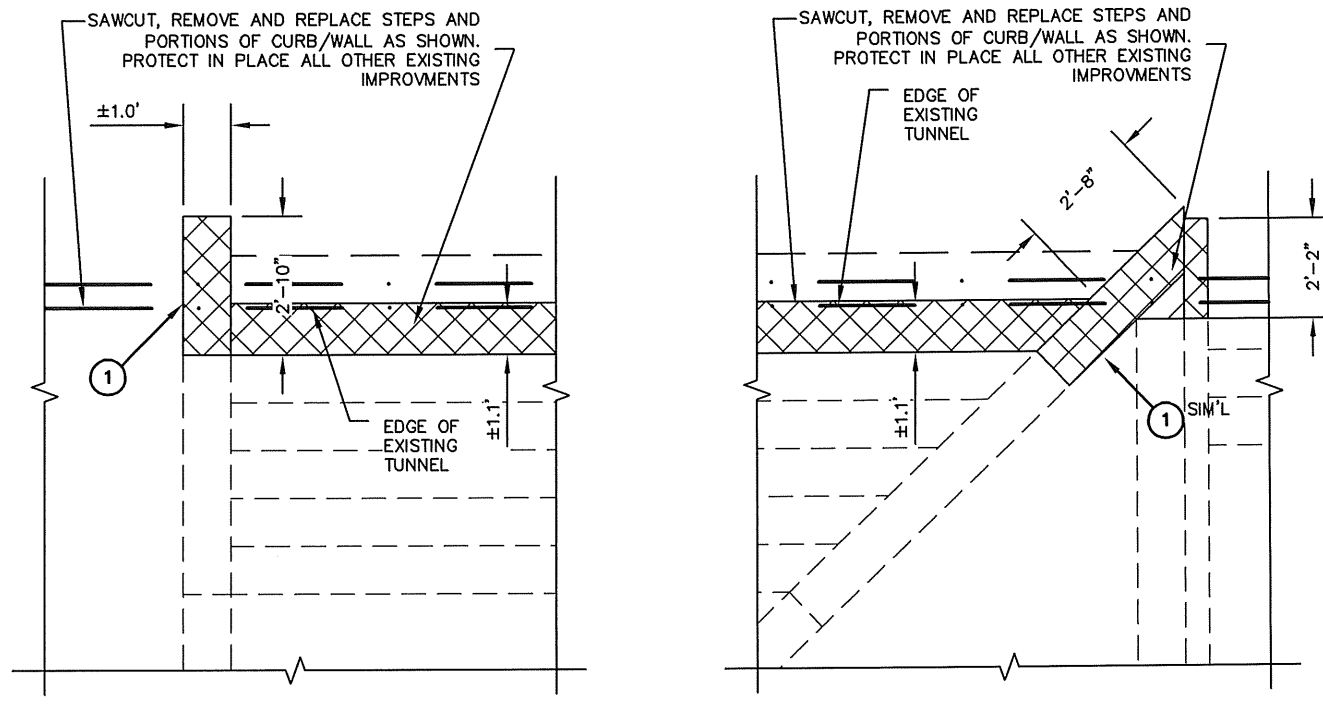
TUNNEL LID REPLACEMENT PROJECT FOR
 OREGON INSTITUTE OF TECHNOLOGY
 KLAMATH FALLS, OREGON
COLLEGE UNION (SE) TUNNEL PLAN

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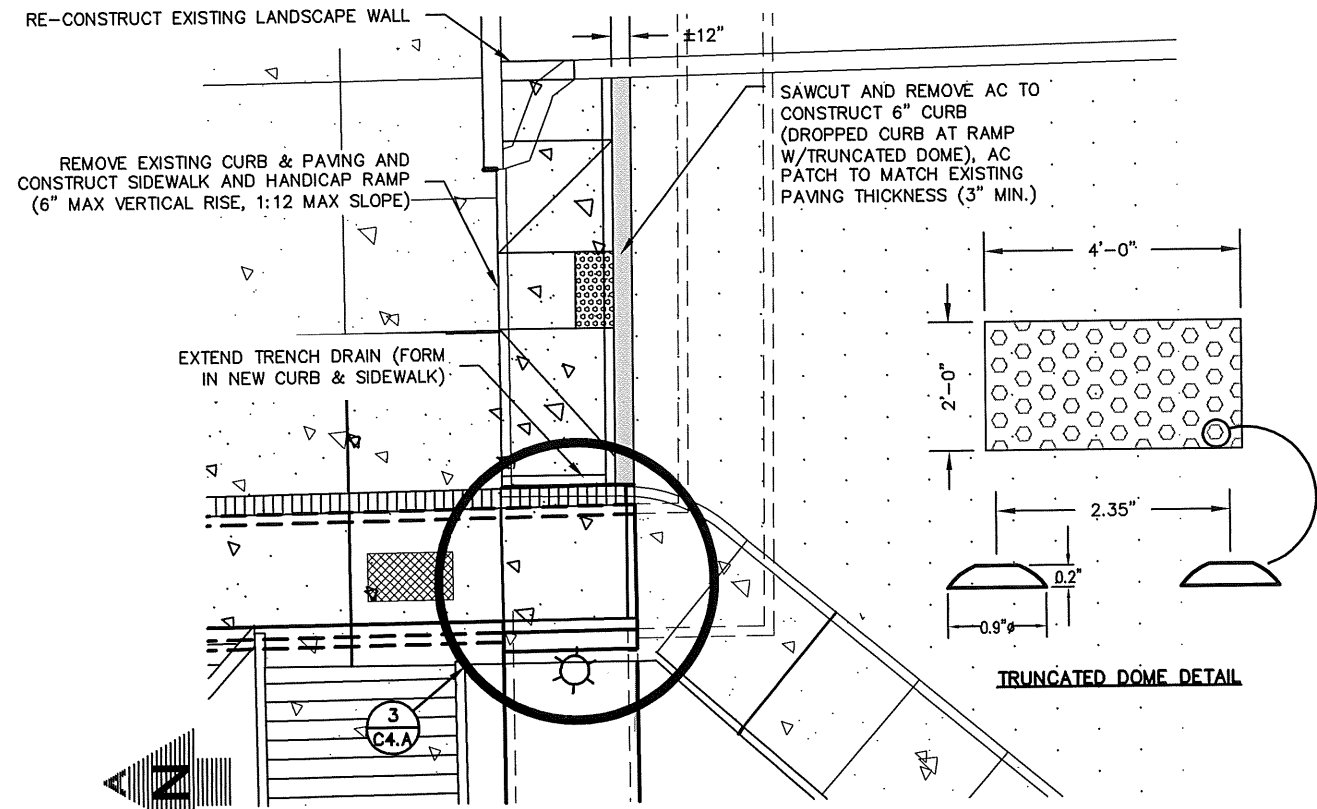


C4



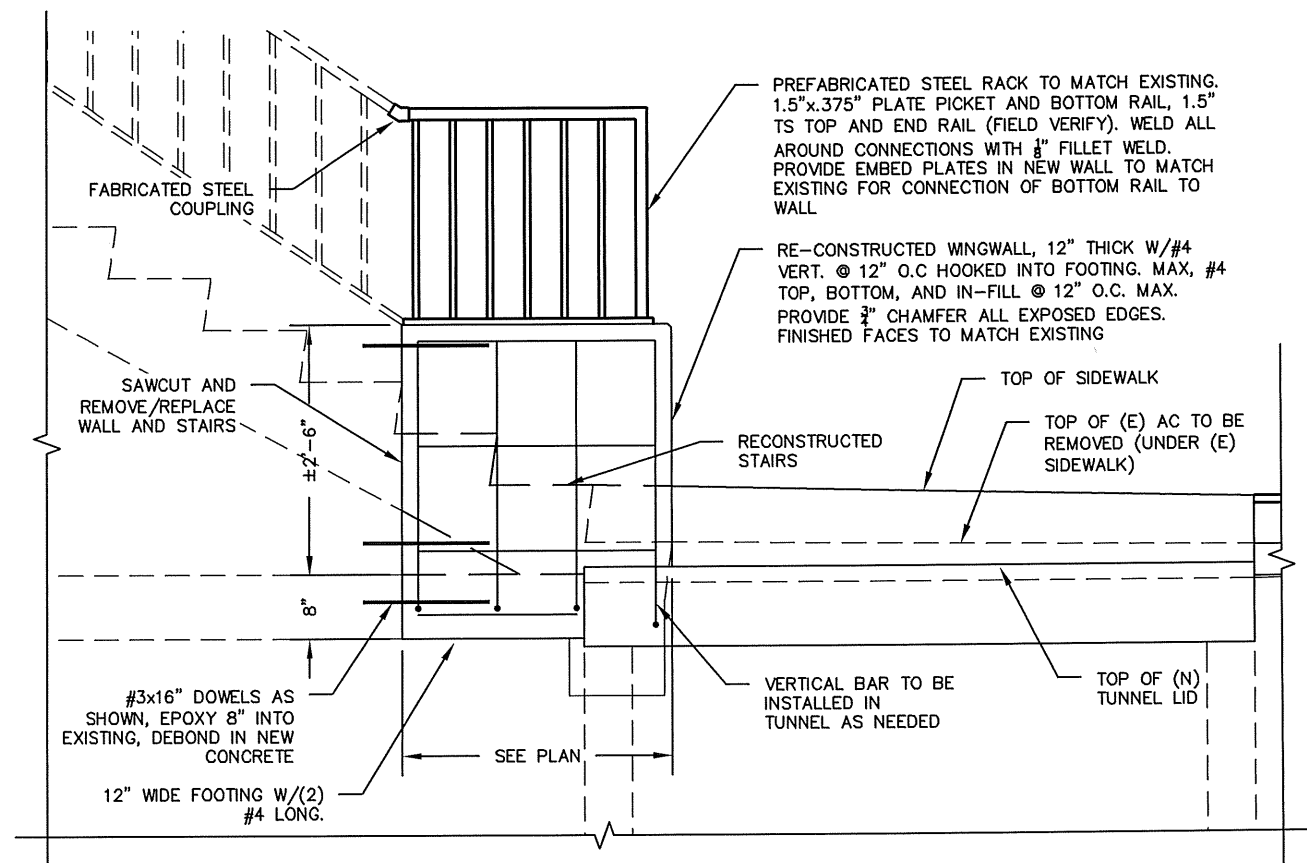
PLAN (PART.)

