

University of Oregon

Information Services

DAS Fiber Backbone Project

Project Manual

April 1, 2014

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UNIVERSITY OF OREGON

Information Services DAS Fiber Backbone Project

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Bidding and Contract Requirements

OREGON UNIVERSITY SYSTEM

NOTICE OF RETAINER CONTRACT OPPORTUNITY

THIS OPPORTUNITY IS ONLY AVAILABLE TO CONTRACTORS WITH A CURRENT OREGON UNIVERSITY SYSTEM (OUS) RETAINER CONTRACT FOR CONSTRUCTION RELATED SERVICES.

The State of Oregon, acting by and through the State Board of Higher Education on behalf of the University of Oregon (“Owner”) is accepting sealed bids for a retainer public improvement project at the University of Oregon until 2 PM, Pacific Time, Wednesday, April 16, 2014 (“Closing Date and Time”) for the Information Services DAS Fiber Backbone project located on the campus of the University of Oregon, in Eugene, Oregon (“Project”). The Project is generally described as “install new underground conduit pathways under Leo Harris Parkway and Martin Luther King Jr. Boulevard, pull in fiber optic cables from new building being constructed at 2777 Martin Luther King Jr. Boulevard to Moshofsky Center near Autzen Stadium and to Oregon Hall on UO main campus using new and existing pathways, and terminate fiber optic cables in all three locations.”

A mandatory pre-bid conference will be conducted at 2 PM, Tuesday, April 8, 2014. Bidders shall meet with Owner’s Representative for that purpose at UO Information Services, Network and Telecom Services “Rainier Building” at 1244 Walnut Street, Eugene, 97403. Attendance will be documented through a sign-in sheet prepared by the Owner’s Representative. Prime bidders who arrive more than 5 minutes after start of time of the meeting (as stated in the solicitation and by the Owner’s Representative’s watch) or after the discussion portion of the meeting (whichever comes first) shall not be permitted to sign in and will not be permitted to submit a bid on the Project.

All pre-bid questions regarding this project shall be directed to Bruce McCarthy **in writing**, UO Information Services, brucem@uoregon.edu, and shall be submitted by 2 PM, Pacific Time, Monday, April 14, 2014, 48 hours before the bid deadline. Questions submitted after that time may not be answered before bidding closes.

Bids will be received on a lump-sum basis for all of the work. **Bid packets may be obtained on the OUS Bid and Business Opportunities website (<http://secure.ous.edu/bid/>).** Only hard copy bids will be accepted. Bids shall be submitted to the UO Campus, Planning, Design, and Construction Office (formerly Capital Construction) located at 1295 Franklin Blvd, Eugene, Oregon 97403.

All bidders must comply with requirements of the prevailing wage law in ORS 279C.800 through ORS 279C.870. All bidders must be registered with the Construction Contractor’s Board at the time of bid submission. No bid will be considered unless fully completed in the manner provided in the “Instructions to Bidders” upon the Bid Form provided and accompanied by Bid Security. OUS encourages bids from Minority, Women, and Emerging Small Businesses.

OREGON STATE BOARD OF HIGHER EDUCATION

By: Jamie Moffitt, Vice President for Finance and Administration

OREGON UNIVERSITY SYSTEM
STANDARD RETAINER CONTRACT
INSTRUCTIONS TO BIDDERS

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INSTRUCTIONS TO BIDDERS

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

Article 1. Definitions

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

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

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

Article 2. Scope of Work

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

Article 3. Examination of Site and Conditions

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

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

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

Article 4. Substitute Materials Approval Process

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

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

4.3 Within a reasonable time after receiving such a request the Owner (or Architect if so designated) will consider

whether the Substitution sought by Bidder is of equal value, utility, as the designated product in the Project Manual. If the requested Substitution is approved an Addendum to the Project Manual shall be issued. A copy of each Addendum will be posted on the OUS Bid and Business Opportunities website (<http://secure.ous.edu/bid>) and shall become a part of the Project Manual.

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

Article 5. Interpretation of Project Manual

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

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

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

Article 6. Execution of the Bid Form

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

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

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

Article 7. Prohibition of Alterations to Bid

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

Article 8. Submission of Bid

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

Article 9. Bid Closing and Opening of Bids

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

Article 10. Acceptance or Rejection of Bids by Owner

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

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

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

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

10.5 If Owner has not accepted a Bid within 30 calendar days after the opening of the Bids, each of the three lowest Bidders may withdraw the Bid submitted.

Article 11. Withdrawal of Bid

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

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

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

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

Article 13. Recyclable Products

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

OREGON UNIVERSITY SYSTEM
STANDARD RETAINER CONTRACT
SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

Project Name: UO DAS Fiber Backbone Project

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

OREGON UNIVERSITY SYSTEM
STANDARD RETAINER CONTRACT

BID FORM

OUS CAMPUS: UNIVERSITY OF OREGON

PROJECT: UO DAS Fiber Backbone Project

BID CLOSING DATE: April 16, 2014, 2PM

FROM: _____
Name of Contractor

TO: The State of Oregon, acting by and through the Oregon State Board of Higher Education,
on behalf of the University of Oregon ("Owner")
(campus or office name and address)

Capital Construction
1295 Franklin Boulevard
1276 University of Oregon
Eugene, OR 97403-1276

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

___ a. An individual doing business under an assumed name registered under the laws of
the State of _____; or

___ b. A partnership registered under the laws of the State of _____;

or

___ c. A corporation organized under the laws of the State of _____; or

___ d. A limited liability corporation/company organized under the laws
of the State of _____;

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

_____ Dollars (\$_____)

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

- Notice of Retainer Contract Opportunity

- Instructions to Bidders
 - Supplemental Instructions to Bidders, if any
 - OUS Retainer Contract General Conditions
 - UO Supplemental Retainer Contract General Conditions
 - Sample Retainer Contract Supplement
 - Performance Bond and Payment Bond
 - Plans and Specifications
 - Prevailing Wage Rates
 - Payroll and Certified Statement Form
- (found at http://egov.oregon.gov/BOLI/WHD/PWR/W_PWR_Forms.shtml)

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

ALTERNATE #1: *New Pathway P2a*
See Scope of Work document, "New Pathways" section, "New Pathway P2a (Additive Alternate)" sub-section. Also see Plan Drawing.
 ADD: \$ _____

ALTERNATE #2: *Pull Cable C3*
See Scope of Work document, "Cable List" section, item "C3" and "Cable C3 (Additive Alternate)" section. Also see Plan Drawing.
 ADD: \$ _____

3. The work shall be completed within the time stipulated and specified in UO Information Services DAS Fiber Backbone Project Scope of Work document, "Meetings and Scheduling" section.

4. 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 and will not be communicated to such person prior to the official opening of the Bid.

5. 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.

6. 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.

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

8. 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.

9. 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.

10. Contractor's Project Manager for this project is: _____,
Office Phone: _____ Cell Phone: _____.

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

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

(name of surety company - not insurance agency)

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

13. 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.

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

NAME OF FIRM _____

ADDRESS _____

FEDERAL TAX ID _____

TELEPHONE NO _____

FAX NO _____

SIGNATURE 1) _____

Sole Individual

or 2) _____

Partner

or 3) _____

Authorized Officer of Corporation

(SEAL)

Attested: Secretary of Corporation

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

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

OREGON UNIVERSITY SYSTEM

RETAINER SUPPLEMENTAL GENERAL CONDITIONS

To The

**GENERAL CONDITIONS
FOR RETAINER CONTRACTS**

**Supplement No. _____
Project Name _____**

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

Section A.1, Definition for “Overhead” is deleted and replaced with the following:

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 or General Conditions, including without limitation such Overhead expenses as wages or salary of personnel primarily at the Contractor’s principle place of business, Contractor's office costs and supplies at Contractor’s principal place of business, and Commercial General Liability Insurance and Automobile Liability Insurance.

Section B.4 is hereby deleted and replaced with the following:

Contractor shall obtain and pay for all necessary permits, licenses and fees, except for those specifically excluded in the Retainer 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. Notwithstanding the first sentence of this paragraph, Owner shall pay for the following: Plan check fees and permit fees required for the general building permit, systems development charges, and building department inspection fees. Notwithstanding the foregoing, however, Contractor shall obtain all permits, licenses and fees required for the construction of the Work.

Section K.2 is hereby deleted and replaced with the following:

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 complete and approved sets of O & M Manuals in paper form and one complete and approved set in electronic form to the Owner and Owner's receipt of the O & M Manuals shall be a condition precedent to Owner's obligation to make final payment.

Section K.4 is hereby deleted and replaced with the following:

As part of the Work, and prior to submission of the final application for payment, the Contractor shall schedule with the Owner and provide 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.

OREGON UNIVERSITY SYSTEM

GENERAL CONDITIONS FOR RETAINER CONTRACTS

July 1, 2012

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

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**OREGON UNIVERSITY SYSTEM
GENERAL CONDITIONS FOR RETAINER CONTRACTS
("OUS Retainer General Conditions")**

**SECTION A
GENERAL PROVISIONS**

A.1 DEFINITION OF TERMS

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

AMENDMENT, means a writing which, when fully executed by the Parties to this Contract, constitutes a change to a Contract Document. Amendments to Supplements (hereinafter a "Supplement Amendment") shall be issued in accordance with the changes provisions of Section D and, if applicable, establish a Contract Price or Contract Time adjustment.

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 issued by the Owner to be later included as an Amendment. A Change Order shall not be effective until codified as an Amendment.

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

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

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

CONTRACT DOCUMENTS, means the Solicitation Document and addenda thereto, Instructions to Offerors, Supplemental Instructions to Offerors, the OUS Retainer Contract, OUS Retainer General Conditions, Retainer Supplemental General Conditions, if any, the accepted Offer, Plans, Specifications, Supplements, Amendments, and Construction Change Directives .

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

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

CONTRACT TIME, means any incremental period of time allowed under the Contract to complete any portion of the Work as reflected in the project schedule.

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

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

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

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

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

MWESB REPORT, means an accurate report by the Contractor to the Owner identifying all Minority, Women and Emerging Small Business (MWESB) enterprises, as those terms are defined in ORS 200.005, receiving contracts throughout the course of the Work. An initial MWESB report is required (see Section E.2.9) and MWESB Reports are required annually (see Section E.2.9) and as a condition of final payment (see Section K.1). The initial report shall 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 Supplements and Amendments incorporated during the course of the project. The reports shall only include enterprises certified with the State of Oregon as MWESB enterprises and shall include individual identification of each enterprise as a Minority business enterprise, a Women business enterprise, and/or an Emerging Small Business Enterprise, as applicable.

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

OFFER, means a bid in connection with Instructions to Bidders or a proposal in connection with a Request for Proposals.

OFFEROR, means a bidder in connection with Instructions to Bidders or a proposer in connection with a Request for Proposals.

OVERHEAD, means those items which may be included in the Contractor's markup (general and administrative expense and profit)

and that shall not be charged as Direct Cost of the Work, including without limitation such Overhead expenses as wages or salary of personnel above the level of foreman (i.e., superintendents and project managers), expenses of Contractor's offices and supplies at the job site (e.g. job trailer) and at Contractor's principal place of business and including expenses of personnel staffing the job site office and Contractor's principal place of business, and Commercial General Liability Insurance and Automobile Liability Insurance.

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

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

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

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

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

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

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

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

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

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

SUPPLEMENT, means a writing which, when fully executed by the Parties thereto, constitutes 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.

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

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

A.2 SCOPE OF WORK

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

A.3 INTERPRETATION OF CONTRACT DOCUMENTS

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

- (a) Contract Supplements, Amendments and Construction Change Directives, with those of later date having precedence over those of an earlier date;
- (b) The Retainer Supplemental General Conditions;
- (c) The OUS Retainer Contract;
- (d) The OUS Retainer General Conditions;
- (e) Division One (General Requirements) of the Specifications;
- (f) Detailed Schedules of finishes, equipment and other items included in the Specifications;
- (g) Plans and Specifications (other than Division One and the Detailed Schedules to the Specifications);
- (h) Large-scale drawings on Plans;
- (i) Small-scale drawings on Plans;
- (j) Dimension numbers written on Plans which shall prevail and take precedence over dimensions scaled from Plans;
- (k) The Solicitation Document, and any addenda thereto;
- (l) The accepted Offer.

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 shall be subject to inspection and/or observation and testing by the Owner to determine if they conform to the Contract Documents. Inspection of the Work by the Owner does not relieve the Contractor of responsibility for the Work in accordance with the Contract Documents.
- B.3.4 Contractor shall furnish adequate facilities, as required, for the Owner to have safe access to the Work including without limitation walkways, railings, ladders, tunnels, and platforms. Producers, suppliers, and fabricators shall also provide proper facilities and access to their facilities.
- B.3.5 The Contractor shall furnish Samples of materials for testing by the Owner and include the cost of the Samples in the Contract Price.

B.4 PERMITS

Contractor shall obtain and pay for all necessary permits, licenses and fees, except for those specifically excluded in the Retainer 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 Supplement Amendment.
- B.7.6 If any testing or inspection reveals failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Owner's and Architect/Engineer's services and expenses, shall be at the Contractor's expense.
- B.7.7 When the United States government participates in the cost of the Work, or the Owner has an agreement with other public or private organizations, or if any portion of the Work is being performed for a third party or in close proximity to third party facilities, representatives of these organizations shall have the right to inspect the Work affecting their interests or property. Their right to inspect shall not make them a party to the Contract and shall not interfere with the rights of the parties of the Contract. Instructions or orders of such parties shall be transmitted to the Contractor, through the Owner.

B.8 SEVERABILITY

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

B.9 ACCESS TO RECORDS

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

- B.9.2 Contractor shall retain and the Owner and its duly authorized representatives shall have access, for a period not less than ten (10) years, to all Record Documents, financial and accounting records, and other books, documents, papers and records of Contractor which are pertinent to the Contract, including records pertaining to Overhead and indirect costs, for the purpose of making audit, examination, excerpts and transcripts. If for any reason, any part of the Work or this Contract shall be subject to litigation, Contractor shall retain all such records until all litigation is resolved and Contractor shall continue to provide Owner and/or its agents with full access to such records until such time as all litigation is complete and all periods for appeal have expired and full and final satisfaction of any judgment, order or decree is recorded and Owner receives a record copy of documentation from Contractor.

B.10 WAIVER

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

B.11 SUBCONTRACTS AND ASSIGNMENT

- B.11.1 Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound by the terms and conditions of these OUS Retainer 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 to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- (b) Contractor's costs for unloading and handling at the site, labor, installation costs, Overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Price but not in the allowances;
- (c) whenever costs are more than or less than allowances, the Contract Price shall be adjusted accordingly by Amendment. The amount of the Amendment shall reflect (i) the difference between actual costs and the allowances under Section B.17.2(a) and (2) changes in Contractor's costs under Section B.17.2(b).
- (d) Unless Owner requests otherwise, Contractor shall provide to Owner a proposed fixed price for any allowance work prior to its performance.

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

B.18.1 The Contractor shall prepare and keep current, for the Architect's/Engineer's approval (or for the approval of Owner if approval authority has not been delegated to the Architect/Engineer), a schedule and list of submittals which is coordinated with the Contractor's construction schedule and allows the Architect/Engineer reasonable time to review submittals. Owner reserves the right to finally approve the schedule and list of submittals. Submittals include, without limitation, Shop Drawings, Product Data, and Samples which are described below:

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

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

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

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

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

B.18.6 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect/Engineer's review or approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect/Engineer in writing of such deviation at the time of submittal and (i) the Architect/Engineer has given written approval to the specific deviation as a minor change in the Work, or (ii) a Supplement Amendment 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 Supplement Amendment or Construction Change Directive. Substitutions shall be subject to the requirements of the bid documents. By making requests for Substitutions, the Contractor: represents that the Contractor has personally investigated the proposed substitute product; represents that the Contractor will provide the same warranty for the Substitution that the Contractor would for the product originally specified unless approved otherwise; certifies that the cost data presented is complete and includes all related costs under this Contract including redesign costs, and waives all claims for additional costs related to the Substitution which subsequently become apparent; and will coordinate the installation of the accepted Substitution, making such changes as may be required for the Work to be completed in all respects.

B.20 USE OF PLANS AND SPECIFICATIONS

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

B.21 FUNDS AVAILABLE AND AUTHORIZED

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

B.22 NO THIRD PARTY BENEFICIARIES

Owner and Contractor are the only parties to this Contract and are the only parties entitled to enforce its terms. Nothing in this Contract gives, is intended to give, or shall be construed to give or provide any benefit or right, whether directly, indirectly, or otherwise, to third persons unless such third persons are individually identified by name herein and expressly described as intended beneficiaries of the terms of this Contract.

SECTION C WAGES AND LABOR

C.1 MINIMUM WAGE RATES ON PUBLIC WORKS

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

C.2 PAYROLL CERTIFICATION AND FEE REQUIREMENTS

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

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

C.2.3 Pursuant to ORS 279C.845(8), the Contractor shall retain 25 percent of any amount earned by a first-tier Subcontractor on this public works project until the first-tier Subcontractor has

filed with the Owner the certified statements required by C.2.1. Before paying any amount retained under this subsection, the Contractor shall verify that the first-tier Subcontractor has filed the certified statement. Within 14 days after the first-tier Subcontractor files the required certified statement the Contractor shall pay the first-tier Subcontractor any amount retained under this subsection.

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

C.3 PROMPT PAYMENT AND CONTRACT CONDITIONS

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

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

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

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

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

C.3.2 As a condition to Owner's performance hereunder, if Contractor fails, neglects or refuses to make prompt payment of any claim for labor or services furnished to the Contractor 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 Supplement or Amendment 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 Amendments shall be executed under the conditions of the Contract Documents. Such changes may include, but are not limited to:

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

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

percentage markup specified for profit, Overhead and other indirect costs, unless otherwise agreed to by Owner.

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

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

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

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

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

Payments made to the Contractor shall be complete compensation for Overhead, profit, and all costs that were incurred by the Contractor or by other forces furnished by the Contractor, including Subcontractors, for adjustments to or deletions from the Work pursuant to a Supplement Amendment. 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 Supplement Amendment. 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 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 OUS Retainer General Conditions. Within thirty (30) Days after the initial Claim, Contractor shall submit to the Owner a complete and detailed description of the Claim (the "Detailed Notice") that includes all information required by Section D.3.2. Unless the Claim is made in accordance with these time requirements, it shall be waived by Contractor.

- D.3.2 The Detailed Notice of the Claim shall be submitted in writing by Contractor and shall include a detailed, factual statement of the basis of the Claim, pertinent dates, Contract provisions which support or allow the Claim, reference to or copies of any documents which support the Claim, the dollar value of the Claim, and the Contract Time adjustment requested for the Claim. If the Claim involves Work to be completed by Subcontractors, the Contractor will analyze and evaluate the merits of the Subcontractor claim prior to forwarding it and that analysis and evaluation to the Owner. The Owner will not consider direct claims from Subcontractors, suppliers, manufacturers, or others not a party to this Contract. Contractor agrees that it will make no agreement, covenant, or assignment, nor will it commit any other act that will permit or assist any Subcontractor, supplier, manufacturer, or other to directly or indirectly make a claim against Owner.
- D.3.3 The Owner will review all Claims and take one or more of the following preliminary actions within ten (10) Days of receipt of the Detailed Notice of a Claim: (1) request additional supporting information from the Contractor; (2) inform the Contractor and Owner in writing of the time required for adequate review and response; (3) reject the Claim in whole or in part and identify the reasons for rejection; (4) based on principles of equitable adjustment, recommend approval of all or part of the Claim; or (5) propose an alternate resolution.
- D.3.4 The Owner's decision shall be final and binding on the Contractor unless appealed by written notice to the Owner within fifteen (15) Days of receipt of the decision. The Contractor must present written documentation supporting the Claim within fifteen (15) Days of the notice of appeal. After receiving the appeal documentation, the Owner shall review the materials and render a decision within thirty (30) Days after receiving the appeal documents.
- D.3.5 The decision of the Owner shall be final and binding unless the Contractor delivers to the Owner its request for mediation, which shall be a non-binding process, within fifteen (15) Days of the date of the Owner's decision. The mediation process will be considered to have commenced as of the date the Contractor delivers the request. Both parties acknowledge and agree that participation in mediation is a prerequisite to commencement of litigation of any disputes relating to the Contract. Both parties further agree to exercise their best efforts in good faith to resolve all disputes within sixty (60) Days of the commencement of the mediation through the mediation process set forth herein.
- In the event that a lawsuit must be filed within this sixty (60) Day period in order to preserve a cause of action, the parties agree that, notwithstanding the filing, they shall proceed diligently with the mediation to its conclusion prior to actively prosecuting the lawsuit, and shall seek from the Court in which the lawsuit is pending such stays or extensions, including the filing of an answer, as may be necessary to facilitate the mediation process. Further, in the event settlements are reached on any issues through mediation, the plaintiff shall promptly cause to be entered by the Court a stipulated general judgment of dismissal with prejudice, or other appropriate order limiting the scope of litigation as provided in the settlement.
- D.3.6 Should the parties arrive at an impasse regarding any Claims or disputed Claims, it is agreed that the parties shall participate in mediation as specified in Section D.3.5. The mediation process will be considered to have been commenced as of the date one

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

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

SECTION E PAYMENTS

E.1 SCHEDULE OF VALUES

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

E.2 APPLICATIONS FOR PAYMENT

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

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

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

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

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

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

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

Signed: _____
Dated: _____"

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

- (a) The request for stored material shall be submitted at least thirty (30) Days in advance of the application for payment on which it appears. Applications for payment shall be entertained for major equipment, components or expenditures only.
- (b) The Contractor shall submit applications for payment showing the quantity and cost of the material stored.
- (c) The material shall be stored in a bonded warehouse and Owner shall be granted the right to access the material for the purpose of removal or inspection at any time during the Contract Period.
- (d) The Contractor shall name the Owner as co-insured on the insurance policy covering the full value of the property while in the care and custody of the Contractor until it is installed. A certificate noting this coverage shall be issued to the Owner.
- (e) Payments shall be made for materials and equipment only. The submitted amount in the application for payment shall be reduced by the cost of transportation from the storage site to the project site and for the cost of an inspector to verify delivery and condition of the goods at the storage site. The cost of storage and inspection shall be borne solely by the Contractor.

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

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

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

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

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

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

- (a) Take that portion of the Contract Price properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the total Contract Price allocated to that portion of the Work in the Schedule of Values, less retainage as provided in Section E.5. Pending final determination of cost to the Owner of changes in the Work, no amounts for changes in the Work can be included in applications for payment until the Contract Price has been adjusted by a Supplement Amendment;
- (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.

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 the Owner 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.3 CUTTING AND PATCHING

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

F.4 CLEANING UP

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

F.5 ENVIRONMENTAL CONTAMINATION

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

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

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

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

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

- (a) Description of items released (identity, quantity, manifest numbers, and any and all other documentation required by law.)

- (b) Whether amount of items released is EPA/DEQ reportable, and, if so, when reported.
- (c) Exact time and location of release, including a description of the area involved.
- (d) Containment procedures initiated.
- (e) Summary of communications about the release between Contractor and members of the press or State, local or federal officials other than Owner.
- (f) Description of cleanup procedures employed or to be employed at the site, including disposal location of spill residue.
- (g) Personal injuries, if any, resulting from, or aggravated by, the release.

F.6 ENVIRONMENTAL CLEAN-UP

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

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

F.7 FORCE MAJEURE

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

SECTION G *INDEMNITY, BONDING, AND INSURANCE*

G.1 RESPONSIBILITY FOR DAMAGES / INDEMNITY

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

G.1.2 To the fullest extent permitted by law, Contractor shall indemnify, defend (with counsel approved by Owner) and hold harmless the Owner, Architect/Engineer, Architect/Engineer's

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

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

G.2 PERFORMANCE AND PAYMENT SECURITY; PUBLIC WORKS BOND

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

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

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

G.3 INSURANCE

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

G.3.2 Workers' Compensation: All employers, including Contractor, that employ subject workers who work under this Contract in the State of Oregon shall comply with ORS 656.017 and provide the required Workers' Compensation coverage, unless such employers are exempt under ORS 656.126. This shall include Employer's Liability Insurance with coverage limits of not less than the minimum amount required by statute for each accident. Contractors who perform the Work without the assistance or labor of any employee need not obtain such coverage if the Contractor certifies so in writing. Contractor shall ensure that each of its Subcontractors complies with these requirements. The Contractor shall require proof of such Workers' Compensation coverage by receiving and keeping on file a certificate of insurance from each Subcontractor or anyone else directly employed by either the Contractor or its Subcontractors.

G.3.3 Builder's Risk Insurance:

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

G.3.3.2 Builder's Risk Installation Floater: For Work other than new construction, Contractor shall obtain and keep in effect during the term of this Contract, a Builder's Risk Installation Floater for coverage of the Contractor's labor, materials and equipment to be used for completion of the Work performed under this Contract. The minimum amount of coverage to be carried shall be equal to the full amount of the Contract. The policy will include as loss payees Owner, the Contractor and its Subcontractors as their interests may appear. Owner may waive this requirement at their 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 issuance of a Supplement, Contractor shall obtain, and keep in effect at Contractor's expense for the term of the Supplement, Commercial General Liability Insurance covering bodily injury and property damage in the amount of \$1,000,000 per claim and \$2,000,000 per occurrence in a form satisfactory to Owner. This insurance shall include personal injury liability, products and completed operations, and contractual liability coverage for the

indemnities provided under this Contract (to the extent contractual liability coverage for the indemnity is available in the marketplace), and shall be issued on an occurrence basis.

- G.3.4.2 Automobile Liability: Contractor shall obtain, at Contractor's expense, and keep in effect during the term of this Contract, Automobile Liability Insurance covering owned, and/or hired vehicles, as applicable. The coverage may be written in combination with the Commercial General Liability Insurance. Contractor shall provide proof of insurance of not less than \$1,000,000 per claim and \$2,000,000 per occurrence. Contractor and its Subcontractors shall be responsible for ensuring that all non-owned vehicles maintain adequate Automobile Liability insurance while on site.
- G.3.4.3 Owner may adjust the insurance amounts required in Section G.3.4.1 and G.3.4.2 based upon institution specific risk assessments through the issuance of Supplemental General Conditions and a Supplement.
- G.3.4.4 "Tail" Coverage: If any of the required liability insurance is arranged on a "claims made" basis, "tail" coverage will be required at the completion of this Contract for a duration of 36 months or the maximum time period available in the marketplace if less than 36 months. Contractor shall furnish certification of "tail" coverage as described or continuous "claims made" liability coverage for 36 months following Final Completion. Continuous "claims made" coverage will be acceptable in lieu of "tail" coverage, provided its retroactive date is on or before the effective date of this Contract. Owner's receipt of the policy endorsement evidencing such coverage shall be a condition precedent to Owner's obligation to make final payment and to Owner's final acceptance of Work or services and related warranty (if any).
- G.3.4.5: Umbrella Liability (if required by Owner through issuance of Supplemental General Conditions): Contractor shall obtain, at Contractor's expense, and keep in effect during the term of this Contract, Umbrella liability Insurance over and above the general liability, automobile liability and workers' compensation coverage if required by Owner in specified limits at time of requirement.
- G.3.4.6 Pollution Liability (if required by Owner through issuance of Supplemental General Conditions): Contractor shall obtain, at Contractor's expense, and keep in effect during the term of this Contract, Pollution liability Insurance in minimum amounts of \$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, professional liability, umbrella, and pollution liability if required, shall include the Owner as additional insureds but only with respect to the Contractor's activities to be performed under this Contract.
- If Contractor cannot obtain an insurer to name the Owner as additional insureds, Contractor shall obtain at Contractor's expense, and keep in effect during the term of this Contract, Owners and Contractors Protective Liability Insurance, naming the Owner as additional insureds with not less than a \$2,000,000 limit per occurrence. This policy must be kept in effect for 36 months following Final Completion. As evidence of coverage, Contractor shall furnish the actual policy to Owner prior to execution of the Contract.
- G.3.6 Notice of Cancellation or Change: If the Contractor receives a non-renewal or cancellation notice from an insurance carrier affording coverage required herein, or receives notice that coverage no longer complies with the insurance requirements herein, Contractor agrees to notify Owner by fax within five (5) business days with a copy of the non-renewal or cancellation notice, or written specifics as to which coverage is

no longer in compliance. When notified by Owner, the Contractor agrees to stop Work pursuant to this Contract, unless all required insurance 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 Owner reserves the right to withhold payment to Contract until evidence of reinstated or replacement coverage is provided to Owner.

- G.3.7 Certificate(s) of Insurance: As evidence of the insurance coverage required by this Contract, the Contractor shall furnish certificate(s) of insurance to the Owner prior to execution of the Contract. The certificate(s) will specify all of the parties who are additional insureds or loss payees for this contract. Insurance coverage required under this Contract shall be obtained from insurance companies or entities acceptable to the Owner and that are eligible to provide such insurance under Oregon law. Eligible insurers include admitted insurers that have been issued a certificate of authority from the Oregon Department of Consumer and Business Services authorizing them to conduct an insurance business and issue policies of insurance in the state of Oregon, and certain non-admitted surplus lines insurers that satisfy the requirements of applicable Oregon law and which are subject to approval by the Owner. The Contractor shall be financially responsible for all deductibles, self-insured retentions and/or self-insurance included hereunder. Any deductible, self-insured retention and/or self-insurance in excess of \$50,000 shall be subject to approval by the Owner in writing and shall be a condition precedent to the effectiveness of any Supplement.
- G.3.8 Retainer Contract Program: For the OUS Retainer Contract Program the term "Contract" as used in this Section G in the phrases "keep in effect during the term of this Contract" and "prior to execution of the Contract" shall mean each Retainer Contract Supplement issued under the Retainer 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 Supplement Amendment, 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.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 project in every respect as though its prosecution had been continuous and without suspension.

J.3 COMPENSATION FOR SUSPENSION

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

J.4 OWNER'S RIGHT TO TERMINATE CONTRACT

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

- (a) If Contractor should, voluntarily or involuntarily, seek protection under the United States Bankruptcy Code and Contractor as debtor-in-possession or the Trustee for the estate fails to assume the Contract within a reasonable time;
- (b) If Contractor should make a general assignment for the benefit of Contractor's creditors;
- (c) If a receiver should be appointed on account of Contractor's insolvency;
- (d) If Contractor should repeatedly refuse or fail to supply an adequate number of skilled workers or proper materials to carry on the Work as required by the Contract Documents, or otherwise fail to perform the Work in a timely manner;
- (e) If Contractor should repeatedly fail to make prompt payment to Subcontractors or for material or labor, or should disregard laws, ordinances or the instructions of the Owner; or
- (f) If Contractor is otherwise in breach of any part of the Contract.
- (g) If Contractor is in violation of Applicable Laws, either in the conduct of its business or in its performance of the Work.

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

J.5 TERMINATION FOR CONVENIENCE

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

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

J.6 ACTION UPON TERMINATION

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

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

I.6.3 Upon Owner's notice of termination pursuant to either Section J.4 or J.5, if Owner shall so elect, Contractor shall assign 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 three (3) complete and approved sets of O & M Manuals to the Owner and Owner's receipt of the O & M Manuals shall be a condition precedent to Owner's obligation to make final payment.

K.3 COMPLETION NOTICES

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

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

K.4 TRAINING

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

K.5 EXTRA MATERIALS

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

K.6 ENVIRONMENTAL CLEAN-UP

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

K.7 CERTIFICATE OF OCCUPANCY

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

K.8 OTHER CONTRACTOR RESPONSIBILITIES

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

K.9 SURVIVAL

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

OREGON UNIVERSITY SYSTEM
STANDARD PUBLIC IMPROVEMENT CONTRACT
PERFORMANCE BOND

Bond No. _____
Solicitation _____
Project Name _____

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

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

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

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

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

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

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

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

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

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

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

Dated this _____ day of _____, 20__.

PRINCIPAL: _____

By _____
Signature

Official Capacity
Attest: _____
Corporation Secretary

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

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

Name

Signature

Address

City State Zip

Phone Fax

OREGON UNIVERSITY SYSTEM

STANDARD PUBLIC IMPROVEMENT CONTRACT

PAYMENT BOND

Bond No. _____
Solicitation _____
Project Name _____

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

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

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

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

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

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

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

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

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

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

Dated this _____ day of _____, 20__.

PRINCIPAL: _____

By _____
Signature

Official Capacity

Attest: _____
Corporation Secretary

SURETY: _____

[Add signatures for each if using multiple bonds]

BY ATTORNEY-IN-FACT:

[Power-of-Attorney must accompany each bond]

Name

Signature

Address

City State Zip

Phone Fax

**RETAINER CONTRACT SUPPLEMENT
OUS RETAINER CONTRACT FOR CONSTRUCTION
RELATED SERVICES**

Supplement No.
Project Name
Owner's Project
Manager

This Retainer Contract Supplement dated _____ (the "Supplement") is entered into between:

"Contractor":

Federal Tax ID No.

and "Owner":

The State of Oregon, acting by and through the State
Board of Higher Education, on behalf of:

(collectively, the "Parties") pursuant to the Retainer Contract for Construction Related Services between the Parties terminating June 30, 2014 (the "Retainer Contract"). Capitalized terms have the meaning defined in the OUS Retainer General Conditions unless otherwise defined in the Retainer Contract or herein.

- 1. DESCRIPTION OF THE PROJECT.** The project to which this Supplement pertains is described as follows: _____ (the "Project").
- 2. WORK TO BE PERFORMED.** Contractor shall perform the following work on the Project : _____ (the "Work"). Contractor will perform the Work according to the terms and conditions of this Supplement and the Contract Documents, which are incorporated herein by this reference.
- 3. SCHEDULE.** Contractor shall perform the Work according to the following schedule: _____ (the "Schedule").
- 4. COMPENSATION.** Owner shall compensate Contractor for Work (a) in the firm, fixed-price amount of \$ _____; or (b) on a time and materials basis subject to a maximum not-to-exceed price of \$ _____; in accordance with the requirements of the OUS Retainer General Conditions. If the Work is performed on a time and materials basis, Contractor's listing of wage rates, material unit costs and overhead charges for the Work is attached to this Supplement.

The cost of the Work under this Supplement, even if this Supplement is later amended to include additional work, must not exceed the greater of \$1,000,000 or the maximum allowable under

OAR 580-063-0030.

5. TERM. This Supplement is effective on the date it has been signed by every Party hereto and all approvals required by Applicable Law have been obtained (the “Effective Date”). No Work shall be performed or payment made prior to the Effective Date. Contractor shall perform its obligations in accordance with the Contract Documents, unless this Supplement is earlier terminated or suspended.

6. PERFORMANCE AND PAYMENT BONDS. The performance and payment bond requirements for this Project are as follows (check one of the following):

As a condition precedent to the effectiveness of this Supplement and to Owner’s obligation to make payment for the Work, Contractor shall provide the Owner with a performance bond and a separate payment bond in a sum equal to the Contract Price stated in Section 4 of this Supplement.

This Project has a Contract price of \$100,000 or less, and Owner has determined that performance and payment bonds will not be required for this Project.

7. MINIMUM WAGE RATES.

Prevailing Wage Rates requirements do not apply to this Project because the maximum compensation for all Owner-contracted Work does not exceed \$50,000.

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.2.3 of the OUS Retainer General Conditions. 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 Supplement:

PREVAILING WAGE RATES for Public Works Contracts in Oregon, _____, 20____, as amended _____, 20____ [~~delete “as amended _____, 20____” if there have been no amendments since last rate change~~], which can be downloaded at the following web address:

[http://www.boli.state.or.us/BOLI/WHD/PWR/pwr_book.shtml]

The Work will take place in _____ County, Oregon.

8. TAX COMPLIANCE CERTIFICATION. Contractor hereby certifies and affirms, under penalty of perjury as provided in ORS 305.385(6), that, to the best of Contractor’s knowledge, Contractor is not in violation of any of the tax laws described in ORS 305.380(4). For purposes of this certification, “tax laws” means a state tax imposed by ORS 320.005 to 320.150 and 403.200 to 403.250, ORS Chapters 118, 314, 316, 317, 318, 321 and 323; the elderly rental assistance program under ORS 310.630 to 310.706; and local taxes administered by the Oregon Department of Revenue under ORS 305.620.

9. INSURANCE REQUIREMENTS.

Contractor shall comply with and obtain the insurance coverage amounts stated in the OUS Retainer General Conditions.

The Owner has determined that the Contractor shall obtain insurance in the amount described in the Retainer Supplemental General Conditions, attached hereto.

10. KEY PERSONS. If checked here, the following provision is incorporated into this Supplement:

The Parties agree that certain Contractor personnel are specifically valuable to the Project (“Key Persons”). Key Persons shall not be replaced during the Project without the written consent of Owner, which shall not be unreasonably withheld. If Contractor intends to substitute personnel, Owner shall receive the request at least 15 days prior to the effective date of substitution. When replacements have been approved by Owner, Contractor shall provide a transition period of at least 10 working days during which the original and replacement personnel shall be working on the Project concurrently. Upon authorization for the replacement of a Key Person, all subsequent substitutions of that Key Person shall require Owner’s written consent in accordance with this Section. The Key Persons for this Project are the following:

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

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

Job Superintendent: _____ shall be Contractor’s on-site Job Superintendent throughout the Project term.

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

11. OTHER TERMS. Except as specifically modified by this Supplement, all terms of the Retainer Contract remain unchanged.

12. EXECUTION AND COUNTERPARTS. This Supplement may be executed in several counterparts, each of which shall be an original, all of which shall constitute but one and the same instrument.

Contractor hereby confirms and certifies that the representations, warranties, and certifications contained in the Retainer Contract remain true and correct as of the Effective Date of this Supplement.

IN WITNESS HEREOF, the Parties have duly executed this Supplement as of the dates indicated below.

, Contractor

The State of Oregon, acting by and through

the State Board of Higher Education, on
behalf of _____, Owner

By: _____

By: _____

Title: _____

Title: _____

Date: _____

Date: _____

**RETAINER CONTRACT SUPPLEMENT AMENDMENT
OUS RETAINER CONTRACT FOR CONSTRUCTION
RELATED SERVICES**

Supplement No.:
Amendment No.:
Project Name:

This Amendment dated _____ to the Retainer Contract Supplement is entered into between:

“Contractor”:

Federal Tax ID No.

and “Owner”:
The State of Oregon, acting by and through the State
Board of Higher Education, on behalf of:

(collectively the “Parties”) pursuant to the Retainer Contract for Construction Related Services between the Parties expiring June 30, 2014 (the “Retainer Contract”). Capitalized terms have the meaning defined in the OUS Retainer General Conditions unless otherwise defined in the Contract Documents.

1. SERVICES: The Work described in the Retainer Contract Supplement is being amended as follows: _____.

2. SCHEDULE. The schedule contained in Section 3 of the Retainer Contract Supplement is hereby replaced in its entirety with the following schedule: _____.

3. COMPENSATION. Section 4 of the Retainer Contract Supplement, is hereby replaced in its entirety with the following:

“Owner will compensate Contractor for Work (a) in the firm, fixed-price amount of \$ _____ ; or (b) on a time and materials basis subject to a maximum not-to-exceed price of \$ _____; in accordance with the requirements of the OUS Retainer General Conditions. If the Project is done on a time and materials basis, Contractor’s listing of wage rates, material unit costs and overhead charges for the Work is attached to this Supplement.

The total cost of Work including the original amount contemplated in the Supplement and the additional amount contemplated in this Amendment, must not exceed the greater of \$1,000,000 or the maximum allowable under OAR 580-063-0030.”

4. TERM. This Amendment is effective on the date it has been executed by the Parties and all required approvals have been obtained (the “Effective Date”). No Work will be performed or payment made prior to the Effective Date.

5. TAX COMPLIANCE CERTIFICATION. Contractor hereby certifies and affirms, under penalty of perjury as provided in ORS 305.385(6), that, to the best of Contractor’s knowledge, Contractor is not in violation of any of the tax laws described in ORS 305.380(4). For purposes of this certification, “tax laws” means a state tax imposed by ORS 320.005 to 320.150 and 403.200 to 403.250, ORS Chapters 118, 314, 316, 317, 318, 321 and 323; the elderly rental assistance program under ORS 310.630 to 310.706; and local taxes administered by the Oregon Department of Revenue under ORS 305.620.

6. EXECUTION AND COUNTERPARTS. This Amendment may be executed in several counterparts, each of which shall be an original, all of which shall constitute but one and the same instrument.

Contractor hereby confirms and certifies that the representations, warranties and certifications contained in the Retainer Contract and the Retainer Contract Supplement remain true and correct as of the Effective Date of this Amendment.

IN WITNESS HEREOF, the Parties have duly executed this Amendment as of the dates indicated below.

_____, Contractor

The State of Oregon, acting by and through
the State Board of Higher Education, on
behalf of _____, Owner

By: _____

By: _____

Title: _____

Title: _____

Date: _____

Date: _____

PREVAILING WAGE RATES

for

Public Works Contracts in Oregon



OREGON BUREAU OF LABOR AND INDUSTRIES

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

Effective: January 1, 2014

http://www.oregon.gov/boli/WHD/PWR/Pages/January_2014_Index.aspx

Created: September 15, 2011/Updated 4/3/12

Purpose of File:

Each Fiscal year, the OUS campuses are required to report data to the State Legislature on Minority, Women and Emerging Small Business Contractors and Sub-Contractors who provide goods and services. Various statistics are calculated, based on the data input being provided by the contractors. This file is for the collection of the data for each project by contract. Each University will compile statistics associated with all of their contracts during each fiscal year. Once consolidated at the University level, the information is sent to OUS who in turn consolidates all of the information from the seven institutions and reports it to the Legislature.

General Information on how to use the file:

You will fill this form out at least twice for your project. Small projects that do NOT span over the end of a fiscal year (June 30 – July 1) will require two submittals (An Initial and a Final). Any project spanning over the end of a fiscal year will require three submittals (Initial, Year-End and Final). For larger projects that span over multiple fiscal years, the Year-End report will need to be submitted multiple times.

The first Submittal will always be the “Initial” report which is due within 10 days of the execution of the contract or in the case of a CM/GC contract, the establishment of an Early Work Amendment or Guaranteed Maximum Price Amendment.

At the end of every fiscal year, you are required to submit a “Year-End” report.

At the completion of the project you are required to submit a “Final” report.

- 2) The areas shaded in gray in the OVERALL PROJECT DATA section are for input by the Contractor. The gray portion of the “Individual Contractor/Sub-Contractor Data Entry Matrix” is also an area intended for Contractor input.
- 3) For some items, a drop-down box is provided. This is to maintain the consistency of data used to sort information.
- 4) For other items, simply type in the information. If the type of information typed in is incorrect, you will get an error message or your results may look incorrect. For example, when you enter a date, simply type it: 8/17/11. You do not need to spell out the month.