1" = 4'



2 SIDEWALK IMPROVEMENTS (PLAN)

1" = 10'

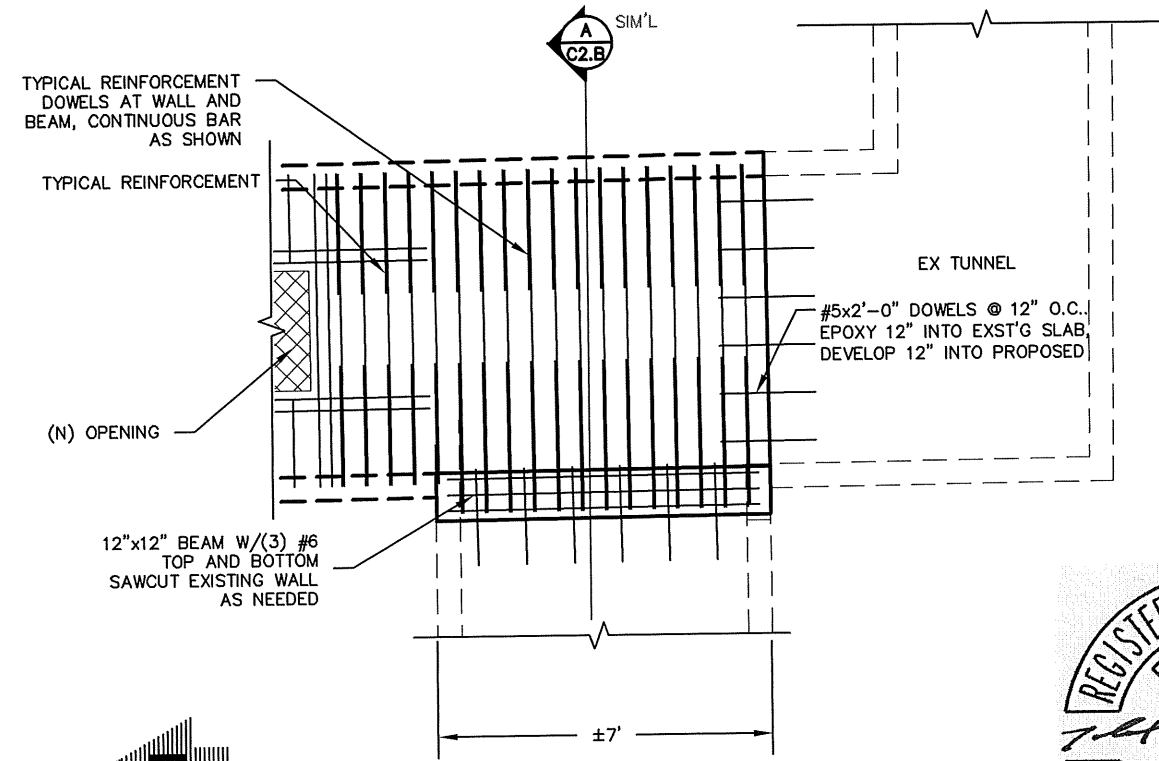


1 WALL ELEVATION

1" = 2'

1 PARTIAL STAIR RECONSTRUCTION

1" = 4'



3 SIDEWALK IMPROVEMENTS (PLAN)

1" = 4'

No.	REVISION	DATE	BY

TUNNEL LID REPLACEMENT PROJECT
FOR
OREGON INSTITUTE OF TECHNOLOGY
KLAMATH FALLS, OREGON
C.U. (SE) TUNNEL DETAILS

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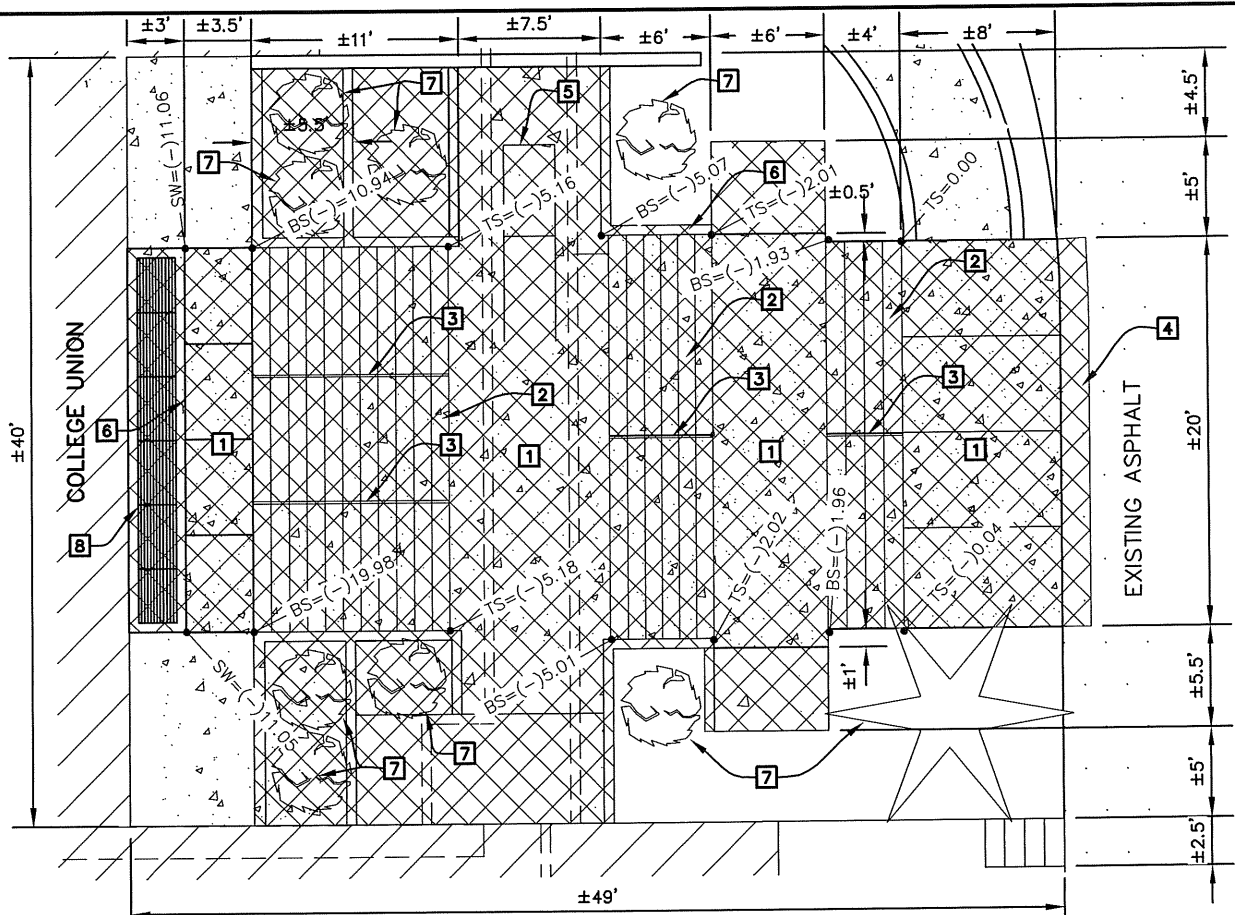
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C4.A

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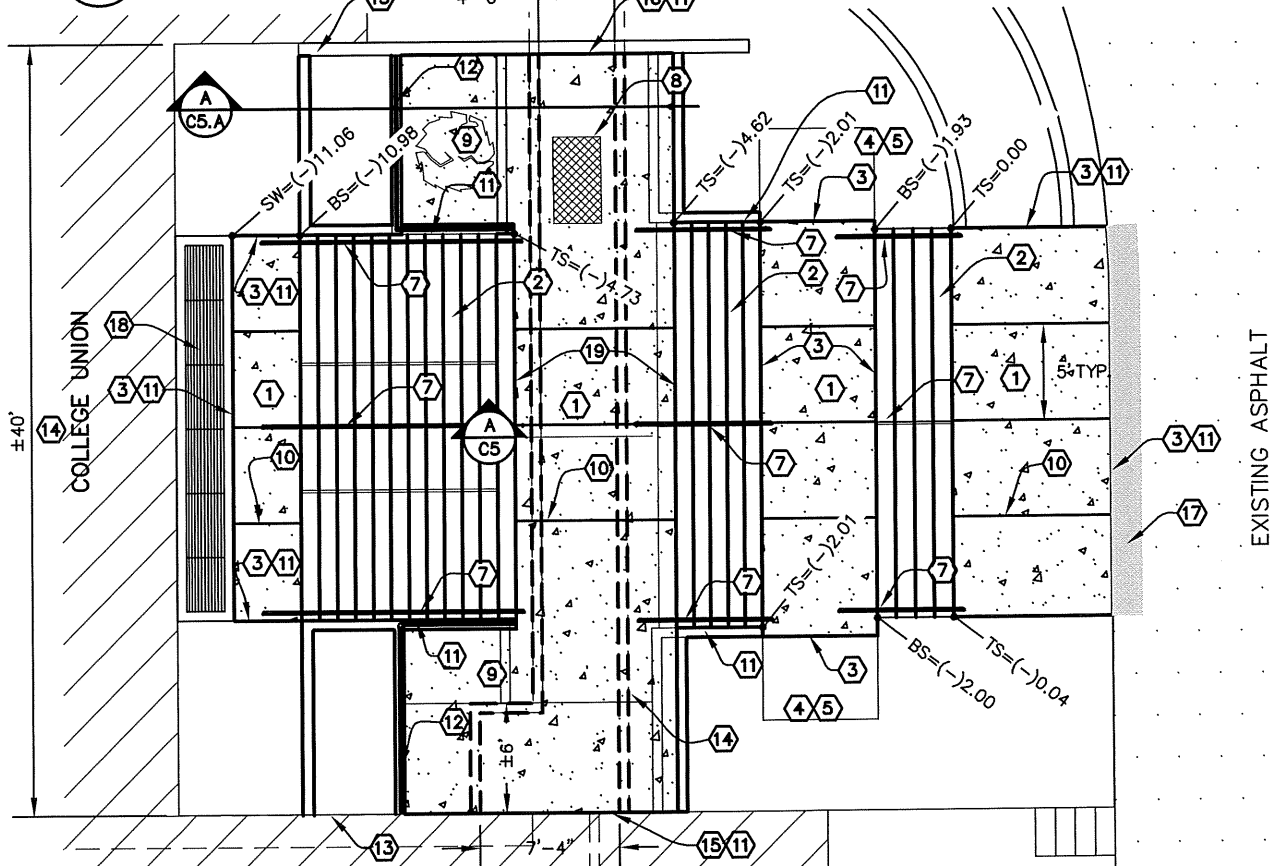
1 STAIRS EAST OF THE COLLEGE UNION (DEMOLITION)
1" = 2'

DEMOLITION NOTES

- 1 SAWCUT & REMOVE EXISTING SIDEWALK TO DIMENSIONS SHOWN.
- 2 REMOVE EXISTING STAIRS.
- 3 REMOVE EXISTING HANDRAIL.
- 4 SAWCUT (12" WIDTH) AND REMOVE EXISTING ASPHALT
- 5 REMOVE EXISTING GEOTHERMAL TUNNEL VAULT LID & FRAME.
- 6 SAWCUT SIDEWALK ADJACENT TO GRATE. CONTRACTOR TO REMOVE ANY EXCESS CONCRETE TO PROVIDE SMOOTH SURFACE FOR CONSTRUCTION. SEE DETAIL 4, SHEET C8.
- 7 REMOVE ALL EXISTING VEGETATION.
- 8 REMOVE EXISTING GRATE.