Saving your file:

- 1) FILE NAMING CONVENTION – All files submitted to the campus shall be named as defined by the following naming convention: (filename = FYXX_ContractNumber_SubmissionStatus)

FYXX = XX refers to the two digit extension of the year. Example “FY12” for Fiscal Year 2012.

Include an underscore between the FYXX and the Contract Number. There should be no blanks in the filename.

ContractNumber = Insert the number that is established on the front of your contract with the campus.

Include an underscore between the Contract Number and the Submission Status. There should be no blanks in the filename.2)

SubmissionStatus = ”I” for Initial; “Y” for Year end; “F” for Final. This should correspond with what you select at the top of the report as explained in item 1 of “Filling Out the Form” below.

Filling Out the Form:

- 1) Use the drop-down box adjacent to the REPORT BEING SUBMITTED heading to pick the corresponding report you are submitting for your project. This will establish highlighted headings (in light green) in the “Individual C/S-C Data Entry Matrix” & OPERALL PROJECT DATA sections that define for you which columns or rows should be completely filled out prior to submission.

- 2) Next, fill in the information in the OVERALL PROJECT DATA section. Again, rows highlighted in green will tell you which cells to fill in based upon the type of report being submitted. Only fill in the cells that are highlighted. The top 5 cells should remain the same for the duration of the reporting on the project. Cell B-11 should also remain unchanged after the initial submittal. Cells B-14 thru B-16 may change over the life of the project if you add additional sub-contractors as the project progresses.
- 3) Once you have completed the OVERALL PROJECT DATA section, begin entering each sub-contractor in the "Individual C/S-C Data Entry Matrix table. Columns F, J, K & L are drop-down selections in the table area. Just pick the appropriate response for these columns. There are "notes" that pop up as you select cells in the columns that help explain what information is needed for each column.
- 4) **IMPORTANT:** Use the tab key to move across the columns. This is necessary in order to avoid generating false information in the cells so that calculations occur appropriately.
- 5) The first two rows of the Matrix are formatted to receive information. They will be identified in bright red when you make the selection of the type of form you are submitting (Cell B-1). To add another row that is properly formatted (like the rows above it), simply press the tab key when you get to the last column in the row you just filled in.
- 6) To change information in a cell, simply type over it or press the Delete key on your keyboard. Using other methods to change data can cause unwanted results. For example, copy and paste can add unwanted data. Using the spacebar to delete information actually leaves behind a space—which is a character—which will cause math errors.
- 7) You must have a State of Oregon Certification Number OR indicate that a contractor is self-identifying as a MWESB. If you have not filled in one of these, then the Name of the Contractor will remain bright red (which is an error symbol).
- 8) All cells in the CALCULATED REPORTING DATA section are automatically generated formulas and cannot be changed.
- 9) Columns to be completed are as follows:
 - Name of MWESB General/ Subcontractor:** List each MWESB used on the project (all tiers). If you as the General, are an MWESB contractor, submit your information in the first row.
 - State of Oregon MWESB Certification Number:** This is the number provided when a contractor or subcontractor applies for and receives this certification. Enter this number.
 - Self-Identified or Other Certified:** If a sub-contractor indicates that they are a women, minority or emerging small business, but doesn't have certification, indicate here by identifying with a "Yes" by picking it from the drop-down box.
 - Initial Sub-Contract Value:** This is the value of the subcontract-with the specific contractor listed, not to be confused with the value of the overall construction contract between the Contractor and the Owner. Once this number is entered, it should not change on subsequent submittals of the form.
 - Sub-Contract value billed within the fiscal year (July 1-June 30):** This is the value for work performed during the year being reported. If your reporting requirements span multiple years due to the size of your project, this information may be replaced by new information for subsequent years.
 - Final Sub-Contract Value:** This is the final value of the sub-contract, including any additions or deductions that occur over the course of the project.

MORE THAN ONE OF THE FOLLOWING CATEGORIES CAN BE SELECTED:

 - Minority-Owned:** Certified by the State of Oregon or self-identifying; select Yes from the drop-down if it applies or leave blank if it does not.
 - Women-Owned:** Certified by the State of Oregon or self-identifying; select Yes from the drop-down if it applies or leave blank if it does not.
 - Emerging Small Business:** Certified by the State of Oregon or self-identifying; select Yes from the drop-down if it applies or leave blank if it does not apply.
- 10) Check your work prior to submitting the document to make sure that all cells in (light green) highlighted rows or columns are completed. If you do not have light green highlights showing up on your document, please return to #1 in this section and follow the directions given. REMEMBER TO SAVE YOUR FILE AGAIN NOW.

Submitting your Form:

Follow the directions as provided by the campus you are contracted with to submit this document. Typically you should be given an E-mail address within your contract transmittal or cover letter for which to submit the file.

CapCon MWESB Subcontractor Report

REPORT BEING SUBMITTED	
-------------------------------	--

OVERALL PROJECT DATA

Reporting Period	2011
Campus	
General Contractor's Name	
Contract Number	
Project Name	
Contract Execution Date (Date Contract was Signed by the Owner)	
Date of Final Payment Application	
Initial Total Contract Value	
Total Contract Value billed within the fiscal year (July 1 - June 30)	
Final Total Contract Value	
Total Number of Subcontractors Used on Project	
Total Number of First-Tier Subcontractors Used on Project	
Number of First-Tier MWESB Subcontractors	

CALCULATED REPORTING DATA (Self Calculating - No Data Entry)

Number of MWESB Subcontractors	0
% MWESB Subcontractors	
% First-Tier MWESB Subcontractors	

CERTIFIED MWESB TOTALS

Value Awarded to MWESB Contractors	\$0.00
% Value Awarded to MWESB Contractors	
Value - minority-owned MWESB subcontractors	\$0.00
% - minority-owned MWESB subcontractors	
Value - women-owned MWESB subcontractors	\$0.00
% - women-owned MWESB subcontractors	
Value - emerging small business MWESB subcontractors	\$0.00
% - emerging small business MWESB subcontractors	

SELF-IDENTIFIED or OTHER CERTIFIED MWESB TOTALS

Value - self-identified or other certified subcontractors	\$0.00
% - self-identified or other certified subcontractors	

OVERALL PROJECT CONTRACT HISTORY

% Value Awarded to MWESB Contractors at Initial Contract	#DIV/0!
% Value Awarded to MWESB Contractors at Final Contract	#DIV/0!

FOR OFFICIAL USE ONLY:

Date Received by the Campus	
Initials of Campus staff who checked the document	

Specifications

Division 1

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Phased construction.
4. Work by Owner.
5. Work under separate contracts.
6. Future work.
7. Purchase contracts.
8. Owner-furnished products.
9. Contractor-furnished, Owner-installed products.
10. Access to site.
11. Coordination with occupants.
12. Work restrictions.
13. Specification and drawing conventions.
14. Miscellaneous provisions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

A. Project Identification: University of Oregon DAS Fiber Backbone.

1. Project Location: North of Martin Luther King Jr. Boulevard at UO PK Park to University of Oregon Campus, Eugene, Oregon.

B. Owner: University of Oregon.

1. Referred to as "Owner" or "University" in project documents.

C. Engineer: KPF Consulting Engineers.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. Installation of two new sections of underground conduits via Horizontal Direction Drilling (HDD) and installation of new fiber optic cables into the new conduits as well as existing underground conduits. The new fiber optic cables will connect the new DAS head end at Martin Luther King Boulevard to the Autzen Stadium complex and to the Oregon Hall switchroom on the main campus. See Scope of Work Document and Drawings.

1.5 WORK BY OWNER

- A. General: Cooperate fully with Owner so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

1.6 OWNER-FURNISHED PRODUCTS

- A. Owner will furnish products indicated. The Work includes receiving, unloading, handling, storing, protecting, and installing Owner-furnished products and making building services connections.
- B. Owner-Furnished Products, as described in Scope of Work Document.

1.7 CONTRACTOR-FURNISHED, OWNER-INSTALLED PRODUCTS

- A. Contractor shall furnish all products not indicated to be furnished by Owner. The Work includes unloading, handling, storing, and protecting Contractor-furnished products as directed and turning them over to Owner at Project closeout.

1.8 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations and for access as indicated on Drawings, in the Scope of Work Document, as required by the City of Eugene in accordance with the approved permits, by the Contract limits and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
1. Limits: Limit site disturbance, including earthwork and clearing of vegetation, to 20 feet beyond surface walkways, patios, surface parking, and utilities less than 12 inches that are part of the project.
 2. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency

vehicles at all times. Do not use these areas for parking or storage of materials without the Owner's written consent.

- a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.9 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy site and existing adjacent buildings during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of the City of Eugene.
 2. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.10 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 8 a.m. to 5 p.m., Monday through Friday, unless otherwise indicated.
1. Weekend Hours: 9 a.m. to 5 p.m.
 2. Hours for noisy activity: 9 a.m. to 5 p.m.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
1. Notify Owner not less than 5 days in advance of proposed utility interruptions.
 2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

1. Notify Owner not less than two days in advance of proposed disruptive operations.
2. Obtain Owner's written permission before proceeding with disruptive operations.

1.11 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 2. Products and materials shall be installed in accordance with the manufacture's installation requirements. Contractor shall account for all ancillary materials and work required to install specified products and materials.
 3. Specific manufactured products and cut sheets are described in the "Product Specifications and Data" section of the project manual.
 4. The design drawing is referred to as "Plan Drawing" in project documents.

END OF SECTION 011000

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.

- c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - j. Cost information, including a proposal of change, if any, in the Contract Sum.
 - k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
2. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Engineer will notify Contractor through Owner of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Engineer's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Engineer does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
 - 1. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Engineer will consider requests for substitution if received within 30 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Engineer.
 - 1. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.

- b. Requested substitution does not require extensive revisions to the Contract Documents.
- c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
- d. Substitution request is fully documented and properly submitted.
- e. Requested substitution will not adversely affect Contractor's construction schedule.
- f. Requested substitution has received necessary approvals of authorities having jurisdiction.
- g. Requested substitution is compatible with other portions of the Work.
- h. Requested substitution has been coordinated with other portions of the Work.
- i. Requested substitution provides specified warranty.
- j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

END OF SECTION 012500

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Requirements:
 - 1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.

1.3 MINOR CHANGES IN THE WORK

- A. Engineer will issue through Owner supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on letterhead.

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Engineer or Owner will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests issued by Engineer or Owner are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within 20 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.

- d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use forms acceptable to Engineer.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Owner.
1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Include costs of labor and supervision directly attributable to the change.
 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
 7. Proposal Request Form: Use form acceptable to Engineer.

1.5 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Changes Proposal Request, Owner will issue a Change Order for signatures of Owner and Contractor on form acceptable to Owner.

1.6 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Owner may issue a Construction Change Directive. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. University of Oregon Bidding and Contract Requirements.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
 - 1. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
 - 2. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Owner for approval.
- B. Forms filled out by hand will not be accepted.
- C. Submit schedule of values in duplicate within 15 days after date established in Notice to Proceed.
- D. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify site mobilization and bonds and insurance.

- E. Include separately from each line item a direct proportional amount of Contractor's overhead and profit.
- F. Revise schedule to list approved Change Orders with each Application For Payment.

1.5 APPLICATIONS FOR PAYMENT

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Owner for approval.
- C. Form filled out by hand will not be accepted.
- D. Execute certification by signature of authorized officer.
- E. All Contractor payment requests must be accompanied by all wage certificates for the billing period.
- F. Submit three copies of each Application for Payment.
- G. When Owner requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date and line item by number and description.

1.6 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
 - 1. All closeout procedures specified in Section 01 7000.
 - 2. All keys checked out to Contractors must be returned to DPS and a receipt of return provided to Information Services by DPS.

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. University of Oregon Bidding and Contract Requirements.

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. Requests for Information (RFIs).
 - 4. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Requirements:
 - 1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
 - 2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

- A. RFI: Request from Owner, Engineer, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
 2. Number and title of related Specification Section(s) covered by subcontract.
 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
- C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid

conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
 2. Preparation of the schedule of values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Preinstallation conferences.
 7. Project closeout activities.
 8. Startup and adjustment of systems.
- E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

1.6 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
 - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
 - f. Indicate required installation sequences.
 - g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance

requirements. Provide alternate sketches to Engineer indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

1.7 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
1. Owner will return RFIs submitted to Owner by other entities controlled by Contractor with no response.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
1. Project name.
 2. Project number.
 3. Date.
 4. Name of Contractor.
 5. Name of Owner and University PM.
 6. RFI number, numbered sequentially.
 7. RFI subject.
 8. Specification Section number and title and related paragraphs, as appropriate.
 9. Drawing number and detail references, as appropriate.
 10. Field dimensions and conditions, as appropriate.
 11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 12. Contractor's signature.
 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Owner.
1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- D. Engineer will review each RFI, determine action required, and respond. Allow seven working days for Engineer's response for each RFI. RFIs received by Engineer after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:

- a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Engineer's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
2. Owner's action may include a request for additional information, in which case Owner's time for response will date from time of receipt of additional information.
 3. Engineer's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Owner in writing within 5 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log every two weeks. Include the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Owner and University PM.
 4. RFI number including RFIs that were returned without action or withdrawn.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date response was received.
- F. On receipt of Owner's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Owner within 5 days if Contractor disagrees with response.
1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.8 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Engineer of scheduled meeting dates and times.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.

3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Engineer, within three days of the meeting.
- B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner, City, and Engineer, but no later than 15 days after execution of the Agreement.
1. Conduct the conference to review responsibilities and personnel assignments.
 2. Attendees: Authorized representatives of Owner and Engineer; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Conduit routing and utility conflicts
 - d. Critical work sequencing and long-lead items.
 - e. Designation of key personnel and their duties.
 - f. Lines of communications.
 - g. Procedures for processing field decisions and Change Orders.
 - h. Procedures for RFIs.
 - i. Procedures for testing and inspecting.
 - j. Procedures for processing Applications for Payment.
 - k. Distribution of the Contract Documents.
 - l. Submittal procedures.
 - m. Preparation of record documents.
 - n. Use of the premises and existing buildings.
 - o. Work restrictions.
 - p. Working hours.
 - q. Owner's occupancy requirements.
 - r. Responsibility for temporary facilities and controls.
 - s. City of Eugene permits
 - t. Procedures for disruptions and shutdowns.
 - u. Construction waste management and recycling.
 - v. Parking availability.
 - w. Office, work, and storage areas.
 - x. Equipment deliveries and priorities.
 - y. First aid.
 - z. Security.
 - aa. Progress cleaning.
 4. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Preinstallation Conference and Site Walk: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Owner, Engineer, and installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise City of Eugene of scheduled meeting dates.
 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Perform site walk.
 - i. Review locates and potholing results to identify possible conflicts.
 - j. Time schedules.
 - k. Weather limitations.
 - l. Manufacturer's written instructions.
 - m. Warranty requirements.
 - n. Compatibility of materials.
 - o. Temporary facilities and controls.
 - p. Space and access limitations.
 - q. Regulations of authorities having jurisdiction.
 - r. Testing and inspecting requirements.
 - s. Installation procedures.
 - t. Coordination with other work.
 - u. Required performance results.
 - v. Protection of adjacent work.
 - w. Protection of construction and personnel.
 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings: Conduct progress meetings at weekly intervals.
1. Coordinate dates of meetings with preparation of payment requests.
 2. Attendees: In addition to representatives of Owner and each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Sequence of operations.
 - 2) Status of submittals.
 - 3) Deliveries.
 - 4) Access.
 - 5) Site utilization.
 - 6) Temporary facilities and controls.
 - 7) Progress cleaning.
 - 8) Quality and work standards.
 - 9) Status of correction of deficient items.
 - 10) Field observations.
 - 11) Status of RFIs.
 - 12) Status of proposal requests.
 - 13) Pending changes.
 - 14) Status of Change Orders.
 - 15) Pending claims and disputes.
 - 16) Documentation of information for payment requests.
4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Startup construction schedule.
 - 2. Contractor's construction schedule.
 - 3. Construction schedule updating reports.
 - 4. Daily construction reports.
 - 5. Material location reports.
 - 6. Site condition reports.
 - 7. Scheduled shut-downs.
- B. Related Requirements:
 - 1. Section 013300 "Submittal Procedures" for submitting schedules and reports.
 - 2. Section 014000 "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum unless otherwise approved by Owner.

- C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- E. Event: The starting or ending point of an activity.
- F. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

1.4 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
 - 1. Working electronic copy of schedule file, where indicated.
 - 2. PDF electronic file.
 - 3. Two paper copies.
- B. Startup construction schedule.
 - 1. Approval of cost-loaded, startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.
- C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.
- D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
 - 1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.
- E. Construction Schedule Updating Reports: Submit with Applications for Payment.
- F. Daily Construction Reports: Submit at weekly intervals.

- G. Material Location Reports: Submit at weekly intervals.
- H. Site Condition Reports: Submit at time of discovery of differing conditions.
- I. Special Reports: Submit at time of unusual event.
- J. Qualification Data: For scheduling consultant.

1.5 QUALITY ASSURANCE

- A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's construction schedule, including, but not limited to, the following:
 - 1. Review software limitations and content and format for reports.
 - 2. Verify availability of qualified personnel needed to develop and update schedule.
 - 3. Discuss constraints, including area separations and Owner occupancy.
 - 4. Review delivery dates for Owner-furnished products.
 - 5. Review schedule for work of Owner's separate contracts.
 - 6. Review submittal requirements and procedures.
 - 7. Review time required for review of submittals and resubmittals.
 - 8. Review requirements for tests and inspections by independent testing and inspecting agencies.
 - 9. Review time required for Project closeout and Owner startup procedures, including commissioning activities.
 - 10. Review and finalize list of construction activities to be included in schedule.
 - 11. Review procedures for updating schedule.
 - 12. Review City of Eugene permit conditions and requirements.

1.6 COORDINATION

- A. Coordinate Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.
1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
1. Activity Duration: Define activities so no activity is longer than 10 days, unless specifically allowed by Owner.
 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
 4. Startup and Testing Time: Include no fewer than 7 days for startup and testing.
 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Owner's administrative procedures necessary for certification of Substantial Completion.
 6. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Phasing: Arrange list of activities on schedule by phase.
 2. Work under More Than One Contract: Include a separate activity for each contract.
 3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 6. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.

- e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
- a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.
 - l. Building flush-out.
 - m. Startup and placement into final use and operation.
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.
- E. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
- 1. See Section 012900 "Payment Procedures" for cost reporting and payment procedures.
- F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
- 1. Unresolved issues.
 - 2. Unanswered Requests for Information.
 - 3. Rejected or unreturned submittals.
 - 4. Notations on returned submittals.
 - 5. Pending modifications affecting the Work and Contract Time.
- G. Recovery Schedule: When periodic update indicates the Work is 7 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.
- H. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

2.2 STARTUP CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Submit startup, horizontal, bar-chart-type construction schedule within 7 days of date established for the Notice to Proceed.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule within 30 the Notice to Proceed. Base schedule on the startup construction schedule and additional information received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 25 percent increments within time bar.

2.4 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 - 1. List of subcontractors at Project site.
 - 2. List of separate contractors at Project site.
 - 3. Approximate count of personnel at Project site.
 - 4. Equipment at Project site.
 - 5. Material deliveries.
 - 6. High and low temperatures and general weather conditions, including presence of rain or snow.
 - 7. Accidents.
 - 8. Meetings and significant decisions.
 - 9. Unusual events (see special reports).
 - 10. Stoppages, delays, shortages, and losses.
 - 11. Emergency procedures.
 - 12. Orders and requests of authorities having jurisdiction.
 - 13. Change Orders received and implemented.
 - 14. Construction Change Directives received and implemented.
 - 15. Services connected and disconnected.
 - 16. Equipment or system tests and startups.
 - 17. Partial completions and occupancies.
 - 18. Substantial Completions authorized.

- B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.5 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At biweekly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate final completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Owner, separate contractors, and other parties identified by Contractor with a need-to-know schedule responsibility.
 - 1. Post copies in Project meeting rooms and temporary field offices.
 - 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 013200

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements:
 - 1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
 - 2. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
 - 3. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Owner's or Engineer's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Owner's or Engineer's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Owner and Engineer and additional time for handling and reviewing submittals required by those corrections.
1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
 2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
 4. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal category: Action; informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Owner's final release or approval.
 - g. Scheduled date of fabrication.
 - h. Scheduled dates for purchasing.
 - i. Scheduled dates for installation.
 - j. Activity or event number.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

- a. Owner reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- B. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Owner's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow 7 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Owner will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
 4. Sequential Review: Where sequential review of submittals by Owner or other parties is indicated, allow 21 days for initial review of each submittal.
- C. Submittals must be Electronic and delivered via email or approved FTP site. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier.
 - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
 3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Owner.
 4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:
 - a. Project name.
 - b. Date.
 - c. Name and address of Owner and Owner PM.
 - d. Name of Contractor.
 - e. Name of firm or entity that prepared submittal.
 - f. Names of subcontractor, manufacturer, and supplier.
 - g. Category and type of submittal.
 - h. Submittal purpose and description.
 - i. Specification Section number and title.
 - j. Specification paragraph number or drawing designation and generic name for each of multiple items.
 - k. Location(s) where product is to be installed, as appropriate.
 - l. Related physical samples submitted directly.
 - m. Indication of full or partial submittal.

- n. Transmittal number, numbered consecutively.
 - o. Submittal and transmittal distribution record.
 - p. Other necessary identification.
 - q. Remarks.
5. Metadata: Include the following information as keywords in the electronic submittal file metadata:
- a. Project name.
 - b. Number and title of appropriate Specification Section.
 - c. Manufacturer name.
 - d. Product name.
- D. Options: Identify options requiring selection by Owner.
- E. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Owner on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- F. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
- 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 - 3. Resubmit submittals until they are marked with approval notation from Owner's action stamp.
- G. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- H. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Owner's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
- 1. Submit electronic submittals via email as PDF electronic files.

- a. Owner will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 2. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
 - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 5. Submit Product Data before or concurrent with Samples.
 6. Submit Product Data in the following format:
 - a. PDF electronic file.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.

- b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
 3. Submit Shop Drawings in the following format:
 - a. PDF electronic file.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 - e. Specification paragraph number and generic name of each item.
 3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
 4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Owner will return submittal with options selected.
 6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified,

and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

- a. Number of Samples: Submit two sets of Samples. Owner will retain one Sample sets; remainder will be returned.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least two sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
 1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 2. Manufacturer and product name, and model number if applicable.
 3. Number and name of room or space.
 4. Location within room or space.
 5. Submit product schedule in the following format:
 - a. PDF electronic file via email.
- F. Coordination Drawing Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."
- G. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."
- H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."
- I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."
- J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- K. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

- L. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- M. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- N. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- O. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- P. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- Q. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- R. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

2.2 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Owner.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file and two paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Owner.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 OWNER'S ACTION

- A. Action Submittals: Owner will review each submittal, make marks to indicate corrections or revisions required, and return it. Owner will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- B. Informational Submittals: Owner will review each submittal and will not return it, or will return it if it does not comply with requirements. Owner will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Owner.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Submittals not required by the Contract Documents may be returned by the Architect without action.

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and -control services required by Owner or authorities having jurisdiction are not limited by provisions of this Section.
 - 4. Specific test and inspection requirements are not specified in this Section.

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Owner.
- C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

- D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

1.4 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 ACTION SUBMITTALS

- A. Shop Drawings: For integrated exterior mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.
 - 1. Indicate manufacturer and model number of individual components.
 - 2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.6 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- B. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Owner or Engineer has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.7 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 - 12. Name and signature of laboratory inspector.
 - 13. Recommendations on retesting and reinspecting.
- B. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.8 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

- B. **Manufacturer Qualifications:** A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. **Fabricator Qualifications:** A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. **Installer Qualifications:** A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. **Professional Engineer Qualifications:** A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. **Specialists:** Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

1.9 QUALITY CONTROL

- A. **Owner Responsibilities:** Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 - 2. Payment for these services will be made from testing and inspecting allowances, as authorized by Change Orders.
 - 3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor[, and the Contract Sum will be adjusted by Change Order].
- B. **Contractor Responsibilities:** Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
 - 1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 - 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

- a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. **Manufacturer's Field Services:** Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- D. **Manufacturer's Technical Services:** Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- E. **Retesting/Reinspecting:** Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. **Associated Services:** Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. **Coordination:** Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- H. **Schedule of Tests and Inspections:** Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's

quality-control plan. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.

1. Distribution: Distribute schedule to Owner, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
 1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to Architect.
 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Owner's reference during normal working hours.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Engineer's or Owner's action on Contractor's submittals, applications, and requests, "approved" is limited to Engineer's and Owner's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Engineer or Owner. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Thomson Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes:
 - 1. Temporary utilities
 - 2. Temporary telecommunications services
 - 3. Temporary sanitary facilities.
 - 4. Temporary Controls: Barriers, enclosures, and fencing.
 - 5. Security requirements.
 - 6. Vehicular access and parking.
 - 7. Waste removal facilities and services.
 - 8. Project identification sign.
 - 9. Field offices.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.3 TEMPORARY UTILITIES

- A. All shut-off locations are to be documented for emergency purposes prior to pre-construction meeting.
- B. Documentation of locations is to be distributed to Owner's Information Services PM, Facilities Zone Supervisor, DPS, EH&S, and any others determined by individual projects.

1.4 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Maintain daily in clean and sanitary condition.

1.5 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
- C. Provide protection for plants designated to remain. Replace damaged plants.
- D. Protect non-Owned vehicular traffic, stored materials, site, and structures from damage.
- E. Unless written approval is obtained do not obstruct private or public streets, driveways, pedestrian walkways, ADA routes, fire lanes, egress of occupied buildings, etc.

1.6 FENCING

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

1.7 SCAFFOLDING

- A. All scaffolding use requires qualified and certified erectors following OSHA 1910.28 guidelines.

1.8 EXTERIOR ENCLOSURES

- A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.
- B. Provide temporary roofing as required.

1.9 INTERIOR ENCLOSURES

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

1.10 SECURITY

- A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.
- B. DPS and Information Services PM are to be consulted to determine strategies to be implemented.
- C. University Fire Marshal and Facilities EH&S consultation regarding egress routes from the project site and adjacent buildings to be provided and maintained at all times.
- D. ADA routes must be provided and maintained at all times from the site & adjacent buildings.

1.11 VEHICULAR ACCESS AND PARKING

- A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- B. Coordinate access and haul routes with governing authorities and Owner.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

1.12 WASTE REMOVAL

- A. See Section 01 7419 - Waste Management, for additional requirements.
- B. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- C. Provide containers with lids. Remove trash from site periodically.
- D. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.13 PROJECT IDENTIFICATION

- A. Only two types of signs fixed to construction fencing are allowed:
 - 1. One sign to identify the project, project purpose, project rendering and design team.

2. One sign to list the general and subcontractors.

1.14 FIELD OFFICES - SEE SECTION 01 5213

- A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack and drawing display table.
- B. Provide space for Project meetings, with table and chairs to accommodate 10 persons.
- C. Locate offices a minimum distance of 30 feet from existing and new structures.

1.15 TREE AND PLANT PROTECTION AND PRESERVATION

- A. Project Arborist must be certified by the International Society of Arboriculture (ISA).
- B. No storage, stockpiling, parking, etc. is permitted within the zones of protection.
- C. Tree protection fencing:
 1. Minimum protection will be a rigid 6-foot chain link or rigid 6ft plywood fence ONLY.
 2. No snow fencing for tree protection.
 3. Fencing sections are to be anchored into the ground.
 4. Fencing to be set at predetermined locations to be shown on plans.
 5. Fencing is to remain through the duration of the construction to final completion.
 6. Fencing may not be moved or removed without prior Arborist, Landscape Architect, and FS Exterior Supervisor approvals.
- D. In instances where there is approved tree removal or construction activity in the vicinity of a tree, the professional services of a certified Arborist shall be sought. Accepted recommendations of the arborist are to be included into the construction documents and management plan for the project.
- E. Trees within recognized campus malls, promenades, and view corridors are significant trees and are to be afforded extra care. See Map 3 of the Campus Tree Plan.
- F. All related construction drawings, including project site, landscape and demolition plans, shall be approved by the project Arborist, and contain the information listed below. FS Exterior Supervisor has final approval in all matters.
- G. The following requirements prevent damage to plant materials including trees, ground cover, root systems, soil, bark, foliage, branches, and limbs due to construction activities that include, but are not limited to:
 1. Soil contamination, erosion and compaction.
 2. Excessive wetting, ponding and construction run-off.
 3. Alteration of grade, stockpiling of soil, debris and materials.
 4. Damage to soil, roots, bark, trunk, limbs, branches and foliage.
 5. Unauthorized cutting, breaking, skinning and abrasion of roots, branches and bark.

H. Zones of Protection:

1. Notices will be posted on Zones of Protection fencing listing prohibited activities without prior approval. These notices will remain in place until authorization is granted by University Arborist and FS Exterior Supervisor.
2. Contractor shall submit requests to work within the Zones of Protection following procedures established by the Landscape Architect and FS Exterior Supervisor must be notified and consulted before work occurs.
3. The following activities are prohibited in the Zones of Protection without prior written approval from the FS Exterior Supervisor.
 - a. Removal or moving of protective fencing
 - b. Parking and driving of vehicles
 - c. Storing of equipment
 - d. Excavations
 - e. Loading and cleanup of equipment, tools, etc.
 - f. Operation of equipment
 - g. Staging of materials
 - h. Trenching
 - i. Stockpiling
 - j. Altering Drainage
 - k. Items may be added or removed for each individual project as needed.
4. Tree trunks are to be protected as specified by the project's Arborist.
5. When fencing is removed all protection requirements still apply.
6. No roots larger than 1 1/2-inches in diameter will be cut without prior approvals from the Arborist and FS Exterior Supervisor.
7. All cuts will be made with clean, sharp cutting tools only.
8. No root tearing, ripping or abrasions are allowed.
9. Exposed roots will be kept moist and protected from sun and frost at all times.
10. Additional requirements shall be incorporated into the project specifications/drawings as necessary to ensure adequate tree/plant protection.
11. Damages:
 - a. Tree values will be assessed by the Landscape Architect and FS Exterior Supervisor per ISA standards and posted to the tree at start of construction. Compensation of any and all harm, damage, destruction, etc. to the tree will be assessed based on the tree value. OR Fines of five-hundred dollars (\$500.00) per tree, per incident will be assessed for violation of these requirements and waived only by FS Exterior Supervisor.
 - b. Damages can be waived only by FS Exterior Supervisor if the tree is replaced with the like species and size and has a full one year unconditional guarantee.

1.16 TREE REMOVAL

- A. Do not remove any trees.

1.17 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of City of Eugene's 1200-CN permit.
- C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

1.18 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.19 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS (not used)

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
 - 1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
 - 1. Connect temporary sewers to municipal system or University system as directed by Owner and City of Eugene.
- C. Traffic Controls: Comply with requirements of authorities having jurisdiction.
 - 1. Protect existing site improvements to remain including curbs, pavement, and utilities.
 - 2. Maintain access for fire-fighting equipment and access to fire hydrants.
- D. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
- E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
 - 1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.

END OF SECTION 015000

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes:
 - 1. Temporary utilities
 - 2. Temporary telecommunications services
 - 3. Temporary sanitary facilities.
 - 4. Temporary Controls: Barriers, enclosures, and fencing.
 - 5. Security requirements.
 - 6. Vehicular access and parking.
 - 7. Waste removal facilities and services.
 - 8. Project identification sign.
 - 9. Field offices.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.3 TEMPORARY UTILITIES

- A. All shut-off locations are to be documented for emergency purposes prior to pre-construction meeting.
- B. Documentation of locations is to be distributed to Owner's Information Services PM, Facilities Zone Supervisor, DPS, EH&S, and any others determined by individual projects.

1.4 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Maintain daily in clean and sanitary condition.

SECTION 015639 - TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes general protection of existing trees from damage.

1.3 DEFINITIONS

- A. Caliper: Diameter of a trunk measured by a diameter tape at 6 inches above the ground for trees up to, and including, 4-inch size; and 12 inches above the ground for trees larger than 4-inch size.
- B. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.
- C. Critical Root Zone (CRZ): The CRZ for trees 4 inches in caliper or smaller shall be an area with a radius at least 5 feet from the trunk. The CRZ for trees over 4 inches in caliper shall be an area with a radius of at least 1 foot 6 inches from the trunk for every 1 inch of caliper size.
- D. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 POSTING

- A. When directed, post Designated Trees with Notice sign provided by Owner's Representative. Attach sign to tree with twine or staples, no nails. Maintain and protect the Notice sign until completion of construction. Obtain approval of Owner's Representative prior to removal of sign.

1.5 NOTICE

- A. Notify all workers, including subcontractors, of the requirements to protect Designated Trees using Notice provided.

1.6 PROTECTIVE FENCING

- A. Install protective fencing around Designated Trees, where shown on Drawings, prior to commencement of any work. Fencing to be a minimum 6 foot chain link, with fence posts securely anchored. Maintain during construction. Adjustments to fence locations are to be approved by the Owner's Representative prior to performing any work within the Zone of Protection.
- B. Protective fencing: Fencing shall remain in place after project completion and shall become the property of the Owner.

1.7 CONSTRUCTION FENCING

- A. No construction activities are permitted within the protective fencing without prior approval of the Owner's Representative

1.8 TRENCHING AND EXCAVATION

- A. All trenching and excavation within the Zone of Protection is to be performed with the use of an air spade or by hand. Obtain Owner's Representative approval of trenching and excavation locations and methods prior to performing any work.

1.9 ROOT PRUNING

- A. Prune roots encountered during construction with an approved root-pruning device. Make clean, vertical cuts. Do not leave split or frayed ends. Obtain Owner's Representative approval prior to cutting roots larger than 1 1/2 inches in diameter. Backfill exposed roots with specified Planting Soil as soon as practical.

1.10 TREE CANOPY PRUNING

- A. Prune canopies of Designated Trees impacted by construction only upon approval of Owner's Representative. All canopy pruning must be performed by a certified arborist.

1.11 MULCH

- A. Provide four (4) inch deep mulch within as directed.

1.12 WATERING

- A. Water trees if required by Owner's Representative. Watering will be required if it is judged that root removal is necessary for construction and threatens the survival of the tree. Use a slow drip or soaker hose to provide one-inch water per week until completion of construction.

1.13 PROHIBITED ACTIVITIES

- A. Cutting of roots larger than 1 1/2 inch diameter or larger without approval.
- B. Damaging tree bark, branches.
- C. Removal of protective fencing or notice posted on trees prior to approval of Owner's Representative.
- D. Activities prohibited within the Zone of Protection (without prior approval) are, but not limited to: construction, operation of machinery, storage of materials, paving, grading, cutting, filling, travel within, dumping, disposal of liquids, and parking of vehicles or equipment.

1.14 DAMAGE

- A. Actual tree damage such as trunk scoring and broken limbs or damaged roots inside the Zone of Protection will be assessed according to the percentage of loss of tree value. Percentage of tree value will be determined by the Owner's Representative. Tree value will be determined from "Evaluation of Landscape Trees, Shrubs, and Other Landscape Plants" by International Society of Arboriculture.

END OF SECTION 015639

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
 - 1. Section 012500 "Substitution Procedures" for requests for substitutions.
 - 2. Section 014200 "References" for applicable industry standards for products specified.

1.3 DEFINITIONS

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

1.4 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.

2. Owner's Action: If necessary, Owner will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Owner will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 - a. Form of Approval: As specified in Section 013300 "Submittal Procedures."
 - b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
 1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
- C. Storage:
 1. Store products to allow for inspection and measurement of quantity or counting of units.
 2. Store materials in a manner that will not endanger Project structure.
 3. Store products that are subject to damage by the elements, under cover in a weather-tight enclosure above ground, with ventilation adequate to prevent condensation.

4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.
7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
 3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
3. Products:
 - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience be considered unless otherwise indicated.
 - b. Non-restricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
4. Manufacturers:
 - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - b. Non-restricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.

2.2 COMPARABLE PRODUCTS

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

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

END OF SECTION 016000

SECTION 017300 – EXECUTION & CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Examination, preparation, and general installation procedures.
 - 2. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.
 - 3. Pre-installation meetings.
 - 4. Cutting and patching.
 - 5. Surveying for laying out the work.
 - 6. Cleaning and protection.
 - 7. Starting of systems and equipment.
 - 8. Demonstration and instruction of Owner personnel.
 - 9. Closeout procedures, except payment procedures.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for limits on use of Project site.
 - 2. Section 013300 "Submittal Procedures" for submitting surveys.

1.3 SUBMITTALS

- A. See Section 01 3300 – Submittal Procedures, for submittal procedures.
- B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
 - 1. On request, submit documentation verifying accuracy of survey work.

2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in conformance with Contract Documents.
 3. Submit surveys and survey logs for the project record.
- C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
1. Structural integrity of any element of Project.
 2. Integrity of weather exposed or moisture resistant element.
 3. Efficiency, maintenance, or safety of any operational element.
 4. Visual qualities of sight exposed elements.
 5. Work of Owner or separate Contractor.
- D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.4 QUALIFICATIONS

- A. For survey work, employ a land surveyor registered in the State in which the Project is located and acceptable to Owner. Submit evidence of Surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate.
- B. For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

1.5 PROJECT CONDITIONS

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- C. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- D. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
 2. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.
- E. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- F. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.

- G. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.6 COORDINATION

- A. See Section 01 1000 for occupancy-related requirements.
- B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- C. Notify affected utility companies and comply with their requirements.
- D. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- E. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- G. Coordinate completion and clean-up of work of separate sections.
- H. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 - PRODUCTS

2.1 PATCHING MATERIALS

- A. New Materials: Match existing products and work for patching and extending work, as approved by the Engineer and Owner.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 2500.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or mis-fabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREINSTALLATION MEETINGS

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

3.3 LAYING OUT THE WORK

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Owner of any discrepancies discovered.
- C. Contractor shall locate and protect survey control and reference points.

- D. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- E. Promptly report to Owner the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- F. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Owner.
- G. Utilize recognized engineering survey practices.
- H. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
 - 2. Grid or axis for structures.
 - 3. Building foundation, column locations, ground floor elevations.
- I. Periodically verify layouts by same means.
- J. Maintain a complete and accurate log of control and survey work as it progresses.

3.4 GENERAL INSTALLATION REQUIREMENTS

- A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.
- B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- D. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- E. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- F. Make neat transitions between different surfaces, maintaining texture and appearance.

3.5 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as shown.
 - 2. Report discrepancies to Owner before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.

- B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
 - 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 in locations indicated on drawings.
 - 2. Provide sound retardant partitions of construction indicated on drawings in locations indicated on drawings.
- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
 - 1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
 - 2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.
- D. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
 - 2. Remove items indicated on drawings.
 - 3. Relocate items indicated on drawings.
 - 4. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
 - 5. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
 - 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
 - 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
 - b. See Section 01 1000 for other limitations on outages and required notifications.
 - c. Provide temporary connections as required to maintain existing systems in service.
 - 4. Verify that abandoned services serve only abandoned facilities.
 - 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.

- F. Protect existing work to remain.
 - 1. Prevent movement of structure; provide shoring and bracing if necessary.
 - 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 - 3. Repair adjacent construction and finishes damaged during removal work.
- G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
 - 1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Owner.
 - 2. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
 - 3. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Owner review and request instructions.
 - 4. Trim existing wood doors as necessary to clear new floor finish. Refinish trim as required.
- H. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- I. Refinish existing surfaces as indicated:
 - 1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 - 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- J. Clean existing systems and equipment.
- K. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- L. Do not begin new construction in alterations areas before demolition is complete.
- M. Comply with all other applicable requirements of this section.

3.6 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
 - 1. Complete the work.
 - 2. Fit products together to integrate with other work.
 - 3. Provide openings for penetration of mechanical, electrical, and other services.
 - 4. Match work that has been cut to adjacent work.

5. Repair areas adjacent to cuts to required condition.
 6. Repair new work damaged by subsequent work.
 7. Remove samples of installed work for testing when requested.
 8. Remove and replace defective and non-conforming work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.
- J. Patching:
1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 2. Match color, texture, and appearance.
 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.7 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.8 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Prohibit traffic from landscaped areas.
- H. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.9 ADJUSTING

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

3.10 FINAL CLEANING

- A. Use cleaning materials that are nonhazardous.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- E. Clean filters of operating equipment.
- F. Clean debris from roofs, gutters, downspouts, and drainage systems.
- G. Clean site; sweep paved areas, rake clean landscaped surfaces.

- H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.11 CLOSEOUT PROCEDURES

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

END OF SECTION 017300

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 WASTE MANAGEMENT REQUIREMENTS

- A. Owner requires that this project generate the least amount of trash and waste possible.
- B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- D. Coordinate all hazardous material removal and disposal with UO.
- E. Provide recycling education and recycling information to Contractor and Subcontractor employees working on the project.
- F. Owner may decide to pay for additional recycling, salvage, and/or reuse based on Landfill Alternatives Proposal specified below.
- G. Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration:
 - 1. Aluminum and plastic beverage containers.
 - 2. Corrugated cardboard.
 - 3. Wood pallets.
 - 4. Clean dimensional wood: May be used as blocking or furring.
 - 5. Land clearing debris, including brush, branches, logs, and stumps.
 - 6. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
 - 7. Glass.
 - 8. Carpet, carpet cushion, carpet tile, and carpet remnants, both new and removed: DuPont (<http://flooring.dupont.com>) and Interface (www.interfaceinc.com) conduct reclamation programs.
- H. Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, incineration, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.

- I. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.
- J. Methods of trash/waste disposal that are not acceptable are:
 - 1. Burning on the project site.
 - 2. Burying on the project site.
 - 3. Dumping or burying on other property, public or private.
 - 4. Other illegal dumping or burying.
- K. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.3 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
- C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.
- D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.
- E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- I. Return: To give back reusable items or unused products to vendors for credit.
- J. Reuse: To reuse a construction waste material in some manner on the project site.
- K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

- L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.
- M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- N. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- P. Waste: Extra material or material that has reached the end of its useful life in its intended use.
- Q. Waste includes salvageable, returnable, recyclable, and reusable material.

1.4 SUBMITTALS

- A. See Section 01 3300 – Submittal Procedures, for submittal procedures.
- B. B. Recycling Plan: Prior to preparation of the Waste Management Plan, submit the recycling plan to the Facilities PM and Architect for approval.
- C. Waste Management Plan: Submit 3 copies of plan within 30 days of the Notice to Proceed.
- D. Waste Reduction Calculations: Before request for Substantial Completion, submit three copies of calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- E. Landfill Alternatives Proposal: Within 10 calendar days after receipt of Notice of Award of Bid, or prior to any trash or waste removal, whichever occurs sooner, submit a projection of trash/waste that will require disposal and alternatives to landfilling, with net costs.
 - 1. Submit for Owner's review and approval.
 - 2. If Owner wishes to implement any cost alternatives, the Contract Sum will be adjusted as specified elsewhere.
 - 3. Include an analysis of trash/waste to be generated and landfill options as specified for Waste Management Plan described below.
 - 4. Describe as many alternatives to landfilling as possible:
 - a. List each material proposed to be salvaged, reused, or recycled.
 - b. List the proposed local market for each material.
 - c. State the estimated net cost resulting from each alternative, after subtracting revenue from sale of recycled or salvaged materials and landfill tipping fees saved due to diversion of materials from the landfill.
 - 5. Provide alternatives to landfilling for at least the following materials:
 - a. Concrete.
 - b. Bricks.
 - c. Concrete masonry units.
 - d. Gypsum masonry units.
 - e. Asphalt paving.