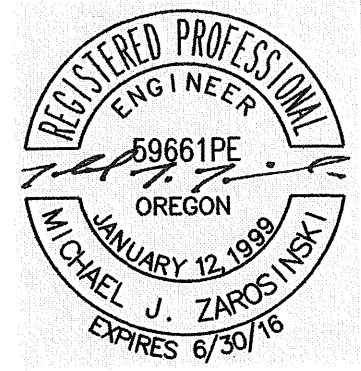
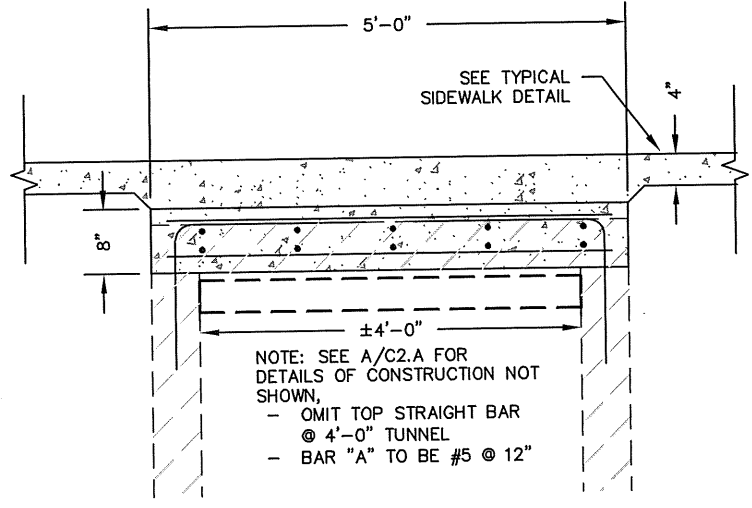
CONSTRUCTION NOTES

- 1 CONSTRUCT SIDEWALK WITH CROSS SLOPE NOT EXCEEDING 2%. SEE DETAIL 1, SHEET C8.
- 2 CONSTRUCT STAIRS AND HANDRAILS. SEE DETAILS 1 & 2, SHEET C7.
- 3 MATCH EXISTING GRADE AND/OR LOCATION OF EXISTING IMPROVEMENTS
- 4 CONTRACTOR TO CONSTRUCT ALL AREAS ADJACENT TO WORK AREA WITH COMPACTED NATIVE BACKFILL MATERIAL AND 12" OF TOPSOIL. THE CONTRACTOR SHALL PERFORM ALL SURFACE RESTORATION WORK AS REQUIRED TO PROVIDE SMOOTH TRANSITIONS FROM THE NEW SIDEWALKS AND STAIRS TO EXISTING GROUND WITH SLOPES 1V:4H OR FLATTER. SEED GRASS AREAS DISTURBED DURING CONSTRUCTION. CONTRACTOR SHALL KEEP DISTURBED AREA TO A MINIMUM.
- 5 CONTRACTOR SHALL REPAIR UNDERGROUND IRRIGATION IF DISTURBED DURING CONSTRUCTION. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO SIDEWALK/STAIR CONSTRUCTION.
- 6 CONTRACTOR TO PENETRATE CEILING OF GEOTHERMAL TUNNEL WITH SCHEDULE 40 PVC CONDUIT SLEEVES SIZED TO ALLOW GEOTHERMAL TUBING INSTALLATION FROM STAIRS/SIDEWALK TO MANIFOLD(S). MANIFOLD(S) SHALL BE SECURELY ATTACHED TO INSIDE WALL OF TUNNEL WITH UNI-STRUT METAL CHANNEL. SEAL ALL TUNNEL PENETRATIONS WITH SPRAY FOAM.
- 7 CONSTRUCT HANDRAIL. SEE SHEET C7.
- 8 INSTALL ACCESS HATCH PER DETAIL 3/C2.B. PROVIDE 2'-6"x6'-0" HATCH RATED FOR SIDEWALK LOADING (300 PSF).
- 9 CONTRACTOR TO CAP EXISTING IRRIGATION LINE AS REQUIRED IN REMOVED PLANTER AREA.
- 10 CONTRACTION JOINT. SEE DETAIL 3, SHEET C8.
- 11 EXPANSION JOINT. SEE DETAIL 3, SHEET C8.
- 12 CONSTRUCT GUARDRAIL. SEE DETAIL 5, SHEET C7 (OMIT HANDRAIL).
- 13 PROTECT EXISTING RETAINING WALL IN-PLACE
- 14 REMOVE AND REPLACE EXISTING TUNNEL LID.
- 15 CONNECT PROPOSED TUNNEL LID TO EXISTING BUILDING WITH #3x16" DOWELS @ 12" O.C.. EPOXY 4" INTO EXST'G BUILDING, DEVELOP 12" INTO LID
- 16 CONNECT PROPOSED LID TO EXISTING WITH #5x2'-0" DOWELS @ 12" O.C.. EPOXY 12" INTO EXST'G TUNNEL LID, DEVELOP 12" INTO PROPOSED (SEE C2.B FOR SIMILAR DETAIL)
- 17 SAWCUT AND REMOVE AC TO CONSTRUCT CONCRETE, AC PATCH TO MATCH EXISTING PAVING THICKNESS (3" MIN.)
- 18 REPLACE REMOVABLE GRATING TO MATCH EXISTING (1.5"x.1875" BEARING BARS, .75"x.1875" GRATING)
- 19 ADJUST NUMBER OF RISERS IN STAIR FLIGHT FROM EXISTING AS SHOWN



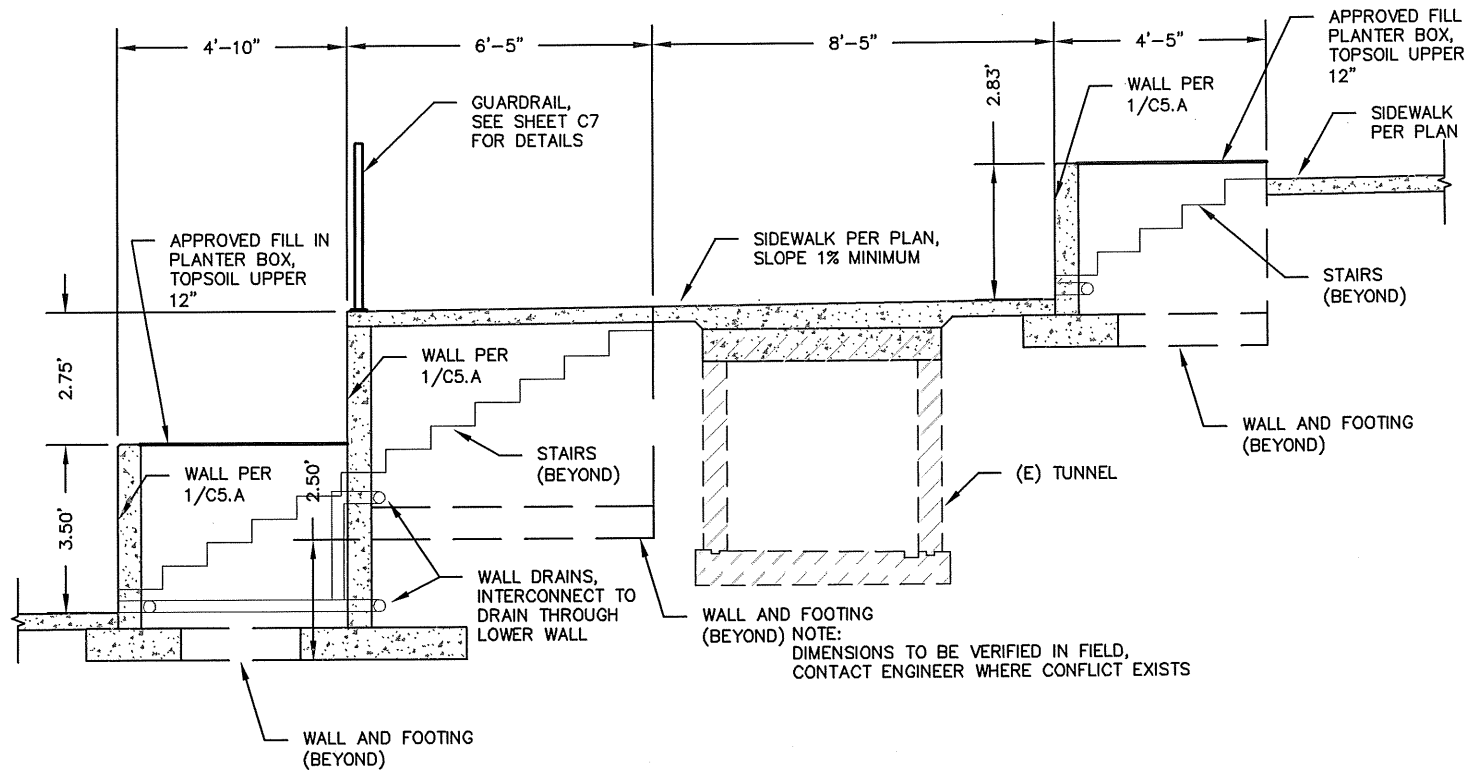
2 STAIRS EAST OF THE COLLEGE UNION (PROPOSED)
1" = 2'

A TYPICAL TUNNEL SECTION
1" = 2'