- f. Gypsum drywall and plaster.
- F. Once Owner has determined which of the landfill alternatives addressed in the Proposal above are acceptable, prepare and submit Waste Management Plan; submit within 10 calendar days after notification by Owner.
- G. Waste Management Plan: Include the following information:
- 1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
 - 2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
 - 3. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
 - 4. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
 - 5. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
 - 6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.
- H. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
- 1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
 - 2. Submit Report on a form acceptable to Owner.
 - 3. Landfill Disposal: Include the following information:
 - a. Identification of material.
 - b. Amount, in tons or cubic yards, of trash/waste material from the project disposed of in landfills.
 - c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 - 4. Incinerator Disposal: Include the following information:
 - a. Identification of material.
 - b. Amount, in tons or cubic yards, of trash/waste material from the project delivered to incinerators.
 - c. State the identity of incinerators, total amount of fees paid to incinerator, and total disposal cost.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 - 5. Recycled and Salvaged Materials: Include the following information for each:
 - a. Identification of material, including those retrieved by installer for use on other projects.

- b. Amount, in tons or cubic yards, date removed from the project site, and receiving party.
 - c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 - e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
6. Material Reused on Project: Include the following information for each:
 - a. Identification of material and how it was used in the project.
 - b. Amount, in tons or cubic yards.
 - c. Include weight tickets as evidence of quantity.
 7. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

1.5 RECORD KEEPING

- A. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether or not the organization is tax exempt.
- B. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices. Include documentation for back-charge fees (if any) for improperly segregated waste.
- C. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

PART 2 - EXECUTION

2.1 WASTE MANAGEMENT PLAN

- A. General: Develop plan consisting of waste identification, and waste reduction work plan. Include separate sections in plan for demolition and construction waste. Indicate quantities by weight throughout waste management plan.
- B. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
 1. Reused Materials: For materials salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.

2. Sold Materials: For materials sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
 3. Donated Materials: For materials donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
 4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 5. Disposed Materials: Indicate how and where materials disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
 6. Handling and Transportation Procedures: Include method used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.
- D. Plan Implementation:
1. Provide containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
 2. Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
 3. Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - a. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 - b. Comply with project requirements for controlling dust and dirt, environmental protection, and noise control.
- E. Clean salvaged items.
- F. Sale of salvaged items is not permitted on Project site. Labor for loading donated items acceptable to local trade practices; union labor if applicable.
- G. Separate recyclable waste from other waste materials, trash, and debris.
- H. NO on-site crushing of asphalt pavement, brick, and concrete rubble.
- I. Demolition Recycling:
1. Asphaltic Concrete Paving: Break up and transport paving to asphalt-recycling facility.
 2. Concrete: Deposit all debris in designated container to be transported to approved aggregate recycling facility.
 3. Masonry: Deposit all masonry debris in designated container to be transported to approved aggregate recycling facility. Clean and stack undamaged whole masonry units on wood pallets for reuse.
 4. Wood Materials: Sort and stack salvageable members according to size, type, and length. Separate lumber waste and deposit into appropriate container. Separate engineered wood products, panel products, and treated wood materials into designated containers.
 5. Metals: Separate metals by type if practical. Stack salvageable structural steel members according to size, type of member, and length.
 6. Asphalt Shingle Roofing: Organic and glass-fiber asphalt shingles and felts shall be disposed of. Recycle nails, staples acceptable, flashing trim and accessories as metals.

7. Asbestos containing shingles shall be abated and properly disposed of by UO; See Section 01 10 00.
 8. Carpet and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tackstrips.
 9. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs.
 10. Plumbing Fixtures: Separate by type, size, and fixtures suitable for reuse. All other fixtures are to be transported to approved recycling facility.
Piping: Separate piping materials by material composition and deposit in designated containers. Separate supports, hangers, valves, sprinklers, and other components by material type and recycle.
 11. Lighting Fixtures: Separate lamps and ballasts and protect from breakage for collection and disposal by Facilities EH&S.
Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.
 12. Conduit: Deposit conduit and fittings into designated container.
- J. Recycling of Construction Packaging:
1. Cardboard and Boxes: Break down packaging into flat sheets.
 2. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
 3. Crates: Break down crates to component wood pieces and recycle.
 4. Site-Clearing Wastes: Chip brush, branches, and trees on-site.
 5. Wood Materials: Deposit into designated clean wood container to be transported to designated recycling facility.
- K. Remove waste materials from Project site and legally dispose of them.
1. Do not allow waste materials that are to be disposed of accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- L. Do not burn waste materials on site.

2.2 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.
- B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect.
- C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.
- D. Meetings: Discuss trash/waste management goals and issues at project meetings.
 1. Regular job-site meetings.

- E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
 - 1. Provide containers as required.
 - 2. Provide adequate space for pick-up and delivery and convenience to subcontractors.
 - 3. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.
- F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.
- G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
- H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.
- I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site

END OF SECTION 017419

Specifications

Division 33

SECTION 330523 – HORIZONTAL DIRECTIONAL DRILLING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the installation of a high-density polyethylene (HDPE) or PVC pipe and steel sleeves using horizontal directional drilling (HDD) installation method. Note that the pipe is referred to as the “pull section” in this Section. This Section includes:
1. Piping materials.
 2. Drilling fluid.

1.2 QUALITY ASSURANCE

- A. Use personnel and equipment from a qualified directional drilling company who has at least three (3) years’ experience involving work of a similar nature. The company must have installed a minimum of 25,000 linear feet of pipe (4-inch diameter or greater) using directional drilling operations. Supply a list of project references prior to job commencement.
- B. Referenced Standards: The Section incorporates by reference the latest revision of the following documents. These references are a part of this Section as specified and modified. In case of conflict between the requirements of this Section and those of a listed document, the requirements of this Section shall prevail.

<i>Reference</i>	<i>Title</i>
API 5D	Specification for Drill Pipe
API 5L	Specification for Line Pipe
API BULL 5C2	Bulletin on Performance Properties of Casing, Tubing, and Drill Pipe
API RP 5A5	Recommended Practice for Care and Use of Casing and Tubing
API RP 7G	Recommended Practice for Drill Stem Design and Operating Limits
ASTM F1962	Standard Guide for use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings

- C. Contractor shall adhere to all scope and requirements described in the document titled "University of Oregon Information Services – DAS Fiber Backbone Project – Scope of Work".
- D. Contractor shall adhere to all requirements and design shown in Plan Drawings, issued by the University of Oregon (University).
- E. Contractor shall adhere to all requirements and best management practices as described in the Erosion and Sediment Control Plans and permit approved by the City of Eugene.
- F. Contractor shall adhere to approved frack-out plan.
- G. General:
 - 1. The Contractor shall maintain a quality assurance program to address the HDD work of this Section.
 - 2. Written quality control inspection and test procedures shall be used for all operations. These procedures shall contain instructions for performing the require activity, contain the accept/reject criteria for each activity, shall establish the frequency for performing the activity, and shall provide for recording the results on checklists acceptable to the University.
 - 3. The Contractor shall provide the Engineer and the University with inspection access to piping during any phase of fabrication and/or installation, and shall provide proper facilities for such access and inspection.
- H. Pre-Installation Meetings:
 - 1. Contractor shall arrange and conduct at least one HDD kick-off meeting and site walk-through with the Engineer, subcontractors, and University staff prior to initiation of the HDD work. This meeting shall be conducted separate from and in addition to any required project meeting specified elsewhere.

1.3 SUBMITTALS

- A. Product data for conduit piping
- B. Drill Plan: Submit the following information 14 days prior to scheduled startup of HDD related work:
 - 1. Diagram showing pipe arrangement for the installation configuration selected.
 - 2. Drilling fluid product information and Material Data Safety Sheets for bentonite and any additives.
 - 3. Equipment data and specifications for drilling, reaming, pulling, and locating equipment.
 - 4. Detailed site layout plan showing locations of all items of equipment, piping, tanks, pumps, offices and trailers, Contractor's access limits, pipe fabrication and assembly and layout area, materials storage, and other considerations affecting public and private use of lands near the work.
 - 5. Identify licensed and approved disposal sites for drilling fluid and cuttings disposal and provide procedures for handling and disposal of cuttings and drilling fluid.
 - 6. A work plan shall be submitted with the following information:
 - a. The installation configuration

- b. The size and dimension ration (DR) for all HDPE or PVC pipe to be installed by HDD method.
 7. Alignment monitoring system.
 8. Certification of training stating that the drill and drill guidance equipment operators have been fully trained in the use of the proposed equipment by an authorized representative of the equipment manufacturer(s) or training agents.
 9. A list of personnel and their qualifications and experience, including back-up personnel.
 10. A list of subcontractors.
 11. Contingency plan: A contingency plan shall be submitted that details the procedures that will be followed in the event of inadvertent returns, stuck or inoperable equipment, a collapsed hole, damage to existing utilities, ground heave or settlement, and other potential disruptions of the drilling work. The plan shall identify how the drilling crew will resume work following each type of disruption to complete the pipeline crossing. Drilling shall not begin until the plan is approved. Equipment:
 - a. Technical specifications and manufacturer of HDD system. Date of manufacture of the HDD system and maintenance record.
 - b. Date of manufacture and/or purchase of drilling assembly.
 - c. Technical specifications and manufacturer for guidance and control system and verification of the calibration of downhole survey equipment prior to the commencement of drilling.
 - d. Technical specifications and manufacturer for solids separation and drill-fluid recirculation systems.
 - e. Technical specifications of rammer and/or other equipment used in installing the steel sleeves.
 12. Contingency Plan for petroleum and other fluid spills.
- C. Quality Assurance / Control Submittals
1. Contractor shall submit complete sets as well as maintain a complete set of project records at the job site or field office.
- D. Data to be submitted a minimum of 48 hours prior to the scheduled startup of HDD related work:
1. Potholing results for each utility crossing
 2. A report from the pre-drilling walk-through including
 - a. Anticipated challenges
 - b. Expected deviations from the original work plan, based on utility conflicts
 - c. Finalized Drill Plan
- E. Data to be Submitted During or a Maximum of 10 Days after Completion of HDD Installation:
1. A tabulation of coordinates, referenced to the drilled entry point, which accurately describes the vertical and horizontal location of the pilot hole a maximum of every 20 feet of pipe length.

PART 2 - PRODUCTS

2.1 PIPE

- A. PVC Schedule 40 Pipe: ASTM D 1785.
 - 1. PVC, Schedule 40 Socket Fittings: ASTM D 2466.
- B. High Density Polyethylene Pipe (HDPE) SDR-13.5 Conduit: ASTM D1248, ASTM D3350, and ASTM F714
 - 1. Polyethylene resin shall meet or exceed requirements of ASTM D3350 for PE 3408 material with a cell classification of 335434C, or better
 - 2. The polyethylene compound shall be suitably protected against degradation by ultraviolet light by means of carbon black, well dispersed by precompounding in a concentration of not less than 2 percent.
 - 3. Continuous conduit preferred.
 - 4. Joining shall be performed by thermal butt-fusion in accordance with the manufacturer's recommendations.

2.2 DRILLING FLUID

- A. Drilling fluid shall be a mixture of bentonite and potable water. Provide admixtures to improve the physical qualities of the mixture. The drilling fluid including admixtures shall be inert.

PART 3 - EXECUTION

3.1 GENERAL

- A. Conduct all operations such that trucks and other vehicles do not create a dust nuisance to the adjacent properties. Each day clean up, remove and dispose of any spilled drilling fluid or other waste. Provide water truck to control dust as needed.
- B. Install erosion and sediment control (ESC) measures, as detailed in the approved ESC Plans and Permit, prior to construction. Issuance of ESC Permit is required prior to mobilization and construction. The City of Eugene requires that the ESC measures be installed, inspected and approved, and a pre-construction conference be held with the City of Eugene ESC staff, prior to ESC Permit issuance.
- C. Contractor shall adhere to all conditions and requirements contained in the approved City of Eugene Utility Public Way Use Permits for HDD related work within the MLK Jr. Boulevard and Leo Harris Parkway right-of-ways, and the City of Eugene park property south of Leo Harris Parkway.

3.2 FACILITIES LAYOUT

- A. The University has obtained the necessary permits and/or easements to conduct the HDD work within the limits shown on the Plan Drawings, and all work within these limits shall be done in accordance with the terms and conditions of those permits and/or easements. The Contractor shall be responsible for obtaining rights to use any additional area necessary. Contractor shall contain all drilling fluids within tanks on the site for haul off and legal disposal.

3.3 PROTECTION OF UNDERGROUND FACILITIES

- A. Contractor shall protect existing utilities and underground facilities from damage. Undertake the following steps prior to finalized Drill Plan and prior to commencing drilling operations in a location that might contain underground facilities:
 1. Coordinate a utility locate for the project site.
 2. Locate and stake all existing lines, cables, and other underground facilities regardless of previous efforts in this regard. Expose any facilities that are located within 10 feet of the design drilled path at the request of the Engineer.
 3. Physically locate (pothole) existing underground utilities. Utilities shall be located to the top of pipe or structure. Depth of utility shall be marked at the location of pothole.
 4. Modify drilling practices and downhole assemblies to prevent damage to existing facilities.
 5. EWEB inspectors are required to be present crossing existing water mains. Arrange for EWEB inspectors to be present when crossing EWEB water mains.
- B. The Contractor shall monitor all existing utilities crossing the bore path for settlement and heaving.

3.4 INSTRUMENTATION

- A. At all times provide and maintain instrumentation which shall accurately locate the pilot hole, measure drill string axial and torsional loads, and measure drilling fluid discharge rate and pressure.
- B. Provide Engineer and University with access to these instruments and their readings at all times.
- C. Maintain, and make continuously available, a log of all recorded readings.

3.5 DRILLING SYSTEMS

- A. The direction drilling machine shall consist of a hydraulically powered system to rotate, push, and pull hollow drill pipe into the ground at variable angles down to 8 degrees above the horizontal, while delivering a pressurized fluid mixture to a guidable drill(bore) head. The machine shall have capacity to adequately complete the drilling and piping installation. The machine shall be anchored to the ground to withstand the pulling, pushing, and rotating pressure required to complete the crossing. The hydraulic power system shall be self-

contained with sufficient pressure and volume to power drilling operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor the maximum pull-back pressure during the pull-back operation. The rig shall be grounded during drilling and pull-back operations. There shall be a system to detect electrical current from the drill string and an audible alarm, which automatically sounds when an electrical current is detected.

- B. The drill head shall be a steerable type and shall provide the necessary cutting surfaces and drilling fluid jets.
- C. Mud motors shall be adequate power to turn the required drilling tools.

3.6 DRILLING FLUID (MUD) SYSTEM

- A. A self-contained, closed, drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid composed of bentonite clay, potable water, and appropriate additives. Mixing system shall be able to molecularly shear individual bentonite particles from the dry power to avoid clumping and ensure thorough mixing. The drilling fluid reservoir tank shall be a minimum of 500 gallons. Mixing system shall continually agitate the drilling fluid during drilling operations.
- B. Additives to drilling fluid such as drill soap, polymers, etc. shall be "environmentally safe" and be approved for such usage. No diesel fuel shall be used.

3.7 CONTROL OF LINE AND GRADE

- A. Monitor the location of the pilot borehead using an electronic instrument package installed in the pilot borehead and a surface receiver.
- B. Record and plot the as-built horizontal and vertical location of the pilot borehead at maximum intervals not to exceed 20 feet. Update these records continuously as the pilot bore is advanced. Submit the complete records to the Engineer immediately after completion of the pilot boring. During installation, grant the Engineer unrestricted access to these records, as well as the readouts showing the position and inclination of the borehead. Interpret such readouts for the Engineer when requested.
- C. In addition to a magnetic downhole survey system, utilize a surface monitoring system to accurately determine the location of the magnetic steering tool during pilot hole drilling and to correct the magnetic line azimuth used in pilot hole survey calculations. The surface monitoring system shall be a Tensor Tru Tracker Guidance System, or approved equal. The surface monitoring system shall be designed for application in horizontally drilled pipeline installations and shall provide accurate information even in areas of magnetic interference.
- D. The surface monitoring system shall generally operate by inducing a magnetic field in a surface coil of known location, allowing the magnetic steering tool to sense its location relative to this magnetic field and communicate this information to the surface. Prior to drilling, the surface monitoring system coil shall be laid out, as required by monitoring system, on the ground surface and its corners accurately surveyed.

- E. Any changes to the alignment outside of the specified pilot hole tolerances shall be approved by the Engineer.

3.8 HANDLING OF DRILLING FLUID AND CUTTINGS

- A. Provide adequate measures for handling, transportation, and disposal of drilling fluid and cuttings. Provide watertight piping, pumps, storage containers, and other measures to guard against leakage. Drilling fluid and cuttings shall not be discharged into any waterway, storm drain, sanitary sewer or other such conveyance, nor shall it be disposed of at the work site. Contractor shall notify the University and Engineer immediately of any spill and shall be responsible for all clean up and legal disposal as directed by the University or Engineer.
- B. Regulate the pressure of drilling fluid and conduct drilling operations in such a manner that minimizes potential for drilling fluid to migrate to the surface.
- C. Dispose of all drilling fluid and excavated materials properly away from the construction site in accordance with applicable state regulations for disposal of these materials. Use the disposal sites identified in the Contractor's accepted submittal for cuttings and drilling fluid disposal.

3.9 RECIRCULATION

- A. Optimize recirculation of drilling fluid surface returns. Provide solids control and fluid cleaning equipment of a configuration and capacity that can process surface returns and produce drilling fluid suitable for reuse.

3.10 INADVERTENT DRILLING FLUID RETURNS

- A. Be responsible for all inadvertent returns and their mitigation including any clean-up and legal disposal.
- B. Control and handle inadvertent drilling fluid returns.

3.11 PILOT HOLE

- A. Directional Tolerance: Drill the pilot hole along the minimum radius shown on the Drawings and to the tolerances listed on the Drawings. However, in all cases, right-of-way restrictions shall take precedence over the listed tolerances. Regardless of the tolerance achieved, no pilot hole will be accepted if it will result in any of the pipe being installed in violation of right-of-way restrictions. Additionally, concern for adjacent utilities and/or structures shall take precedence over the listed tolerances. Listing of tolerances does not relieve Contractor from responsibility for safe operations or damage to adjacent utilities and structures.
- B. Curve Radius: Drill curves at a radius equal to or greater than that listed on the Drawings. The drilled radius shall be calculated over any three joint (range 2 drill pipe) segment using the following formula:

$$R_{\text{drilled}} = (L_{\text{drilled}}/A_{\text{avg}})*57.32$$

Where: R_{drilled} = drilled radius over L_{drilled}

L_{drilled} = length drilled, no less than 75 feet and no greater than 100 feet

A_{avg} = total change in angle over L_{drilled}

3.12 PREREAM AND PULLBACK

- A. Prereaming: Conduct prereaming operations to insure that a hole sufficient to accommodate the pull section has been produced. The hole shall be prereamed to the minimum of 150 percent of the effective outside diameter of the pull section, or 12 inches plus the effective outside diameter of the pull section, whichever is smaller. Any damage to the pull section resulting from inadequate prereaming shall be the responsibility of Contractor.
- B. Pulling Loads: The tensile load imposed on HDPE or PVC pipe pull section shall not exceed the maximum allowable tensile load of the pipe.
- C. Torsional Stress: Use a swivel to connect the pull section to the reaming assembly to minimize torsional stress imposed on the pull section.
- D. Pull Section Support: Support the pull section as it proceeds during pullback so that it moves freely and does not damage the pipe.
- E. External Collapse Pressure: Install the pull section in the reamed hole in such a manner that external pressures are minimized and an appropriate counter-balancing internal pressure is maintained. Any damage to the pipe resulting from external pressures during installation shall be at the responsibility of the Contractor
- F. The Contractor shall assume all responsibility for methods of construction, the stability and accuracy of the drilled and reamed hole and pits constructed. Maintaining circular pipe during installation, and all costs for damages resulting from any failure thereof.
- G. Ensure that the pipe is not distorted from a circular cross section. During pullback of the pipe, prevent pipe buckling and bending beyond the pipe manufacturer's recommended bending radius. Monitor pulling tensions during the installation process.
 - 1. Attach a pulling head and swivel to the front section of the pipe being installed. Prior to commencement of pullback operations the pulling head design shall be submitted to the Engineer for approval. If a breakaway link is used, it shall be rated within the safe tensile strength of the pipe.
 - 2. The pullback of the pipe shall be done in such a manner so as not to damage the pipe.
 - 3. During pullback of the pipe the pulling load shall not exceed the safe pull force calculated for the segment to be installed.

3.13 PIPE ASSEMBLY, HANDLING AND INSTALLATION

- A. Fabricate pull section depending on the Contractor's construction setup. Assemble pipe in continuous pipe strings to the extent possible within the pipe lay down area. Continuous piping preferred.
- B. Fuse pipe.
 - 1. HDPE preferred to be continuous. Where necessary, HDPE shall be joined to one another by means of thermal butt-fusion. Polyethylene pipe lengths to be joined by thermal butt-fusion shall be of the same type, grade, and class of polyethylene compound and supplied from the same raw material supplier. Joining of the pipes and fittings shall be performed in accordance with ASTM D-2774.
 - 2. PVC shall be joined using non-metallic couplings to form an integral system. high-strength, flexible thermoplastic splines shall be inserted into mating, precision-machined grooves in the pipe and coupling to provide full 360 degree restraint with evenly distributed loading. Joints shall be designed to meet the leakage test requirements of ASTM D3139.
- C. Dragging the pull section along the ground is prohibited. Cease installation operations if damage to the pipe occurs. Damaged pipes shall be repaired or replaced immediately. Pulling operations may not be resumed until the pipe is repaired or replaced.
- D. Allow pipe to recover from elastic strain before cutting, capping, or backfilling over each end of pipes. The recovery period shall, at a minimum, equal the duration of the entire pullback of the pipe.

3.14 FIELD QUALITY CONTROL

- A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect at completion of drilling and conduit placement.
 - 1. Submit separate report for each system inspection.
 - 2. Defects requiring correction include the following:
 - a. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
 - b. Damage: Crushed, broken, cracked, or otherwise damaged piping.
 - c. Infiltration: Water leakage into piping.
 - 3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
 - 4. Reinspect and repeat procedure until results are satisfactory.
- B. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

3.15 CLEANING

- A. Clean dirt and superfluous material from interior of piping.

3.16 COMPLETION OF DIRECTIONAL DRILLING

- A. Post-Installation Survey:
- B. Upon completion of conduit installation and successful testing, provide paint markings (white) on the ground to locate the installed conduit/drill path. Paint markings shall define the precise location of the installed conduit. Markings to be provided at 20-foot stations along the conduit path. Marking must note the depth of the installed conduit. In areas that cannot be painted, such as in landscape areas, conduit path to be staked instead of marked with paint. .

3.17 SITE RESTORATION

- A. Upon completion of the HDD pipe installation, remove all unnecessary HDD equipment, materials and waste matter from the site. Restore the work site.
- B. All existing facilities and improvements (pavements, landscaping, striping, etc) damaged or disturbed during construction shall be repaired to the original condition or better, and as approved by the University. Landscaping shall be replaced with planting of equal or better size and species. Concrete pavements shall be sawcut, removed and replaces to the nearest existing panel joint. Concrete color and tint to match existing to the extent possible.

END OF SECTION 33 05 23

Scope of Work and Instructions

University of Oregon Information Services
DAS Fiber Backbone Project
Scope of Work

Rev 7 - March 28, 2014

Overview

Information Services at the University of Oregon is requesting a quote to install (2) new sections of underground conduits, and install (3) new fiber optic cables into the newly installed conduits and other existing underground pathways, connecting the new DAS head end on Martin Luther King Blvd. to the Autzen Stadium complex and to the Oregon Hall switchroom on the main campus.

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Coordination

The University will provide the following materials:

- (1) or more spools - Corning 432EV4-14100D53 - 432-strand single-mode outside plant (OSP) ribbon-type fiber optic cable (10,000 feet)
- (1) spool - Corning 288EV4-14100D53 - 288-strand single-mode OSP ribbon-type fiber optic cable (5,000 feet)
- (1) spool - Corning 144EC8-14101-20 - 144-strand single-mode inside plant (ISP) plenum-rated ribbon-type fiber optic cable (1,250 feet)
- (1) spool - 144-strand single-mode loose-tube fiber optic cable (for Additive Alternate #2)
- (3) each - Corning OSE-LD0-00-1 - splice enclosures
- (4) each - Corning OSE-CBL-37 - OSP cable entry kits for above OSE enclosures
- (10) each - Corning OSE-CBL-34 - ISP cable entry kits for above OSE enclosures
- (20) each - Corning M67-110 - mass fusion splice trays for above OSE enclosures
- (2) each - Corning EDGE-04U - rack mount fiber termination housings
- (2) each - Corning EDGE-02U - rack mount fiber termination housings
- (120) each - Corning EDGE-CS12-AF-P00RJ - splice cassettes
- 3M 1432 XR/ID - electronic marking system near-surface RFID markers (Qty TBD as needed)
- 3M 1421 XR/ID - electronic marking system mid-range RFID "ball" markers (Qty TBD as needed)

Spec sheets for above items are included with this document.

All other materials will be provided by Contractor unless otherwise stated in this document.

Contractor is responsible for identifying any cable damage prior to installation.

Contractor is responsible for transportation of 8 foot spools of fiber cable from a storage location in Eugene to the job site and back to University storage upon job conclusion. All new cable will be of dielectric construction.

Environmental Hazards

Portions of the work will be in the campus tunnel system. A brief training session will be required for all Contractor staff and sub-contractors before work in tunnels is performed. Check-in, check-out procedures shall be followed for each work shift in the tunnels. Communications devices will be provided by Information Services. Other utilities including alarm systems, intermediate voltage (12,500V) electrical distribution, steam and chilled water share space in the tunnel system. Use caution when installing and removing cable to avoid damaging or disturbing these other utilities. Pay particular attention if and when using mechanical cable pulling apparatus in the tunnel system.

Other portions of the work will require confined space entries. Contractor shall be equipped to perform this work safely and in a manner consistent with Oregon OSHA requirements. UO Environmental Health and Safety will require the Contractor to provide to the University and abide by a confined space safety plan that meets University and Oregon OSHA requirements.

Several utility vaults will require pumping for access during this project. If the pumped water is clear and without sediment, it may be pumped into the storm drains. If the pumped water contains sediment, petroleum residue or solids, it must be pumped into either a sanitary sewer or a tanker truck for offsite disposal. This stipulation applies to vaults located both on campus and off campus.

Contractor to include a Chemical Spill Containment Plan as part of their submittal package.

Storage

Storage for materials and equipment will not be provided by the University. Unused materials shall be removed from the work site at the end of each day. Contractor will be responsible for picking up University-provided fiber optic cable and storing it for the duration of the project. Unused fiber left on reels at the end of the job shall be delivered to University storage facility after pulling is completed.

Meetings and Scheduling

A project schedule shall be coordinated with the University prior to the start of work. The work shall be done in a timely manner once the contract is awarded.

Besides a scheduling coordination meeting with the University, the Contractor shall

- schedule and attend a safety meeting with a representative of UO Environmental Health and Safety.
- schedule and attend a tunnel training session with the University Central Power Plant, if not already University "tunnel certified." This is to be completed prior to the start of work.
- attend a preconstruction meeting with the City of Eugene Public Works Maintenance Department.

It is anticipated that the new Head End building will be ready for cable pulling and termination on or about 6/1/2014. Assuming this date stands, Contractor shall have project work substantially complete by 6/30/2014. If Contractor cannot meet that deadline the University, at its discretion, may ask the Contractor to bill the University for work done, excluding any work not completed, and cease further work on the project.

Access to the first vault outside Oregon Hall is restricted due to several factors. Access to that vault needs to be scheduled well in advance and should be restricted to (1) day of activity, if possible. The cable should be pulled through, service loops secured, and labels applied before leaving this vault.

Athletics Department Coordination

It will be college baseball season during the time of this work. All work in the vicinity of PK Park will need to be scheduled around the needs the UO Athletic Department. This work includes, but is not limited to horizontal directional drilling, vault installation, duct installation, cable pulling, and concrete work. It is understood that on some days, or portions thereof, work will be prohibited near PK Park.

Although football will not be in season, coordination and scheduling in the vicinity of Autzen Stadium is also required. This work includes, but is not limited to horizontal directional drilling, duct installation, cable pulling, and concrete work.

The UO Information Services Project Manager shall be the sole point of contact for coordinating with the Athletic Department for the items listed above, as well as for any other questions or issues that may arise. **Contractor is not to coordinate directly with Athletic Department.**

Pay Applications

The Contractor shall be paid under a current OUS retainer agreement. The Contractor has the option of submitting a single invoice upon completion of the project, or two or more progressive payment applications in the AIA format (forms G702 and G703). Pay applications may be submitted bi-weekly. Coordinate a schedule of values and retainage with University Project Manager prior to first application.

Permits

Right of way use permits shall be obtained by the University.

Vehicle Access

Motor vehicles are generally not allowed outside of roads and parking lots on campus. Information Services will work with the UO Police Department and the grounds crew to coordinate vehicle access to tunnel entrances for a truck and reel trailer.

Parking permits are required for all parking lots and spaces on UO property. Parking permits are available on a daily, monthly, or yearly basis from UOPD. Contractor is responsible for all parking permit purchases.

No driving is allowed on the bridges on the bike path, alternate routes must be used. Vehicle access to bike paths on both sides of the river is outlined on the included "BIKE PATH ACCESS" maps.

Questions regarding access to bike paths shall be coordinated with City of Eugene Public Works Maintenance group. Contact Brian Siria, City of Eugene Utility Coordinator at 541-682-4887.

Utility Markers

Contractor will need to coordinate with UO staff and place 3M RFID Utility Markers on specific sections of any new conduit installation. Markers are usually placed near vaults, on sweeps, and on long straight sections to enable locating of conduits in the future. In the case of trenched conduit, 3M 1421 XR/ID mid-range ball-style markers shall be tied to ducts in trench. In the case of horizontally drilled pathways, vacuum excavating of 6" diameter holes to a depth of 18" may be required. 3M 1421 XR/ID mid-range ball-style markers shall be placed and the hole shall be backfilled. In cases where the conduit is not exposed and vacuum excavating is not possible, such as hard-surface roadways and paths, 3M 1432 XR/ID near-surface cartridge-style markers (1" diameter X 3" length) shall be used instead. Drill hole, insert marker, and fill with epoxy. Use Euclid "Dural Fast Set Gel" Epoxy or approved equivalent. Include epoxy cut sheet with submittal package. Manufacturer's instructions must be followed. Sprinkle sand over patched hole while the epoxy is setting.

Pathway and Cable Work

Permit Notes

The following items are conditions of the City Right of Way permits and must be adhered to for any/all

work outlined in this document to which they pertain.

Leo Harris/Canoe Canal/Alton Baker Park:

1. Preconstruction meeting required with City. (University to coordinate.)
2. Erosion Prevention permit required.
3. Appropriate traffic device measures shall be taken with consideration to pedestrian traffic at all times. Contractor shall provide safe access around work zones.
4. Contractor to have a "frack-out" plan in place that, at a minimum, conforms to guidelines approved by the City in included "Frack-Out Plan" document.
5. Contractor to use City-approved HDD hole sealer, specified in included "Diamond Seal" spec sheet, if needed to comply with frack-out plan.
6. It is to be understood that future improvements to the canal would reduce the slope of the bank to make it more user friendly for accessing water activities, so deep and gradual installation under the banks shall be needed to prevent potential future conflicts. Final drilling plan to be discussed with City before drilling starts.
7. The new Intercept vault placement adjacent to bike path has too many variables to pin down an exact location at this time. Vault location shall be determined and approved in the field by City Parks and City Utility Program staff when drilling has commenced.
8. Restore all work areas to a condition as good or better than found at start of work.
9. 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 1-800-332-2344.

Martin Luther King, Jr. Boulevard (MLK):

1. Preconstruction meeting required with City. (University to coordinate.)
2. Permit valid for directional drilling, only. If open excavation is needed due to existing conditions, prior approval by the City will be required and street restoration requirements will be expanded and reconditioned through the permit.
3. Erosion Prevention permit not required.
4. Approved traffic control plan required for any lane closures on MLK.
5. Work to be coordinated with UO not to conflict with events that produce high vehicular or pedestrian traffic.
6. Tree protection standards to be followed. Reference Eugene standard drawing LS120 for detail.
7. 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 1-800-332-2344.

New Pathways

See Plan Drawing for details on the following items.

New Pathway P1:

Directionally drill from existing Autzen South Gate vault, South under Canoe Canal to new Intercept vault site adjacent to bike path (approximately 325 feet).

Drill path to be a minimum of 5 feet under channel bottom.

Exact route to be determined and agreed upon after utility locates and critical root zone considerations.

See "P1 Drill Path and Critical Root Zone Detail" on Plan Drawing.

Contractor is responsible for verifying location of existing underground utilities and establishing their depths and the route of the drilling. Included "Leo Harris/Canoe Canal Underground Infrastructure" map included for reference, only.

Install (1) new Intercept vault at South end of run.

- Vault to be located adjacent to bike path. Exact location to be determined after utility locates and potholing and approved in the field by City Parks and City Utility Program staff.
- Vault to match existing vaults along bike path: Oldcastle 264-TA or equivalent.
- Vault to have no bottom.
- Vault to have 10" thick concrete lid to match existing vault lids along bike path. See included "Vault Lid Drawing."
- Vault lid to be flush with grade.
- Vault to be set on 6" bed of compacted ¾-minus gravel and backfilled with compacted ¾-minus gravel to top of vault. Remaining backfill to be 8" of soil covered with 2" of mulch. Seed to match existing lawn if in grassy area. Vault lid to be flush with grade.
- See "P1 Vault Detail" on Plan Drawing.

Install conduit

- Install (2)4" PVC or polyethylene underground conduit.
- Conduit to terminate within the two aforementioned vaults.

Install innerduct

- Install (4)1.25" innerduct in each of the (2)4" new conduits.

Only (1) of the (2) existing 4" conduits in the Intercept vault will be empty and is to be cut. The other conduit is occupied with active cables. Contractor to confer with UO Information Services personnel before cutting existing conduit in Intercept vault.

It is possible that City of Eugene path lighting ducts may run above UO existing 4" conduits in the vicinity of the new Intercept vault. In that case, the vault placement will need to be offset from the existing UO duct bank and the intercepted, existing conduit will need to be routed to the vault. Considerations should be taken for that eventuality and the total of sweeps should be no greater than 45 degrees (i.e., (2)22½ degree sweeps).

EWEB inspectors are required to be present crossing existing water mains. Contractor to coordinate with EWEB regarding 45" water main running parallel to Leo Harris Parkway, North of the roadway and South of Autzen Stadium, before drilling in that area.

Mark surface with route, position and depths (+/- 2") of drill head where possible. Record and relay position and depths under canal to University project managers.

Place 3M RFID markers as directed by University project managers.

New Pathway P2:

Directionally drill from RoW in front of Masonic Center at 2777 Martin Luther King Blvd. (MLK) South under MLK to RoW on South side of MLK near PK Park, and then West and Southwest to site of new UO Transition vault. Continue Southwest to (1)4" conduit stubbed under concrete (approximately 715 feet).

Contractor is responsible for verifying location of existing underground utilities and establishing their depths and the route of the drilling. Included "MLK Underground Infrastructure" map included for reference, only.

It is estimated one core drill will be needed in MLK to locate storm sewer line. Other than the MLK East vault installation in the sidewalk and the single core drill in the MLK road surface, there will be no breaching of hard surfaces in the RoW.

Install (2) new vaults

- Install (1) new MLK East vault in sidewalk on North side of MLK approximately 205 feet East of Masonic Center driveway, and adjacent to Masonic Center property.

- Install (1) new Transition vault on UO property as close to RoW as possible.
- Both vaults to be 4' x 4' x 4', Oldcastle 444-LA or approved equivalent with (2)6" risers and non-skid "sandblasted" lids (Oldcastle 44-332-NS).
- Both vaults to be set on 6" of compacted ¾-minus rock and backfilled with ¾-minus rock.
- MLK East vault, in RoW sidewalk, to have entire existing concrete panel(s) removed and replaced. Follow City of Eugene requirements for sidewalk panel replacement. Lids to be flush with finished concrete.
- See "Concrete Work," below, for any concrete repair/replacement stipulations on UO property.

Install conduit

- Install (6)1.5" underground conduit (PVC or polyethylene) from new MLK East vault to new UO Transition vault.
- Expose (1)4" conduit stubbed under concrete panel on UO property in front of PK Park. Install (1)4" underground conduit (PVC or polyethylene) from new UO Transition vault to existing stubbed conduit. Join new conduit to existing conduit.
 - Contractor to verify existence of stubbed conduit.
- See "Concrete Work," below, for concrete repair/replacement stipulations on UO property.
- All conduits to be a minimum 40" deep.
- All conduit sweeps to be a minimum 4' radius.

Mark surface with route, position and depths (+/- 2") of drill head.

Place 3M RFID markers as directed by University project managers.

New Pathway P2a (Additive Alternate #1):

If existing stubbed conduit in P2, above, cannot be confirmed, or at the discretion of the University, rather than extending (1)4" new conduit from new UO Transition vault to existing stubbed conduit, instead run (8)1.5" conduit from new UO Transition vault to existing North Ticket vault. This run of conduit can be drilled, trenched, or be a combination of both. Additional drilling/trenching approximately 165 feet.

See Plan Drawing.

See "Concrete Work," below, for any concrete repair/replacement stipulations on UO property.

Contractor is responsible for verifying location of existing underground utilities and establishing their depths and the route of the drilling. "MLK Underground Infrastructure" map included for reference, only.

New Pathway P3:

From MLK East vault, North and then West to the new Head End building on Masonic Center property (approximately 625').

This pathway to be installed by others. Listed here because Contractor will be responsible for pulling cables C1 and C2 through this pathway.

Exact path, conduit sizes, interim pull points, interior routing, and termination TBD and to be coordinated with owners and/or their contractors through UO Project Managers.

Expect to leave 100' of total service loops along this pathway North of MLK East vault.

Existing Pathways

In some areas the cables will be routed through the University tunnel system. Throughout most of the tunnel system, wall mounted aerial hardware is used to support cable on tensioned steel cable. Use lower strand where there are two or more to choose from.

Cables are to be strapped to strand with reclosable plastic ties every 4 to 5 feet. In many places these ties are already in service. Do not cut off the tails of these cable ties after closing them. The University will provide new reclosable ties for areas which are missing them.

University staff will need to be on hand to coordinate cable routing through some congested sections of the tunnel, especially under Franklin Boulevard, and then near Streisinger, Klamath, and Oregon halls. provide notice to University Project Manager at least one day in advance.

In some areas, existing underground conduit will be used. Existing pull string or mule tape may be used for pulling new cable. Replacement 2,500-lb rated mule tape to be pulled in with cable except when pulling into dedicated innerduct.

Cable List

The following cables will be installed during this project. Lengths are approximate and **include** service loops.

ID	From	To	Type	Approx. Total Length (incl. svc loops)	Label	Remarks
C1	Head End	Oregon Hall	432-strand SM ribbon fiber	8,825 feet	DAS Head End to Oregon Hall	Corning 432EV4-14100D53
C2	Head End	Moshofsky	288-strand SM ribbon fiber	4,268 feet	DAS Head End to Moshofsky	Corning 288EV4-14100D53
C3	Moshofsky	Oregon Hall	144-strand SM loose tube	6,499 feet	Moshofsky to Oregon Hall	Additive Alternate #2

Cable Routing

See Plan Drawing for cable routes.

All cables runs must be pulled in contiguous lengths. **Splices are not permitted** except where explicitly specified in the Interior Cable Routing and Termination section, below.

At the point where the cable exits the tunnel system and enters the underground ducts, University staff must be present to approve routing of the cable. Schedule this approximately (1) day in advance.

Pull a new 2,500lb rated mule tape with all new cables except when pulling into dedicated innerduct. Mule tape to have footage markings. Include mule tape cut sheet with submittal package.

In all places outside of conduit and tunnels, for instance, when routing cables in wiring closets, fastening of fiber cable is to be done with Velcro strapping to minimize the chance of physical damage to the cables. No standard plastic wire ties are to be used.

Innerduct Installation

(4) 1.25" innerduct are to be installed into all new and existing 4" conduits along Job Route from the South Gate vault to the Duct-to-Tunnel Transition near Millrace Studios (approximately 3,760 feet including both new conduits installed in pathway P1, above). See Plan Drawing.

Cable C1 shall be installed in (1) of the new innerducts.

New 2,500-lb rated mule tape to be installed in any/all empty innerduct. Mule tape to have footage markings.

Include innerduct and mule tape cut sheets with submittal package.

Cable Testing

University-supplied fiber cable will be tested before shipment from factory. Test results will be included with shipment. Contractor to test all cables after installation as per included "UO Fiber Testing" document.

Interior Cable Routing and Termination

Head End:

Cables C1 and C2 to be pulled from MLK East vault North and then West, through new pathway, P3, into new Head End building.

Exact path, conduit sizes, interim pull points, interior routing, equipment location and termination at this site TBD and to be coordinated with owners and/or their contractors through UO Project Managers.

Expect to leave 100' in total service loops on Head End property and/or in Head End building. Location(s) TBD.

Total estimated OSP cable length including exterior run, interior run, and service loops: approximately 725'

General Interior Installation:

- NOTE: Contractor must use a mass fusion splicer to execute this section.
- Install (1) University-supplied Corning OSE-LD0-00-1 splice enclosure.
- Install cables C1 and C2 into splice enclosure using (2) University-supplied Corning OSE-CBL-37 OSP entry kits.
- Install (1) University-supplied Corning EDGE-04U rack mount fiber termination housing
- Install (1) University-supplied Corning EDGE-02U rack mount fiber termination housing
- Install the (5) lengths of University-supplied Corning 144EC8-14101-20 144-strand ISP cable into the OSE splice enclosure using (5) University-supplied Corning OSE-CBL-34 ISP entry kits.
- In the OSE, mass fusion splice the (5) ISP cables to OSP cables, C1 and C2, using (10) Corning M67-110 mass fusion splice trays.
- Run the (5) 144-strand ISP cables from the OSE splice enclosure to the EDGE housings.
- Splice the (5) 144-strand ISP cables onto (60) Corning EDGE-CS12-AF-P00RJ pigtailed splice cassettes and install the cassettes into the EDGE housings effectively extending and terminating the 432 strands of cable C1 in the EDGE-04U and the 288 strands of cable C2 in the EDGE-02U.
- Splice fibers as per a predetermined method in the included "MTP Polarity Management" document. Contractor to decide on method and utilize the same method in all three terminal locations to assure polarity is properly maintained at terminal ends of each cable.