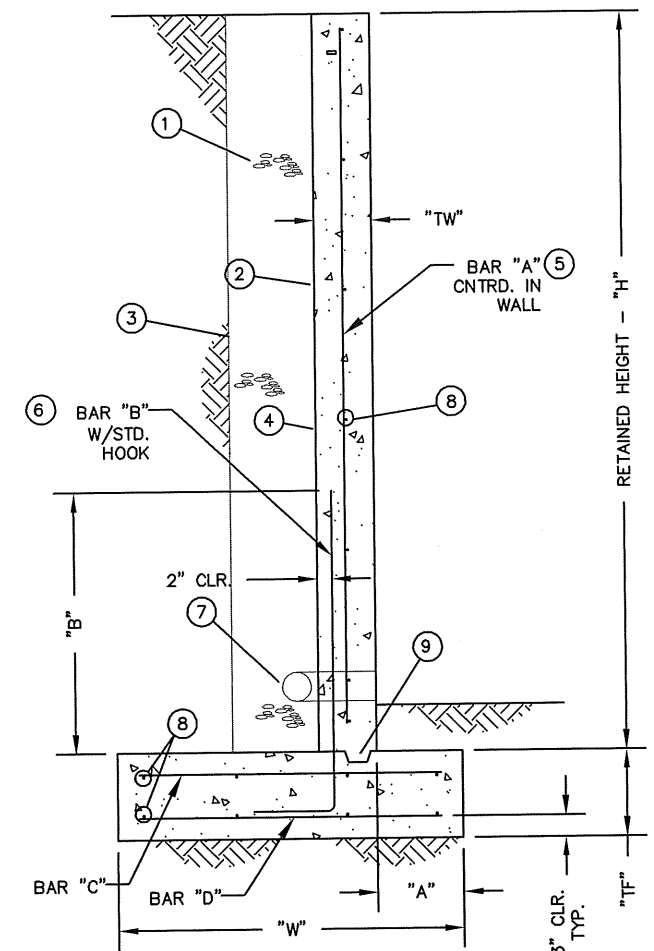
TUNNEL LID REPLACEMENT PROJECT FOR OREGON INSTITUTE OF TECHNOLOGY KLAMATH FALLS, OREGON	C.U. (NE) TUNNEL AND STAIRS
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A
C5.A SECTION: PLANTER BOX REPLACEMENT
SCALE: 1"=4'

- ① CLEAN 1"-1" WASHED DRAIN ROCK, EXTEND FROM FACE OF WALL MIN. 12"
 - ② MOISTURE PROTECTION, PROVIDE BITUMINUS MEMBRANE W/ PROTECTION BOARD CONT. OVER FOOTING (OWNER'S DISCRETION)
 - ③ NON-WOVEN GEOTEXTILE FABRIC (AMOCO 4546 O.A.E.)
 - ④ CAST IN PLACE WALL
 - ⑤ BAR "A" TO PLACED FULL HEIGHT (SEE SCHED.) WHERE BAR "B" NOT REQUIRED PROVIDE STANDARD HOOK INTO FOOTING
 - ⑥ BAR "B" TO LAP DIST. "B" (SEE SCHED.) PROVIDE STANDARD HOOK INTO FOOTING. CENTER DOWEL @ 4' AND LESS RETAINED HEIGHT
 - ⑦ 3" PERFORATED PVC/HDPE PIPE W/ DRAIN ROCK MIN. 6" AROUND PIPE. DAYLIGHT THROUGH WEEP HOLES IN WALL @ 4'-0" O.C. MAX
 - ⑧ #4 LONGITUDINAL @ 16" O.C., NOT REQUIRED WHERE TRANSVERSE BAR NOT REQUIRED
 - ⑨ 2x4 KEYWAY (NOMINAL) BEVEL FOR REMOVAL AND SHAPE AS NEEDED FOR REBAR PLACEMENT (ONLY APPLIES AT 7' WALLS, ROUGHEN SURFACE AT SHORTER)
- NOTE:
PROVIDE 1/4" CHAMFER ON ALL EXPOSED EDGES

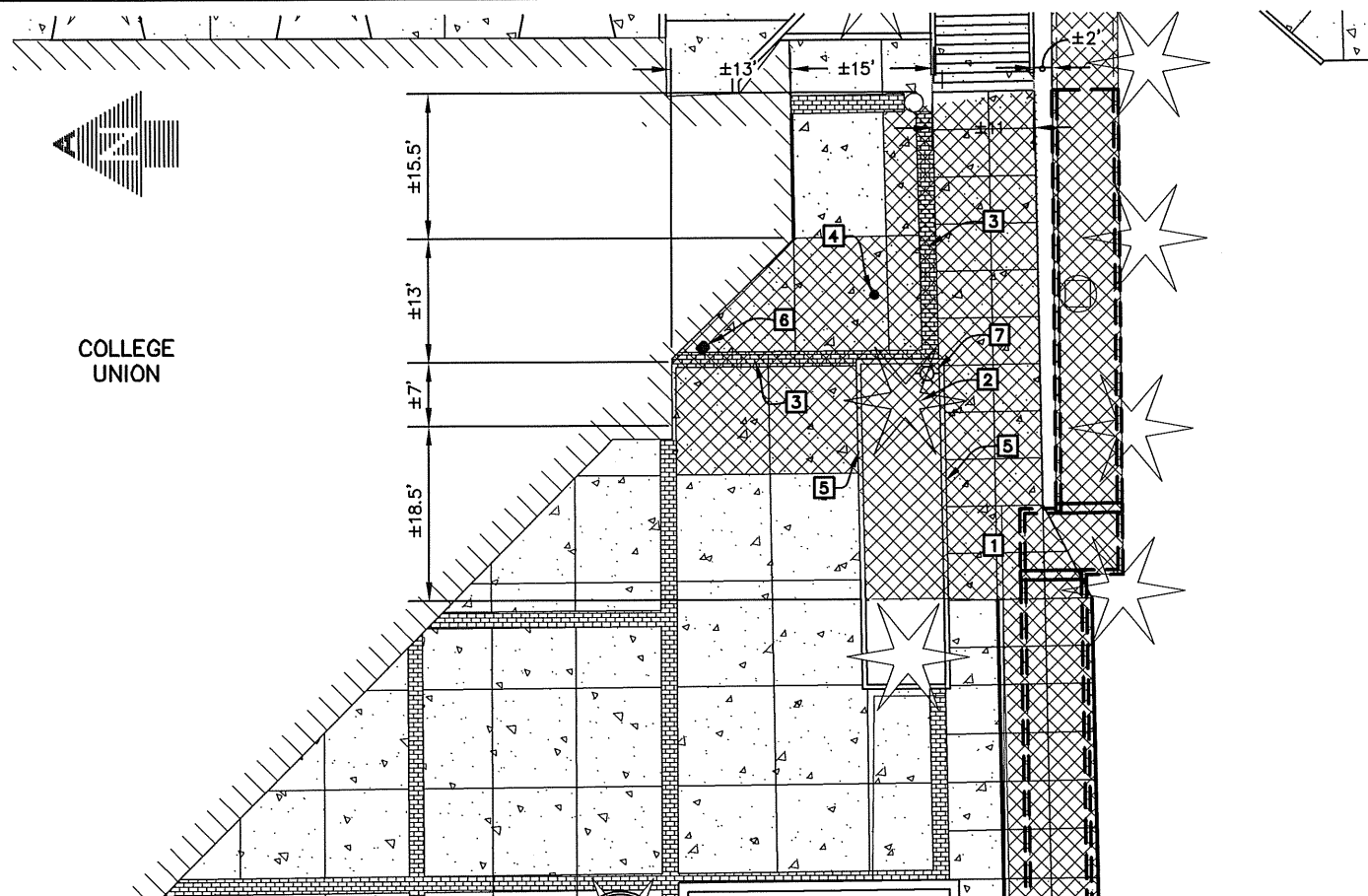


REINFORCEMENT & DIMENSIONS									
"H"	"TW"	"W"	"A"	"TF"	"B"	BAR "A"	BAR "B"	BAR "C"	BAR "D"
4'	6"	2'-0"	8"	12"	N/A	#4 @ 16"	N/A	#4 @ 16"	N/A
7'	6"	3'-6"	12"	12"	36"	#4 @ 16"	#4 @ 8"	#4 @ 16"	#4 @ 16"

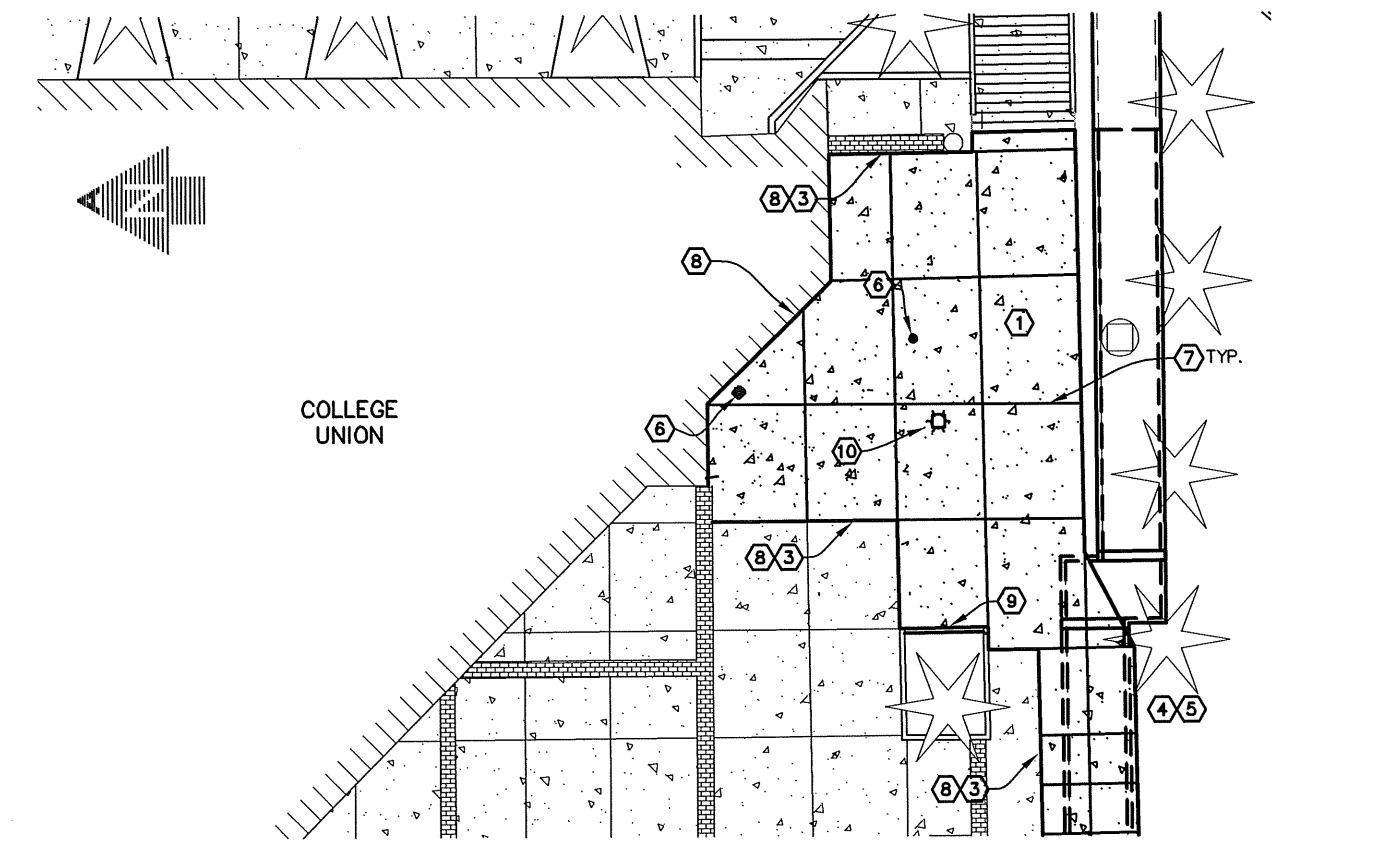
1
C5.A DETAIL: RETAINING WALL
SCALE: 3/4"=1'