Oregon Hall:

See included "Oregon Hall Interior Routing Detail" drawing for more information on this section.

Total approximate OSP cable length in this building including (1) 100' service loop: 150'.

Cable C1 to be pulled from Oregon Hall vault into Oregon Hall basement switchroom, Room 3A, to a space marked on the West wall approximately 10' South of Northwest corner.

(1) 100' service loop to be left on strut with other existing cables on the West wall just South of the Northwest corner before reaching location specified above.

Interior Cable Installation and Termination:

- NOTE: Contractor must use a mass fusion splicer to execute this section.

- Install (1) University-supplied Corning OSE-LD0-00-1 splice enclosure in marked area on West wall specified above.
- Install cable C1 into splice enclosure using (1) University-supplied Corning OSE-CBL-37 OSP entry kit.
- Install (1) University-supplied Corning EDGE-04U rack mount fiber termination housing in existing rack in Southwest corner of room.
- Install (3) lengths of University-supplied Corning 144EC8-14101-20 144-strand ISP cable into the OSE splice enclosure using (3) University-supplied Corning OSE-CBL-34 ISP entry kits.
- In the OSE, mass fusion splice the (3) ISP cables to the OSP cable, C1, using (6) Corning M67-110 mass fusion splice trays.
- Run the (3) 144-strand ISP cables on existing ladder-style overhead rack from the OSE splice enclosure to the EDGE-04U housing.
- Splice the (3) 144-strand ISP cables onto (36) Corning EDGE-CS12-AF-P00RJ pigtailed splice cassettes and install the cassettes into the EDGE housing effectively extending and terminating the 432 strands of cable C1 in the EDGE-04U.
- Splice fibers as per a predetermined method in the included "MTP Polarity Management" document. Contractor to decide on method and utilize the same method in all three terminal locations to assure polarity is properly maintained at terminal ends of each cable.

Moshofsky:

See included "Moshofsky Interior Routing Detail" drawing for more information on this section.

Total approximate OSP cable length in this building including (1) 100' service loop: 400'.

Cable C2 to be pulled from Moshofsky Loading Dock vault through existing 4" conduit to existing 5'x3'x2' pull/junction box in Room 228. From there, to be pulled through existing 4" conduit into wiring closet, Room 231A, and from there, to be run on existing overhead ladder-style cable rack into wiring closet, Room 231D, to the West end of the South wall.

(1) 100' service loop to be fastened to plywood South wall adjacent to Southwest corner.

Interior Cable Installation and Termination:

- NOTE: Contractor must use a mass fusion splicer to execute this section.
- Mount fire-resistant backboard on the sheet rocked West wall near the Southwest corner.
- Install (1) University-supplied Corning OSE-LD0-00-1 splice enclosure on new fire-resistant backboard.
- Install cable C2 into splice enclosure using (1) University-supplied Corning OSE-CBL-37 OSP entry kit.
- Install (1) University-supplied Corning EDGE-02U rack mount fiber termination housing in farthest West existing relay rack.
- Install (2) lengths of University-supplied Corning 144EC8-14101-20 144-strand ISP cable into the OSE splice enclosure using (2) University-supplied Corning OSE-CBL-34 ISP entry kits.
- In the OSE, mass fusion splice the (2) ISP cables to the OSP cable, C2, using (4) Corning M67-110 mass fusion splice trays.
- Run the (2) 144-strand ISP cables on existing ladder-style overhead rack from the OSE splice enclosure to the EDGE-02U housing.
- Splice the (2) 144-strand ISP cables onto (24) Corning EDGE-CS12-AF-P00RJ pigtailed splice cassettes and install the cassettes into the EDGE housing effectively extending and terminating the 288 strands of cable C2 in the EDGE-02U.
- Splice fibers as per a predetermined method in the included "MTP Polarity Management" document. Contractor to decide on method and utilize the same method in all three terminal locations to assure polarity is properly maintained at terminal ends of each cable.

Cable C3 (Additive Alternate #2)

Cable C3 to be pulled from Moshofsky to Oregon Hall sharing pathways with cables C2 and C1.

Cable C3 to use a dedicated innerduct in the sections of conduit where new innerduct has been installed.

Cable C3 to be left in service loops and remain un-terminated at each building as follows:

- Interior routing of cable C3 to match cable C1 at Oregon Hall, however, cable C3 is to be labeled and **left un-terminated** in (1) 100' service loop along with the cable C1 service loop near Northwest corner of Oregon Hall switchroom, Room 3A.
- Interior routing of cable C3 to match cable C2 at Moshofsky, however, cable C3 is to be labeled and **left un-terminated** in (1) 100' service loop in wiring closet, Room 231A, and not be routed into wiring closet, Room 231D.

Utility Vaults

The vault access points on the bike path are covered with one ton concrete slabs to prevent cable theft. These must be lifted with heavy equipment. They have (4) anchors set in them for attaching eye bolts. Use all (4) connection points when lifting the slabs, keeping them as close to the ground as possible. Extra precaution for pedestrian and cyclist safety must be taken when working in these areas. Provide either plastic snow fencing with sturdy supports and/or barricades around open vaults/manholes. Any time a vault is open there must be a spotter outside the vault to ensure pedestrian/traffic safety. The fill surrounding the slabs must be replaced after completing work and any disturbed grass must be replanted. Replace concrete lids each day. Leave safety cones and/or pylons in place at each vault adjacent to bike path until fill surrounding slabs is replaced.

Coordinate with University Project Manager for inspection of bike path vaults prior to final replacement of lids.

Concrete Work

Any damage to concrete surfaces on University property in and around the Autzen Complex due to potholing, or for any other reason, will require complete concrete panel replacement ensuring score pattern, and expansion joints are matched to the section being removed and to adjacent remaining sections. If removed panels were tinted, reasonable efforts must be made to match tinting with new concrete. Security against vandalism must be provided for any newly-poured concrete.

Any damage to concrete surfaces in City RoW will require complete concrete panel replacement unless otherwise agreed to by the City. Any concrete repair or replacement in City RoW must conform to City standards and guidelines.

Cable Protection

Contractor shall use a tension gauge or breakaway swivels to assure tension applied to cable being pulled does not exceed cable manufacturer's recommendations. Include breakaway swivel cut sheet in submittal package. Follow cable manufacturer's instructions for tying on to and pulling cable.

Service Loops

Service loops are required in tunnels and vaults. Service loop locations and lengths are noted on Plan Drawing. All service loops are to consist of indicated length of cable +/- 10 ft. Wrap cable in figure-8 loops measuring 20" in diameter (minimum). Use five Panduit tie mounts (TMEH-S10-C100) and five Contractor-provided 22" Panduit reclosable weather resistant Pan-Tie straps (PRT6EH) to fasten each service loop to vault or tunnel wall. Fasten tie mounts with galvanized #10 machine screws and drop in concrete anchors. Placement of service loops in tunnel may be adjusted by 30' to a less congested section of tunnel.

The location of the 400' loop indicated in the tunnel North of Franklin Blvd. will be agreed upon by Contractor and University and may require special mounting.

Service loops also required in Oregon Hall and Moshofsky wiring closets. See associated detail drawings.

There will always be at least (2) cables in each indicated service loop location. Indicated service loop lengths apply to each cable, individually. For instance if a 50' service loop is called for in a single location, each cable traversing the location will have its own 50' service loop.

Labeling

Use Panduit B2M2S-D0 marker ties to label cables at the locations listed below. Apply writing to marker ties with plastic laminated machine-generated adhesive labels. Do not use lettering smaller than 10 point. All labels on a single cable shall be identical.

For label text, see "Cable List" table, above.

Label each cable at every:

- cable endpoint (where cable stubs out of tunnel or conduit)
- tunnel entry and exit point for cable
- tunnel intersection
- service loop
- utility vault
- 200' run in the tunnel between landmarks above

Miscellany

Submittals

Contractor must present the following submittals for approval before job commencement:

- Breakaway swivel spec sheet
- Mule tape spec sheet
- Epoxy spec sheet
- Vault spec sheets
- Frack-out plan
- Chemical spill containment plan
- Innerduct
- Velcro fastening straps and/or tape

Documentation

At the end of the project, provide the University an electronic spreadsheet which lists each cable and for each cable a list of the marked cable footages at each end and just prior to each service loop, working from the originating building. Provide a brief description of the location of each service loop. Additionally, mark the Plan Drawing with the above information and return it to the University.

Code Compliance and Workmanship

Contractor is expected and responsible to be in compliance of all electrical and building codes. Contractor shall perform all tasks with professional workmanship.

Warranty

Contractor is responsible for replacing or repairing cable that is damaged during installation. The University has up to one (1) year after the end of the project to identify damage and report it to the Contractor.

University of Oregon DAS Fiber Testing

Rev 1 - 3/6/2014

1 OTDR Fiber Testing

1.1 Introduction to Test

It is a University of Oregon (UO) requirement that each strand of fiber used in the construction of the DAS system be tested. This section assumes the reader has a technical understanding of fiber optic tools and testing. The purpose of this section is to assure that fiber OTDR testing is performed and documented per UO standards.

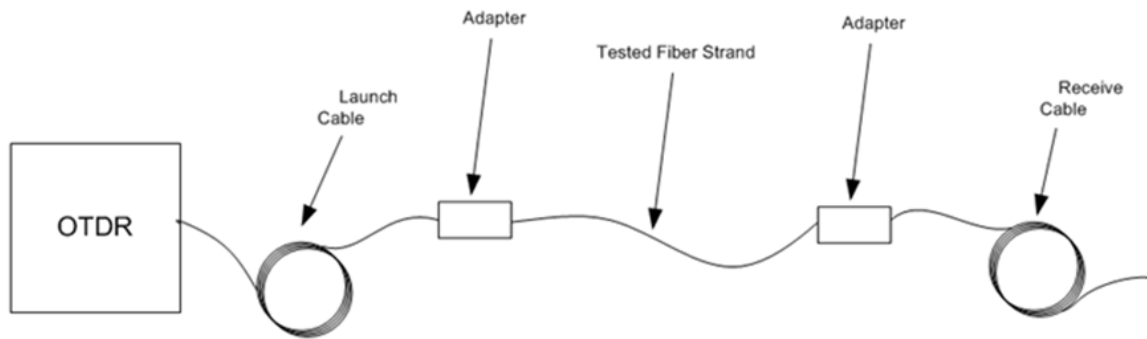
In a DAS application, it is important that the fiber be tested per UO specifications. This test should be performed at both 1330 nm and 1550 nm for single-mode fiber or 850 nm and 1300 nm for multi-mode fiber. Additionally, this test should be performed in both directions on each fiber strand. This test is intended to be performed after DAS installation and prior to commissioning. A current calibration certificate and individual equipment certification is required to be submitted with results.

1.2 Required Tools/Equipment

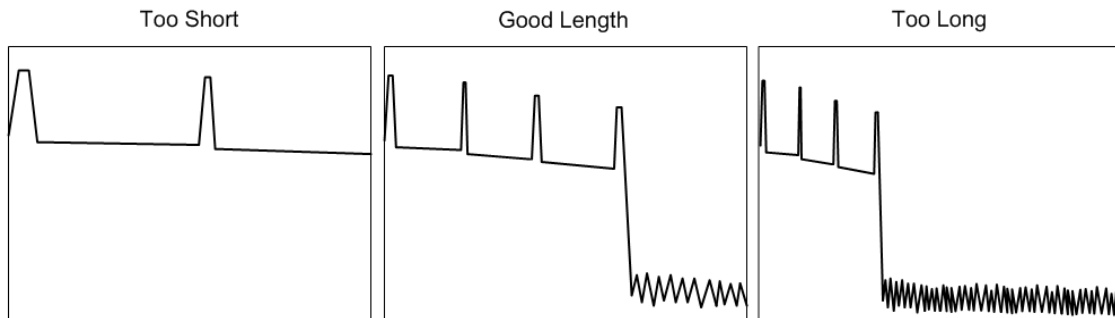
- OTDR Device
- Launch/Receive cables (150 m or manufacturer specified length)
- (2) Barrel Adapter
- Fiber Cleaning Materials

1.3 Equipment Setup

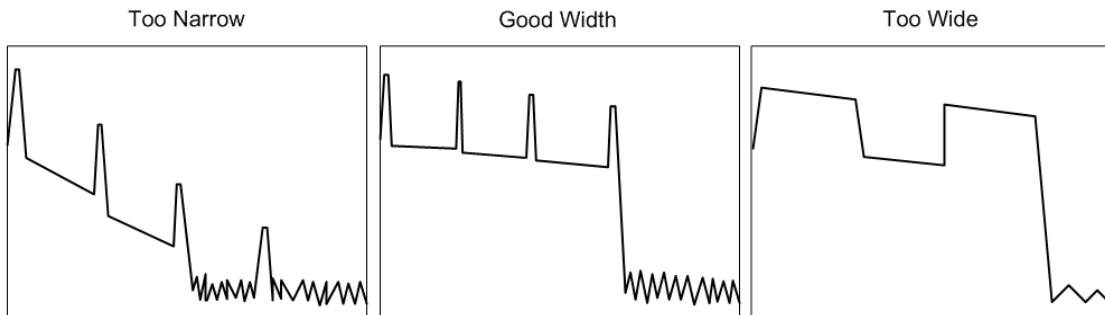
When testing fiber for a UO system, the OTDR must be connected to a 150 m launch cable or of manufacturer specified length to overcome the testing dead-zone. The launch cable is then connected in line with the tested fiber strand using the appropriate adapters. After the tested fiber strand, an adapter will connect to a 150 m or of manufacturer specified length receive cable. These launch/receive cables are required to accurately measure the front-end and back-end connectors losses as well as assure fiber continuity in the system.



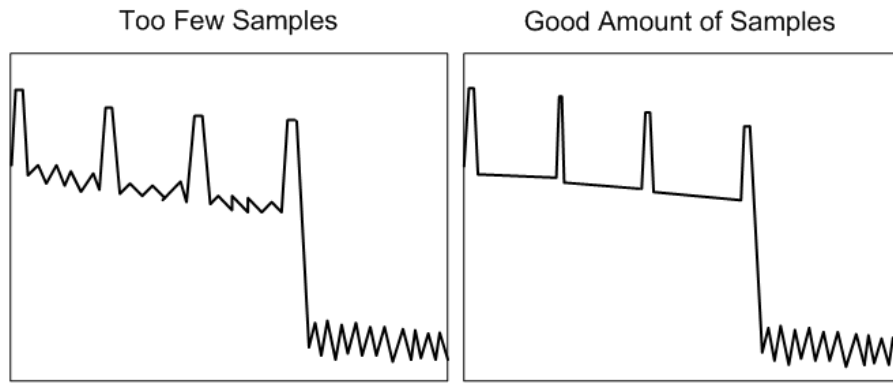
The OTDR distance range should not be too short or too long. Appropriate length should set the range at approximately 1.5 times the anticipated length. Adjust the distance as appropriate per fiber run to reflect this. See below for detail:



Adjust the pulse width as necessary to appropriately display the events. If the pulse is too narrow the trace will fall into the noise floor. If the pulse is too wide the events will not clearly be depicted in the trace. See below for detail:

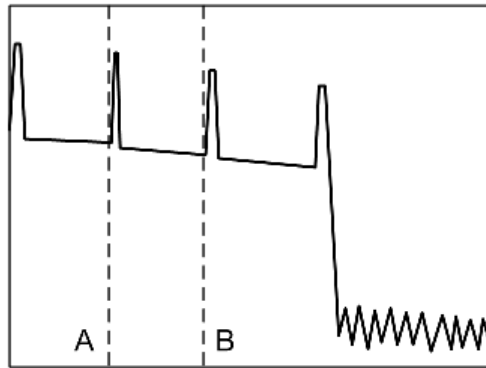


It is also required that an appropriate amount of samples be used when performing the OTDR test. If too few samples are taken, the trace will appear noisy and not flat. See below for detail:

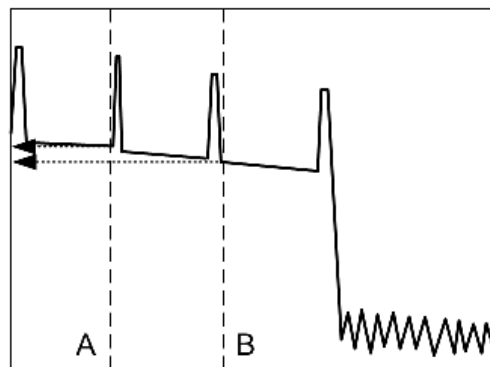


1.4 Operational Procedures

Once the proper setup is completed for the fiber run, test each strand of fiber. Place a marker at the event of the fiber strands first connector and at the beginning of the event of the fiber strands last connector as per below. Record the x-axis distance value for this strand as the distance between A and B.



Next, move marker B to the end of the event of the second connector as per below. Record the y-axis loss value between point A and B. A screenshot should also be taken at this point and properly labeled.



These tests should be completed and recorded at both 1310 nm and 1550 nm. It should also be performed in the forward (fiber head to remote location) and reverse (remote location to fiber head) direction of the fiber run.

1.5 Passing Requirements

UO requires that each strand loss must be less than 1.5 dB. If the fiber does not meet this requirement cleaning the fiber connectors or re-splicing may be required to get improved test results.

1.6 Labeling and Documentation

OTDR testing requires a table to be filled out for submission. The readings should be recorded manually on a per strand basis and should include overall distance of the strand and loss in dB of the strand. Labeling of the strand should adhere to the design document. In general, this is labeled as per the following:

- Receiving Remote ID
- Fiber Pair lettered A-F
- UL or DL strand

Example: 1-2_B_UL

In addition to the table, OTDR screenshots are also required. Four screenshots are required for each strand of fiber. Appropriate screen size should be adhered to in accordance with the "Equipment Setup" section. This screenshot should have the markers placed for total strand loss. The title of the screenshot should be labeled according to the following:

- UO Site Name
- Cable ID
- Cable Strand Count
- Fiber Strand Label
- "FOR" or "REV" for Forward or Reverse direction
- "1310" or "1550" nm
- Date

Example: OregonHall_C1_432_1-2_B_UL_FOR_1550_05-30-2014

1.7 Submittal Process

Results should be inserted into an Excel spreadsheet format for submission. These results should be included with the coax sweeps. These should be completed prior to DAS commissioning. These results should be submitted directly to the UO Project Manager. The

screenshot, table and digital files should all be included in submission. Sample submission may be seen below.

Fiber Strand Label	1310 nm Forward		1310 nm Reverse		1550 nm Forward		1550 nm Reverse	
	Distance	Loss	Distance	Loss	Distance	Loss	Distance	Loss
1-1_A_UL	1208'	1.07	1206'	1.04	1199'	.98	1212'	.96
1-1_A_DL	1204'	1.05	1206'	1.12	1205'	.87	1196'	.89
1-1_B_UL	1199'	.99	1209'	.96	1205'	.84	1205'	.82
1-1_B_DL	1204'	.95	1211'	.94	1200'	.82	1204'	.82
1-1_C_UL	1212'	1.12	1209'	1.11	1211'	1.01	1199'	1.00
1-1_C_DL	1196'	.98	1203'	.94	1209'	.90	1204'	.88
1-1_D_UL	1205'	.90	1204'	.88	1206'	.81	1204'	.79
1-1_D_DL	1205'	1.00	1199'	1.02	1209'	.92	1199'	.94
1-1_E_UL	1200'	1.01	1204'	1.05	1211'	.91	1204'	.89
1-1_E_DL	1211'	1.08	1204'	1.06	1196'	.97	1204'	.96
1-1_F_UL	1209'	.98	1199'	.99	1205'	.91	1212'	.89
1-1_F_DL	1203'	.89	1204'	.91	1205'	.82	1196'	.84

Material Specifications and Shop Drawings

3M™ Electronic Marking System (EMS) iD Ball Marker 1421 XR/iD

Installation Instructions

1.0 Introduction

- 1.1 3M™ iD Ball Markers provide an accurate, convenient, long lasting method of marking underground facilities during construction or maintenance. They also make the job of precisely locating underground facilities easier. Other buried markers can be disturbed by backfill dirt or installed improperly so they don't stay positioned correctly. The 3M iD Ball Markers unique self-leveling design ensures the marker is in an accurate, horizontal position regardless of how it is placed into the ground. 3M iD Markers enable you to return to the exact location of the marked underground feature and ensure positive identification by reading the stored data and unique serial number in each iD Marker. Unlike surface markers such as stakes, flags or paint, the iD Ball marker cannot be inadvertently moved or worn away by weather.

2.0 Removable Identification Number Tag

- 2.1 Prior to burying the iD Marker, remove the identification number tag and attach it to "as-builts", or facility documentation, as required by company procedure.

3.0 Writing Information to iD Markers

- 3.1 Second generation iD Markers launched in the first quarter of 2012. Please make sure your Dynatel iD enabled locator has the latest software. The latest PC-Tools can be downloaded at www.3m.com/dynatel.
- 3.2 If the iD marker is intended to contain specific facility information, write the information to the iD marker prior to burying using one of the 3M™ Dynatel™ iD enabled locators (see list below).
- 3.3 Hold the 3M™ Dynatel™ M-Series iD Locator receiver over the top of the iD marker. The maximum distance between the marker and the locator tip during writing is 12 in. (30 cm).