TUNNEL LID REPLACEMENT PROJECT FOR OREGON INSTITUTE OF TECHNOLOGY KLAMATH FALLS, OREGON	C.U. (NE) TUNNEL AND STAIRS
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C5.A	



1 SIDEWALK SOUTHEAST OF COLLEGE UNION (DEMOLITION)
C6 1" = 20'



2 SIDEWALK SOUTHEAST OF COLLEGE UNION (PROPOSED)
C6 1" = 20'

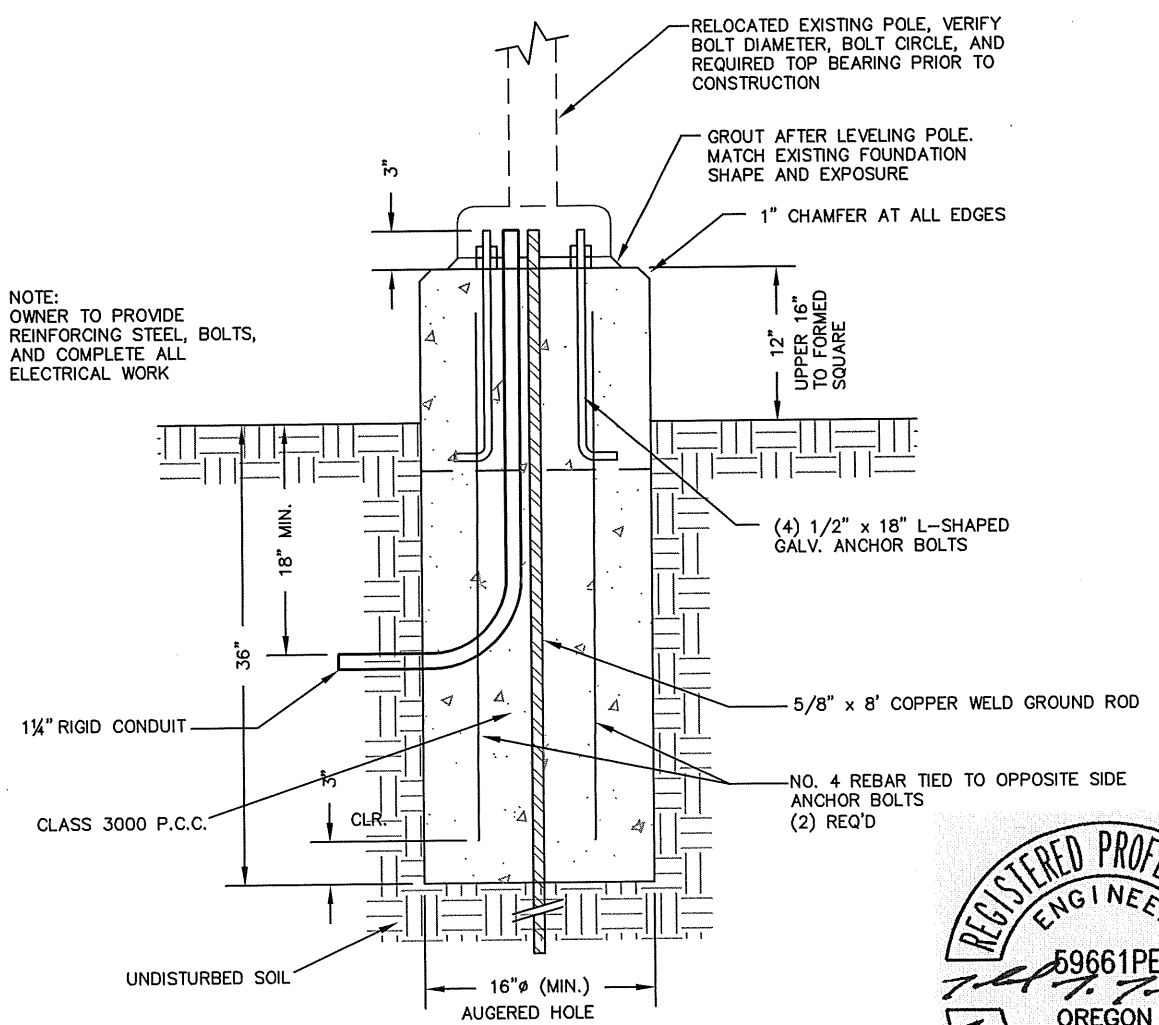
DEMOLITION NOTES

- 1 SAWCUT & REMOVE EXISTING SIDEWALK TO DIMENSIONS SHOWN.
- 2 REMOVE EXISTING TREE.
- 3 REMOVE EXISTING BRICK BORDER.
- 4 PROTECT EXISTING CLEANOUT.
- 5 SAWCUT AND REMOVE EXISTING CURB TO DIMENSIONS SHOWN.
- 6 PROTECT EXISTING CONTROL BOX.
- 7 SALVAGE EXISTING LIGHT POLE, PROTECT EXISTING WIRING, REMOVE FOUNDATION AS NEEDED

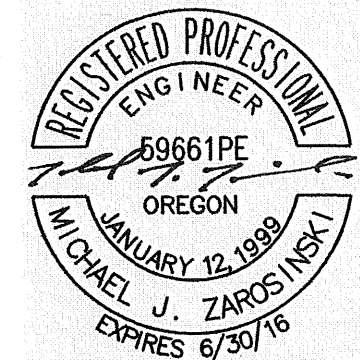
CONSTRUCTION NOTES

- 1 CONSTRUCT SIDEWALK WITH CROSS SLOPE NOT EXCEEDING 2%. SEE DETAIL 1, SHEET C8.
- 2 NOT USED
- 3 MATCH EXISTING GRADE AND/OR LOCATION OF EXISTING IMPROVEMENTS
- 4 CONTRACTOR TO CONSTRUCT ALL AREAS ADJACENT TO WORK AREA WITH COMPACTED NATIVE BACKFILL MATERIAL AND 12" OF TOPSOIL. THE CONTRACTOR SHALL PERFORM ALL SURFACE RESTORATION WORK AS REQUIRED TO PROVIDE SMOOTH TRANSITIONS FROM THE NEW SIDEWALKS AND STAIRS TO EXISTING GROUND WITH SLOPES 1V:4H OR FLATTER. SEED GRASS AREAS DISTURBED DURING CONSTRUCTION. CONTRACTOR SHALL KEEP DISTURBED AREA TO A MINIMUM.
- 5 CONTRACTOR SHALL REPAIR UNDERGROUND IRRIGATION IF DISTURBED DURING CONSTRUCTION. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO SIDEWALK/STAIR CONSTRUCTION.
- 6 MATCH EXISTING GRADE AROUND EXISTING UTILITIES.
- 7 CONTRACTION JOINT. SEE DETAIL 3, SHEET C8.
- 8 EXPANSION JOINT. SEE DETAIL 3, SHEET C8.
- 9 CONSTRUCT CURB. SEE DETAIL 5, SHEET C8.
- 10 RELOCATE EXISTING LIGHT ON NEW FOUNDATION, SEE DETAIL THIS SHEET. COORDINATE LOCATION IN FIELD WITH OIT STAFF

NOTE:
OWNER TO PROVIDE REINFORCING STEEL, BOLTS, AND COMPLETE ALL ELECTRICAL WORK



3 LIGHT POLE FOUNDATION
C6 NTS



TUNNEL LID REPLACEMENT PROJECT FOR OREGON INSTITUTE OF TECHNOLOGY KLAMATH FALLS, OREGON		REVISION	DATE	BY
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FILE: CS-C8.DWG		DESIGNED BY: JMM		
DRAWN BY: SJM		CHECKED BY: MJZ		
SURVEYED BY: ACE		SCALE: AS SHOWN		
SHEET: 14 OF 17		C6		

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TUNNEL LID REPLACEMENT PROJECT
 FOR
 OREGON INSTITUTE OF TECHNOLOGY
 KLAMATH FALLS, OREGON
CONCRETE STAIR DETAILS

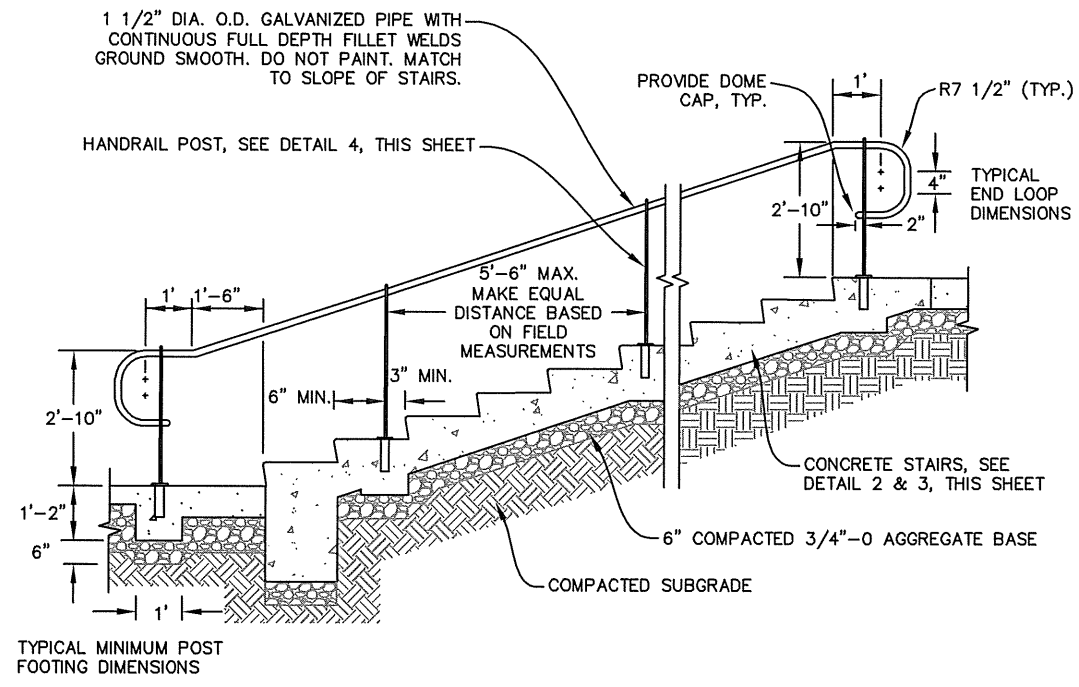
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 SCALE: AS SHOWN
 SHEET: 15 OF 17

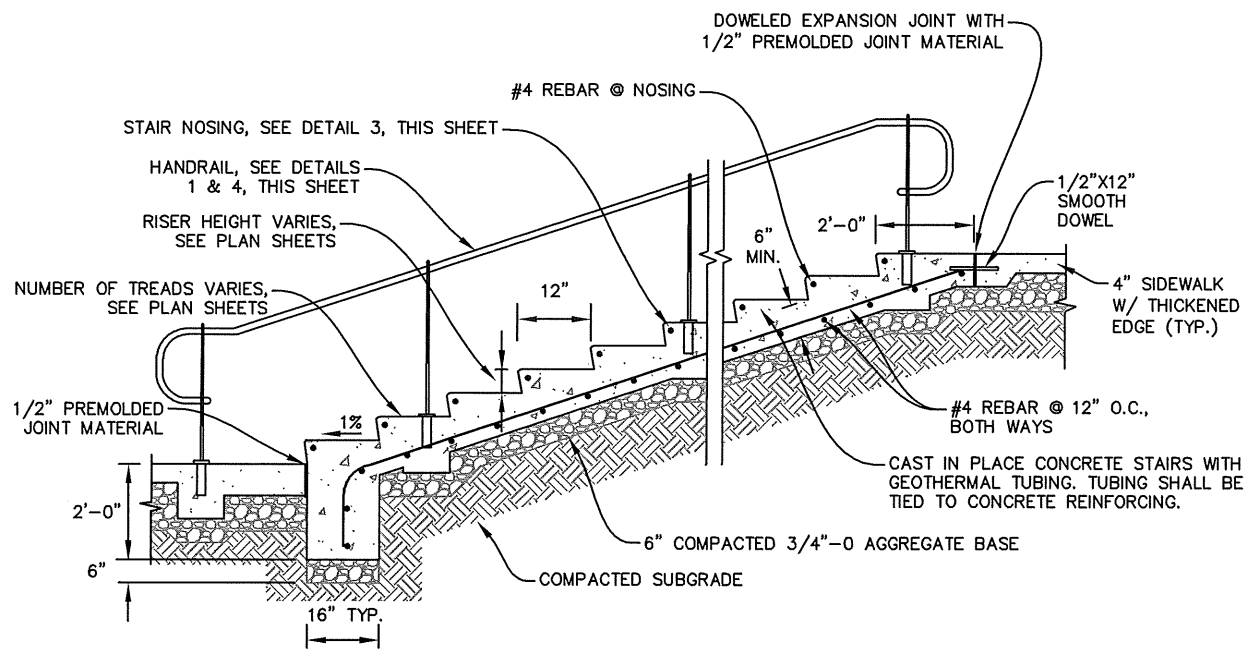


STAIR HANDRAIL/STEEL POST NOTES:

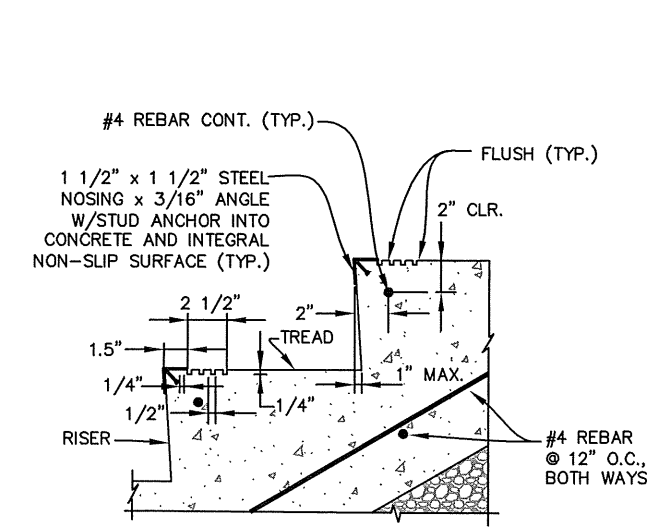
1. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL SHOWING COMPLETE DIMENSIONS AND DETAILS OF FABRICATION AND INCLUDING AN INSTALLATION DIAGRAM AND RAIL JOINT DETAILS. MATERIAL BEING USED SHALL BE SPECIFIED IN THE SHOP DRAWINGS.
2. THE RAILING, POSTS, AND PLATES SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
3. RAILING SHALL BE ADEQUATELY WRAPPED TO ENSURE SURFACE PROTECTION DURING HANDLING AND TRANSPORTATION TO THE JOB SITE.
4. WELDING SHALL BE IN ACCORDANCE WITH AWS D1.1. CONTINUOUS WELD AND GRIND SMOOTH ALL JOINTS.
5. RAILING MAY BE HEATED TO FACILITATE FORMING OR BENDING.
6. THE CONTRACTOR SHALL REPAIR ALL SURFACES DAMAGED BY FIELD OPERATIONS.
7. RAILINGS SHALL BE CONTINUOUS AROUND CORNERS.
8. FIELD WELDS SHALL BE GALVANIZED TO MATCH HOT DIP GALVANIZING AND PROVIDE CORROSION PROTECTION.
9. PIPE MATERIAL SHALL BE ASTM A53. POSTS/PLATES MATERIAL SHALL BE ASTM A36.



1 HANDRAIL AT STAIRS
 C7 1/4"=1'

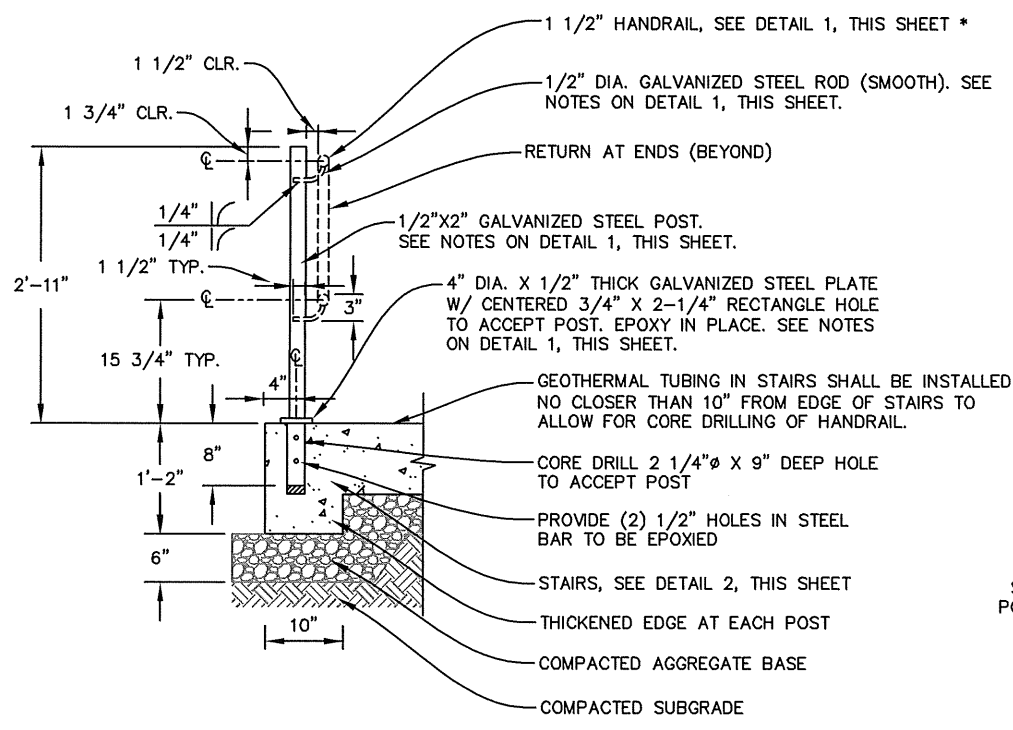


2 CONCRETE STAIRS
 C7 1/4"=1'



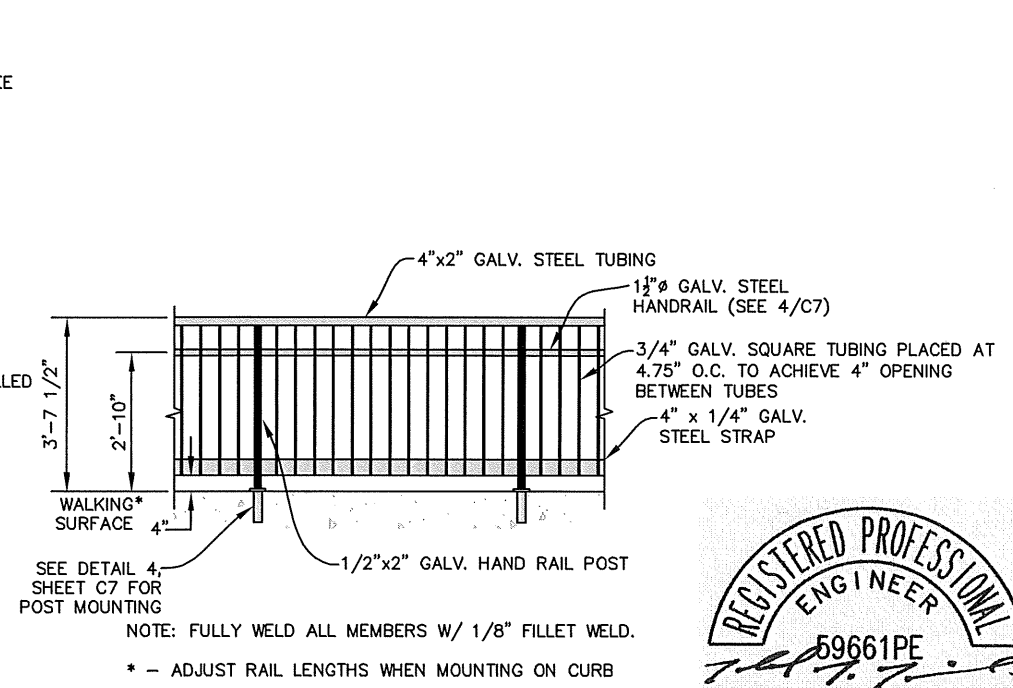
- NOTES:
1. REMOVE TOOL MARKS AND APPLY MEDIUM BROOM FINISH TO STAIR TREAD.
 2. 1/2" RADIUS, TYPICAL ON ALL EXPOSED EDGES OF STAIR TREADS.
 3. GROOVES ON TREAD TO BE PAINTED WITH SAFETY YELLOW PAINT

3 STAIR NOSING
 C7 1"=1'



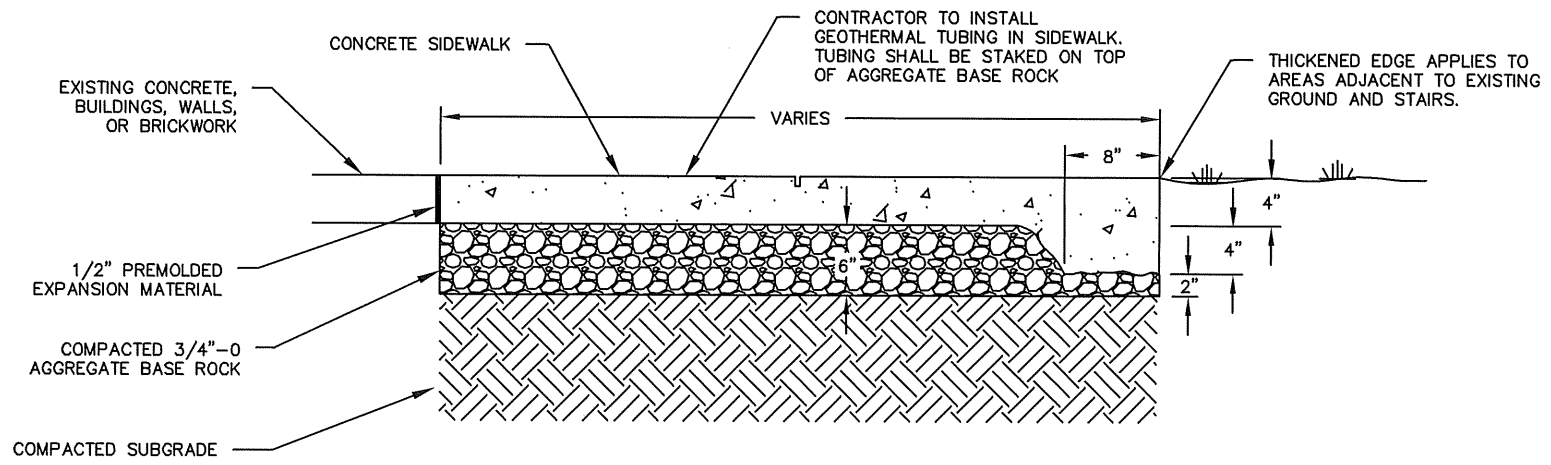
* PROVIDE HANDRAILS ON BOTH SIDES OF POST FOR CENTER STAIR POSTS.

4 HANDRAIL POST
 C7 1/2"=1'

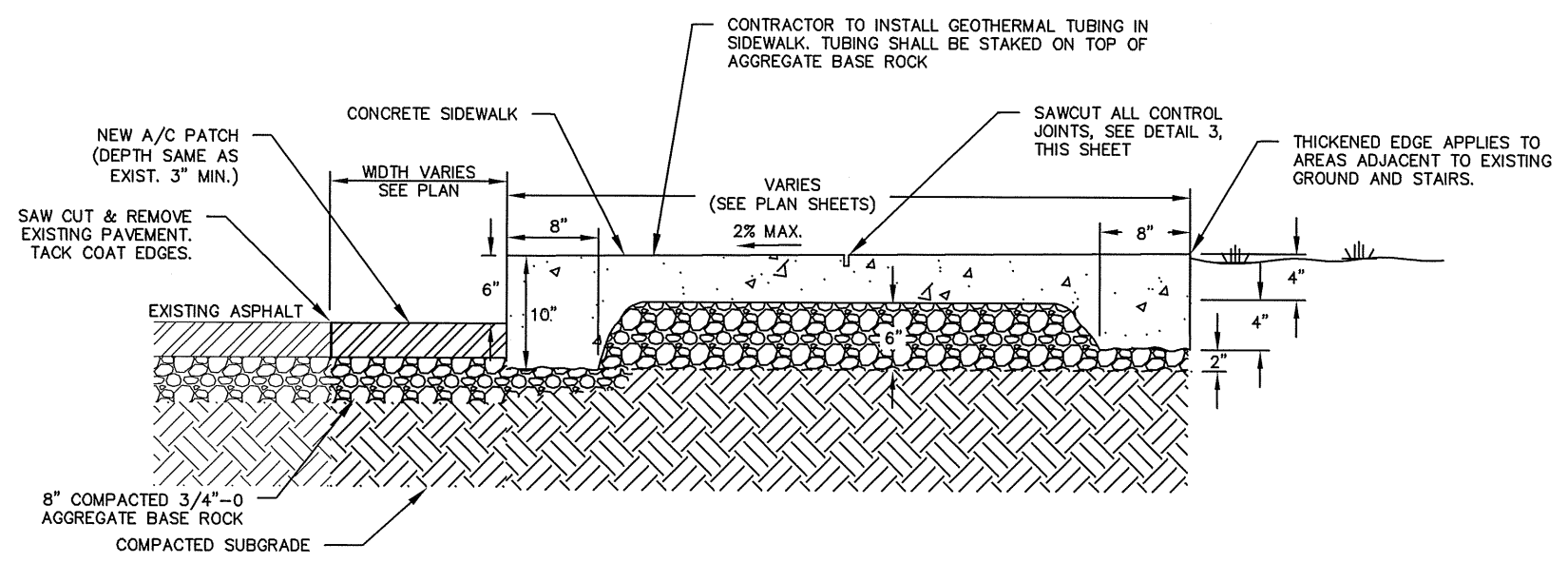


NOTE: FULLY WELD ALL MEMBERS W/ 1/8" FILLET WELD.
 * - ADJUST RAIL LENGTHS WHEN MOUNTING ON CURB

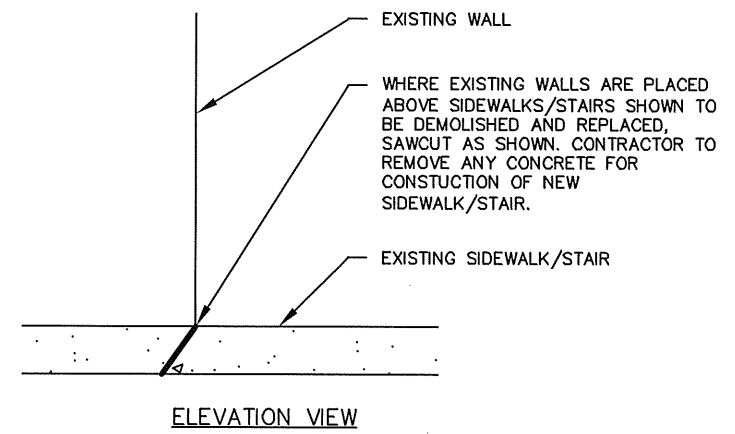
5 GUARDRAIL DETAIL
 C7 1"=1'



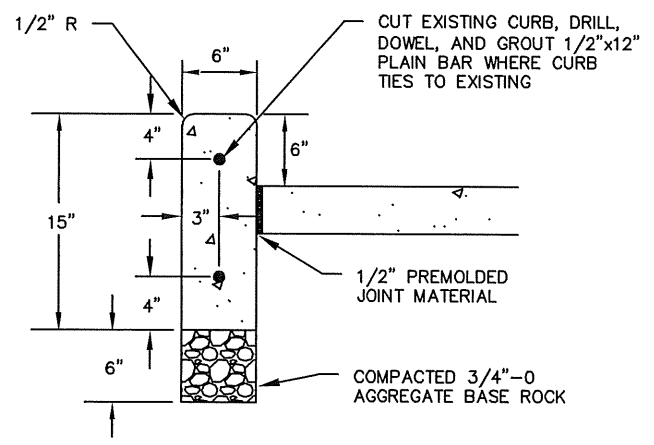
1 TYPICAL SIDEWALK DETAIL
C8 3/4" = 1'



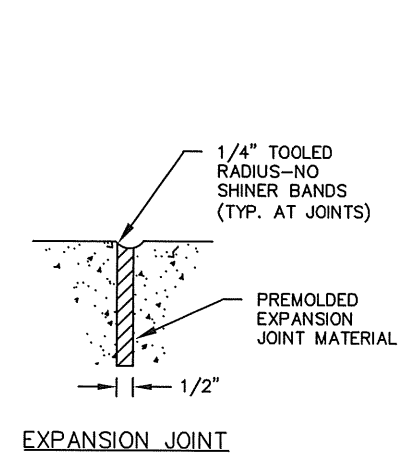
2 TYPICAL SIDEWALK ABUTTING ASPHALT DETAIL
C8 3/4" = 1'



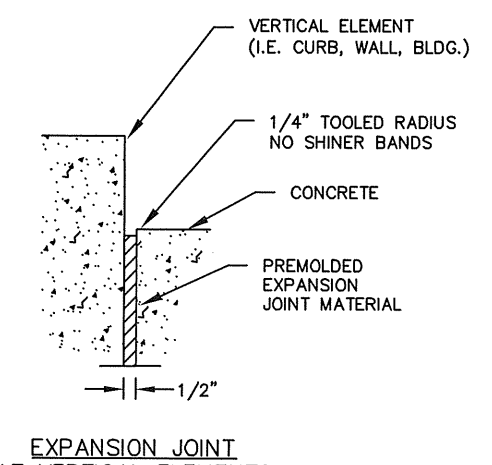
4 SAW CUT AT WALL (TYPICAL)
C8 N.T.S.



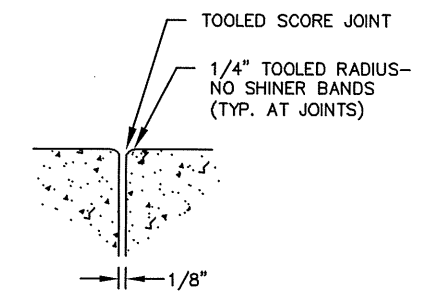
5 CURB DETAIL
C8 N.T.S.



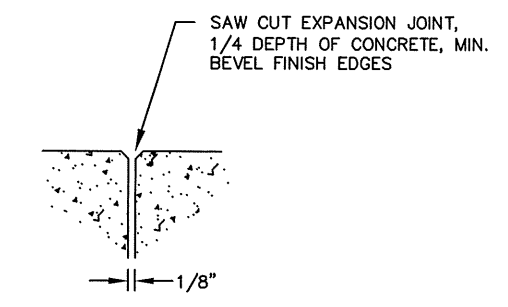
EXPANSION JOINT



EXPANSION JOINT AT VERTICAL ELEMENTS



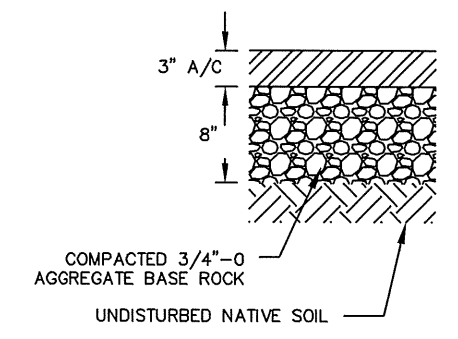
TOOLED CONTRACTION JOINT



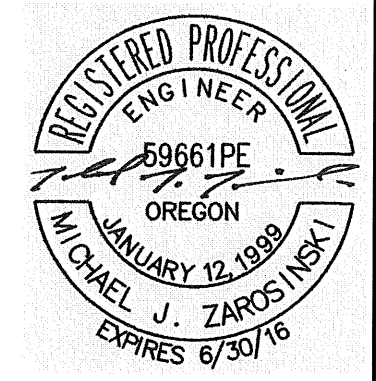
SAW CUT CONTRACTION JOINT

NOTE: EXPANSION JOINTS TO BE FULL DEPTH OF SLAB, CONTRACTION JOINTS 1/3 SLAB DEPTH

3 CONTROL JOINT DETAILS
C8 N.T.S.



6 TYPICAL ASPHALT REPLACEMENT DETAIL
C8 N.T.S.



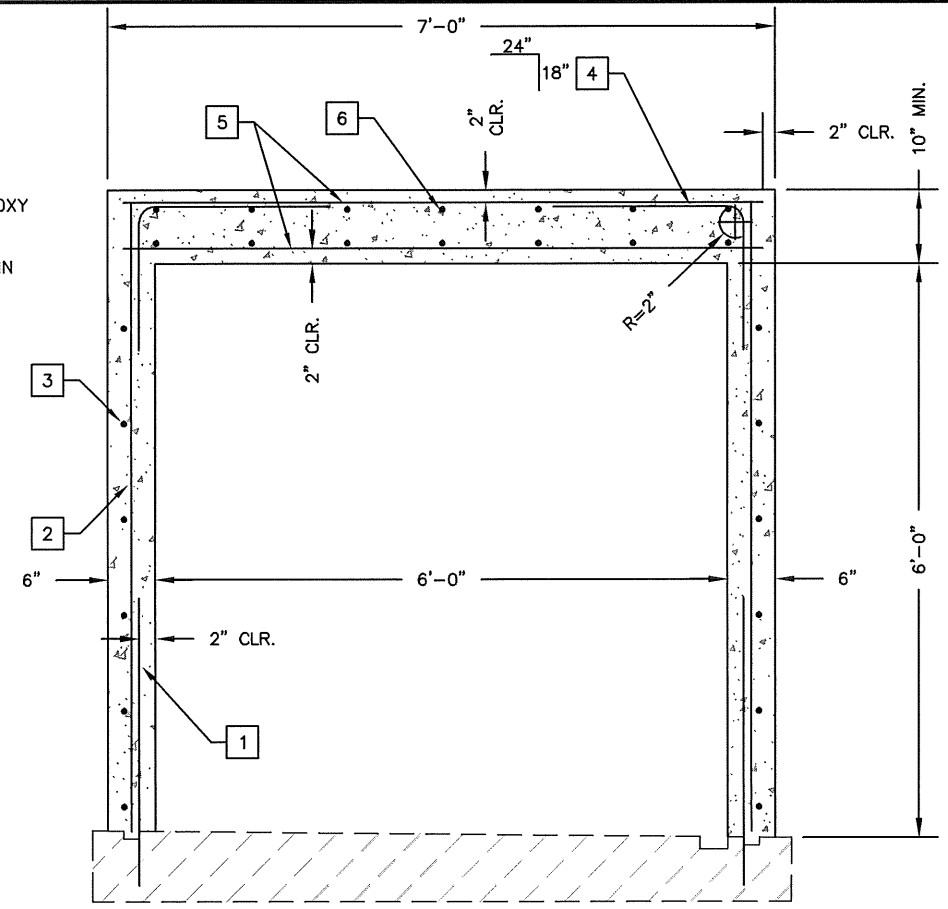
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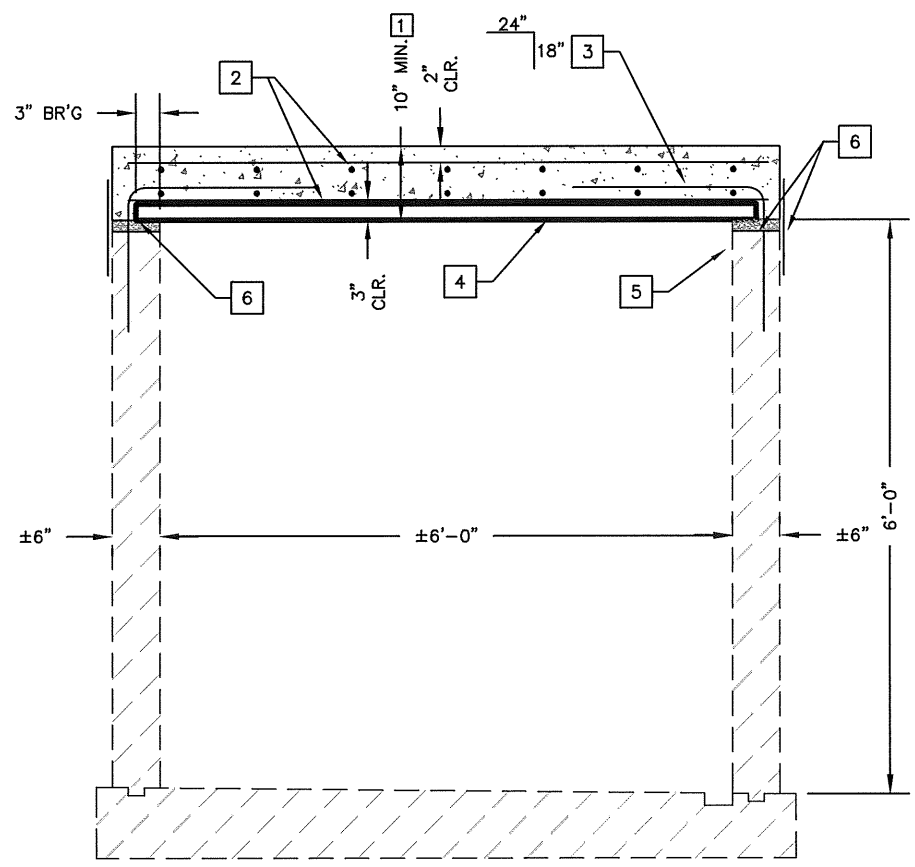
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- 1 #5x3'-0" DOWEL @ 10" O.C., EPOXY 6" INTO EXISTING SLAB
- 2 #5 @ 10" O.C. VERT. CENTERED IN WALL
- 3 #4 @ 12" O.C. HORIZ.
- 4 #6 @ 10" O.C. DOWELS
- 5 #6 @ 10" O.C. TOP & BOTTOM.
- 6 #5 LONG. @ 12" O.C. TOP & BOTTOM.

NOTE:
 1. LOCATIONS FOR FULL REPLACEMENT TO BE DETERMINED IN FIELD BY OWNER AND ENGINEER. UTILITY RELOCATION TO BE COORDINATED AS NEEDED WITH OWNER.
 2. PROVIDE MOISTURE PROTECTION ON ALL WALLS, SLAB ONLY WHERE OTHERWISE NOTED IN PLANS



1
C9 **DETAIL: LID AND WALL REPLACEMENT OPTION**
 SCALE: 1"=2'



2
C9 **DETAIL: STEEL DECK SYSTEM ALTERNATE**
 SCALE: 1"=2'

- 1 OVERALL DEPTH OF SLAB TO BE USED FOR STEEL DECK SYSTEM DESIGN. DEPTH VARIES, SEE PLAN
- 2 SLAB REINFORCEMENT, #4 @ 12" O.C. EACH WAY, TOP & BOTT. MINIMUM
- 3 DOWELS TO MATCH TOP SLAB STEEL. DRILL AND EPOXY INTO EXISTING WALL AS SHOWN
- 4 STEEL DECK. PROVIDE 5/8" PUDDLE WELDS @ 2' O.C. AT ALL SIDELAPS (MIN.). DECK TO BEAR 3" OVER (E) WALL.
- 5 DEMOLITION EXISTING FOR FULL EVEN BEARING, OVERE-CUT WALLS AND USE 1" MIN. NON-SHRINK GROUT LEVELING PAD AS NEEDED.
- 6 3/8" CONTINUOUS BEAD OF HYDROPHILIC CAULK. (SUBMIT PRODUCT FOR APPROVAL PRIOR TO CONSTRUCTION), OR EXTERIOR MOISTURE PROTECTION EXTENDING 8" BOTH SDES OF JOINT

NOTE: DETAIL DOES NOT REFLECT ALL CONDITIONS OF USE AND WORK TO BE COMPLETED, SEE OTHER PLANS AND DETAILS PROVIDED FOR ADDITIONAL INFORMATION.

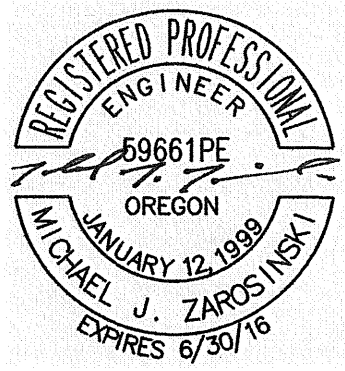
- COMPRESSIVE STRENGTH OF CONCRETE TO BE 4000 PSI
- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND CALCULATIONS OF STEEL DECK SYSTEM TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
- STEEL DECK SYSTEM SHALL BE A STRUCTURAL MEMBER AND INTEGRAL TO THE STRUCTURAL INTEGRITY OF THE SLAB. STAY-IN-PLACE FORMWORK IS NOT ALLOWED.
- LL CONSIDERED SHALL BE A 24k AXLE LOAD (12k WHEEL LOAD), AND 300 PSF UNIFORM LOAD (NOT CONCURRENT)
- BEARING SUPPORTS SHALL BE CONSIDERED AS PINNED

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TUNNEL LID REPLACEMENT PROJECT
 FOR
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 KLAMATH FALLS, OREGON
ADDITIVE & ALTERNATE DETAILS

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C9