- 3.4 For iD Marker writing instructions, please refer to the following Operator's Manuals: 3M™ Dynatel™ EMS-iD Locator 1420, 3M™ Dynatel™ Cable/Pipe/Fault Locator 2250M/2273M Series or 3M™ Dynatel™ Cable/Pipe/Fault Locator 2550/2573 Series.

4.0 Installing the iD Marker

- 4.1 Before placing the iD Marker over the key point of the facility, decide if a tie down procedure is necessary to keep it in place. If so, secure the iD Marker by inserting a cable tie through one, or both, tie down tabs on the iD Marker and the key point (for example, pipe, cable or splice).
- 4.2 If the key point is metallic, it is recommended that the iD Marker be separated from it by a minimum distance of 4 inches (10 cm) of clean fill dirt.
- 4.3 If the key point is non-metallic, place the iD Marker over the desired location.

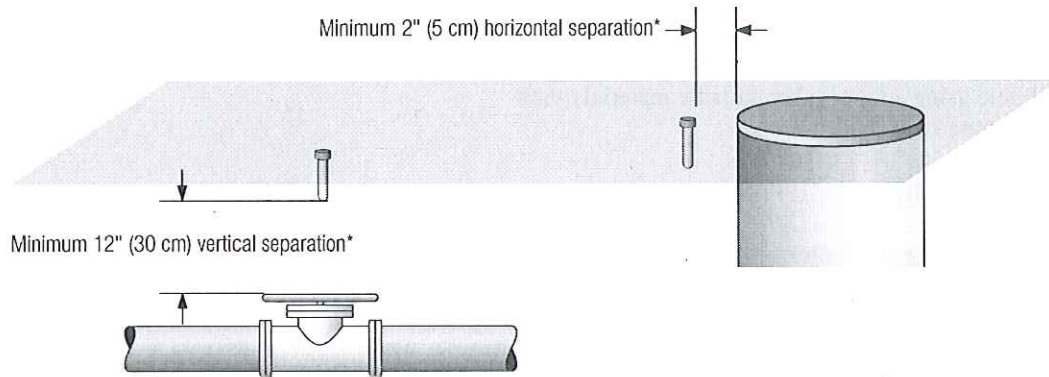
IMPORTANT: The iD Ball Marker cannot reliably re-radiate the locator's signal at a depth greater than 5 feet (1.5 m). If using an E-model locator in countries following CE limitations, or equivalent, the maximum depth is 4 feet (1.2 m). This is the maximum allowable distance between iD Ball Marker and the locator tip.

- 4.4 Hand fill at least 6 inches (15 cm) of soil over the iD Marker to prevent movement, or damage, during backfill.
- 4.5 Backfill the hole.

3M™ Electronic Marking System (EMS) Near-Surface iD Marker

1432 XR/iD

Installation Instructions



1.0 Introduction

1.1 3M™ Near-Surface iD Markers provide an accurate, convenient, long lasting method of marking underground and street-access facilities. Its size and shape allow for easy installation in asphalt, concrete or dirt, without extensive digging or drilling. 3M iD Markers enable you to return to the exact location of the marked underground feature and ensure positive identification by reading the stored data and unique serial number in each iD Marker.

2.0 Removable Identification Number Tag

2.1 Prior to burying the iD Marker, remove the identification number tag and attach it to "as-builts," or facility documentation, as required by company procedure.

3.0 Writing Information To iD Markers

3.1 Second generation iD Markers launched in the first quarter of 2012. Please make sure your Dynatel iD enabled locator has the latest software. The latest PC-Tools can be downloaded at www.3m.com/dynatel.

3.2 If the iD Marker is intended to contain specific facility information, write the information to the iD Marker prior to burying. Near-Surface iD Markers must be in a vertical position to write information into them.

3.3 Place the iD marker in the soil, or a non-metallic holder such as a cardboard box with a hole in the top to hold the iD marker for writing.

3.4 Hold the 3M™ Dynatel™ iD enabled Locator receiver over the top of the iD marker. The maximum distance between the iD marker and the receiver during writing is 6 inches (15 cm).

3.5 For iD Marker writing instructions, please refer to the following Operator's Manuals: *3M™ Dynatel™ EMS-iD Locator 1420*, *3M™ Dynatel™ Cable/Pipe/Fault Locator 2250M/2273M Series* or *3M™ Dynatel™ Cable/Pipe/Fault Locator 2550/2573 Series*.

4.0 Installing the iD Marker

4.1 Place the marker vertically into the soil or pavement.

4.2 Maintain a vertical separation from metallic objects of at least 12 inches (30 cm).

- 4.3 A minimum horizontal separation distance of 2 inches (5 cm) from metallic objects should be maintained.

IMPORTANT: The Near-Surface iD Marker cannot reliably re-radiate the locator's signal at a depth greater than 3 feet (0.9 m). If using an E-model locator in countries following CE limitations, or equivalent, the maximum depth is 0.6 m (1.96 ft). This is the maximum allowable distance between the Near-Surface iD Marker and the locator tip.

- 4.4 Fill hole using soil, or other suitable materials such as concrete or asphalt.

5.0 Specifications

Specifications

Read Depth (max)	
Locator, US-Version	3 ft (0.9 m)
Locator, E-Version	0.6 m (1.96 ft)
Program Distance (max)	6 in (15 cm)
Vertical Separation from Facility (min)	12 in* (30 cm)
Horizontal Separation from Facility (min)	2 in* (5 cm)
Distance Between ID Markers (min)	3.5 ft (1.06 m)
Marker Diameter	0.78 in (2 cm)
Marker Length	3 in (7.6 cm)

* Target size and material dependent. Depth estimation may be adversely affected when placing the marker above a large metallic object, such as a manhole cover. To improve depth estimation accuracy, increase the vertical separation from the metal object or perform a field test for depth accuracy.

3M and Dynatel are trademarks of 3M Company.



Infrastructure Protection Division

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Austin, TX 78726-9000
1-800-426-8688
www.3M.com/dynatel

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78-8140-0401-2-D

SST-UltraRibbon™ Single-Tube, Gel-Free Cable

288 F, Single-mode (OS2)

CORNING

Corning SST-UltraRibbon™ gel-free cables continue the innovative breakthrough in outdoor cable technology by introducing a new generation of high-fiber-count gel-free cables. Providing high-fiber-counts in a rugged, compact design, the enhanced coupling features ensure the ribbon stack and cable act as one unit, providing long-term reliability in aerial, duct and direct-buried applications. These features also minimize ribbon movement in situations where cable vibration may occur. The cable consists of a single buffer tube containing a stack of up to eighteen 24-fiber ribbons wrapped within a water-swellaible foam tape and surrounded by a second water-swellaible foam tape. Each 24-fiber ribbon can be easily separated by hand into two 12-fiber ribbons. Strength members located 180 degrees apart under the cable jacket provide tensile and anti-buckling strength. The cable is jacketed with a black UV-resistant polyethylene sheath.

Features and Benefits

Gel-free waterblocking technology
Craft-friendly cable preparation

Innovative waterblocking technology
Provides ribbon to cable coupling

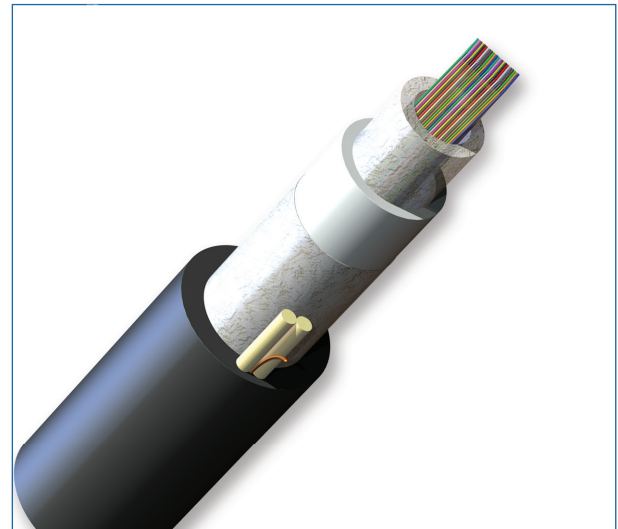
Up to 432 fibers in a compact design
Easily fits in 1.25-in diameter inner duct

Each 12-fiber ribbon individually numbered
Easy identification

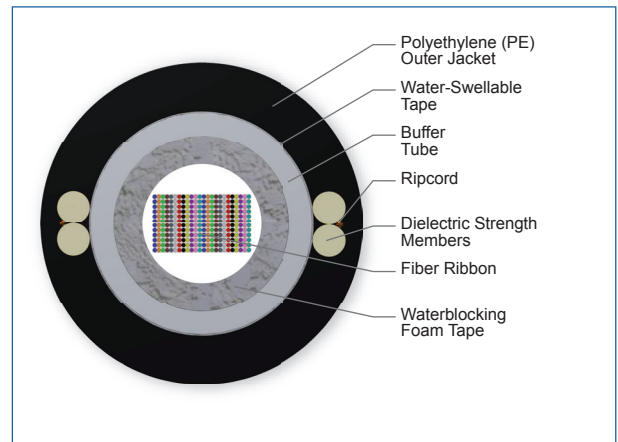
Standards

Common Installations Outdoor lashed aerial, duct and direct-buried; indoor when installed according to National Electrical Code® (NEC®) Article 770

Design and Test Criteria ANSI/ICEA S-87-640
Telcordia GR-20
RDUP PE-90



Part Number: 288EV4-14100D53



Cross Section of Part Number: 288EV4-14100D53

SST-UltraRibbon™ Single-Tube, Gel-Free Cable

288 F, Single-mode (OS2)

CORNING

Specifications

General Specifications	
Environment	Outdoor
Application	Aerial, Direct Buried
Cable Type	Ribbon
Product Type	Dielectric
Fiber Category	Single-mode (OS2)

Temperature Range	
Storage	-40 °C to 70 °C (-40 °F to 158 °F)
Installation	-30 °C to 70 °C (-22 °F to 158 °F)
Operation	-40 °C to 70 °C (-40 °F to 158 °F)

Cable Design	
Fiber Count	288
Ribbons per Tube	12
Fibers per Ribbon	24
Fiber Coloring	Blue, Orange, Green, Brown, Slate, White, Red, Black, Yellow, Violet, Rose, Aqua
Tape	Waterblocking foam tape
Buffer Tube Color	Natural
Buffer Tube Diameter	14.0 mm (0.55 in)
Tape, Layer 2	Water-swellable
Tensile Strength Elements and/or Armoring - Layer 1	Dielectric strength members
Number of Ripcords	2
Outer Jacket Material	Polyethylene (PE)
Outer Jacket Color	Black

Mechanical Characteristics Cable	
Max. Tensile Strengths, Short-Term	2700 N (600 lbf)
Max. Tensile Strengths, Long-Term	890 N (200 lbf)
Weight	266 kg/km (178 lb/1000 ft)
Nominal Outer Diameter	20.3 mm (0.8 in)
Min. Bend Radius Installation	305 mm (12.0 in)
Min. Bend Radius Operation	203 mm (8.0 in)

SST-UltraRibbon™ Single-Tube, Gel-Free Cable

288 F, Single-mode (OS2)

CORNING

Chemical Characteristics

RoHS	Free of hazardous substances according to RoHS 2002/95/EG
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Fiber Specifications

Optical Characteristics (cabled)

Fiber Type	Single-mode
Fiber Core Diameter	8.2 μm
Fiber Category	OS2
Fiber Code	E
Performance Option Code	00
Wavelengths	1310 nm / 1383 nm / 1550 nm
Maximum Attenuation	0.35 dB/km / 0.35 dB/km / 0.25 dB/km
Serial 1 Gigabit Ethernet	5000 m / - / -
Serial 10 Gigabit Ethernet	10000 m / - / 40000 m

* ITU-T G.652 D compliant.

* Meets 0.75 ns optical skew when used in all Corning Plug and Play™/Pretium EDGE® systems solutions.

Notes: 1) Improved attenuation and bandwidth options available.
2) Bend-insensitive single-mode fibers available on request.
3) Contact a Corning Customer Care Representative for additional information.

Ordering Information

Part Number	288EV4-14100D53
Product Description	SST-UltraRibbon™ Single-Tube, Gel-Free Cable, 288 F, Single-mode (OS2)



Corning Cable Systems LLC • PO Box 489 • Hickory, NC 28603-0489 USA

800-743-2675 • FAX: 828-325-5060 • International: +1-828-901-5000 • www.corning.com/cablesystems

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SST-UltraRibbon™ Single-Tube, Gel-Free Cable

432 F, Single-mode (OS2)

CORNING

Corning SST-UltraRibbon™ gel-free cables continue the innovative breakthrough in outdoor cable technology by introducing a new generation of high-fiber-count gel-free cables. Providing high-fiber-counts in a rugged, compact design, the enhanced coupling features ensure the ribbon stack and cable act as one unit, providing long-term reliability in aerial, duct and direct-buried applications. These features also minimize ribbon movement in situations where cable vibration may occur. The cable consists of a single buffer tube containing a stack of up to eighteen 24-fiber ribbons wrapped within a water-swella-ble foam tape and surrounded by a second water-swella-ble tape. Each 24-fiber ribbon can be easily separated by hand into two 12-fiber ribbons. Strength members located 180 degrees apart under the cable jacket provide tensile and anti-buckling strength. The cable is jacketed with a black UV-resistant polyethylene sheath.

Features and Benefits

Gel-free waterblocking technology
Craft-friendly cable preparation

Innovative waterblocking technology
Provides ribbon to cable coupling

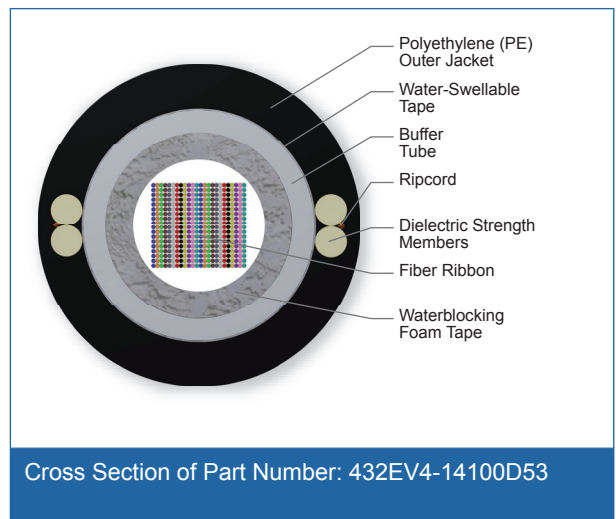
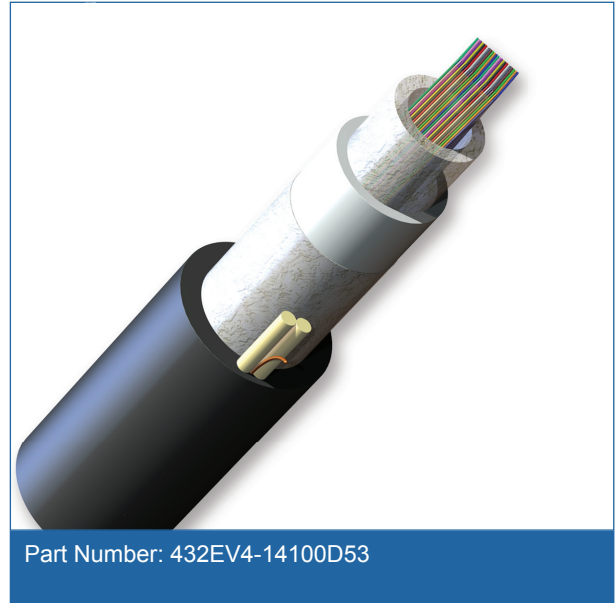
Up to 432 fibers in a compact design
Easily fits in 1.25-in diameter inner duct

Each 12-fiber ribbon individually numbered
Easy identification

Standards

Common Installations Outdoor lashed aerial, duct and direct-buried; indoor when installed according to National Electrical Code® (NEC®) Article 770

Design and Test Criteria ANSI/ICEA S-87-640
Telcordia GR-20
RDUP PE-90



SST-UltraRibbon™ Single-Tube, Gel-Free Cable

432 F, Single-mode (OS2)

CORNING

Specifications

General Specifications	
Environment	Outdoor
Application	Aerial, Direct Buried
Cable Type	Ribbon
Product Type	Dielectric
Fiber Category	Single-mode (OS2)

Temperature Range	
Storage	-40 °C to 70 °C (-40 °F to 158 °F)
Installation	-30 °C to 70 °C (-22 °F to 158 °F)
Operation	-40 °C to 70 °C (-40 °F to 158 °F)

Cable Design	
Fiber Count	432
Ribbons per Tube	18
Fibers per Ribbon	24
Fiber Coloring	Blue, Orange, Green, Brown, Slate, White, Red, Black, Yellow, Violet, Rose, Aqua
Tape	Waterblocking foam tape
Buffer Tube Color	Natural
Buffer Tube Diameter	15.4 mm (0.61 in)
Tape, Layer 2	Water-swellaable
Tensile Strength Elements and/or Armoring - Layer 1	Dielectric strength members
Number of Ripcords	2
Outer Jacket Material	Polyethylene (PE)
Outer Jacket Color	Black

Mechanical Characteristics Cable	
Max. Tensile Strengths, Short-Term	2700 N (600 lbf)
Max. Tensile Strengths, Long-Term	890 N (200 lbf)
Weight	276 kg/km (186 lb/1000 ft)
Nominal Outer Diameter	21.1 mm (0.83 in)
Min. Bend Radius Installation	317 mm (12.5 in)
Min. Bend Radius Operation	211 mm (8.3 in)

SST-UltraRibbon™ Single-Tube, Gel-Free Cable

432 F, Single-mode (OS2)

CORNING

Chemical Characteristics

RoHS	Free of hazardous substances according to RoHS 2002/95/EG
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Fiber Specifications

Optical Characteristics (cabled)

Fiber Type	Single-mode
Fiber Core Diameter	8.2 μm
Fiber Category	OS2
Fiber Code	E
Performance Option Code	00
Wavelengths	1310 nm / 1383 nm / 1550 nm
Maximum Attenuation	0.35 dB/km / 0.35 dB/km / 0.25 dB/km
Serial 1 Gigabit Ethernet	5000 m / - / -
Serial 10 Gigabit Ethernet	10000 m / - / 40000 m

* ITU-T G.652 D compliant.

* Meets 0.75 ns optical skew when used in all Corning Plug and Play™/Pretium EDGE® systems solutions.

Notes: 1) Improved attenuation and bandwidth options available.
2) Bend-insensitive single-mode fibers available on request.
3) Contact a Corning Customer Care Representative for additional information.

Ordering Information

Part Number	432EV4-14100D53
Product Description	SST-UltraRibbon™ Single-Tube, Gel-Free Cable, 432 F, Single-mode (OS2)



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DIAMOND SEAL[®]

Absorbent Polymer for Lost Circulation

Description DIAMOND SEAL[®] lost circulation material is a 100% active, water-swellaable, synthetic polymer. DIAMOND SEAL polymer LCM absorbs hundreds of times its own weight in water. It is intended for use primarily as a lost circulation material for horizontal directional drilling (HDD).

Applications/Functions *The use of DIAMOND SEAL absorbent polymer can assist the following:*

- Lost circulation material for horizontal directional drilling
- Prevent inadvertent returns in river crossing applications
- Stabilize borehole in cobble and gravel
- Stabilize unconsolidated formations

Advantages

- Rapid water absorption
- Effective in mitigating lost circulation
- Economical – small quantity yields large volume
- Easy to use
- Non-fermenting

Typical Properties

• Appearance	off-white crystals
• Specific gravity	0.75
• Dry screen analysis	96% through 5 mesh (4.0 mm)
• Swelling capacity in fresh water	3.5 ft ³ /lb (0.22 m ³ /kg)

Recommended Treatment *For slug treatment:*

- Add 0.5 to 1 pound (0.25-0.5 kg) DIAMOND SEAL polymer LCM per joint

As a pill:

- Add DIAMOND SEAL polymer LCM at 10 - 20 lb/100 gallons of drilling fluid
- Add DIAMOND SEAL polymer LCM at 12 - 24 kg/m³ of drilling fluid

Treatment for Loss of Circulation or Inadvertent Returns in HDD

Operations:

(Prior to pumping remove all in-line screens in circulating system)

Add the following to existing drilling fluid and displace:

BAROLIFT[®] - 0.25 - 0.5 lb/100 gallons (0.3 - 0.6 kg/m³)

N-SEAL[™] - 3 - 5 lb/100 gallons (3.6 - 6.0 kg/m³)

DIAMOND SEAL - 10 - 20 lb/100 gallons (12 - 24 kg/m³)

Packaging DIAMOND SEAL[®] absorbent polymer is packaged in 10-lb (4.5-kg) resealable plastic containers.

Availability DIAMOND SEAL absorbent polymer can be purchased through any Baroid Industrial Drilling Products Retailer. To locate the Baroid IDP retailer nearest you contact the Customer Service Department in Houston or your area IDP Sales Representative.

Baroid Industrial Drilling Products
Product Service Line, Halliburton
3000 N. Sam Houston Pkwy E.
Houston, TX 77032

Customer Service	(800) 735-6075 Toll Free	(281) 871-4612
Technical Service	(877) 379-7412 Toll Free	(281) 871-4613

DURAL FAST SET EPOXY

RAPID SETTING, HIGH STRENGTH, EPOXY ADHESIVE BINDER

DESCRIPTION

DURAL FAST SET EPOXY systems are two part, 100% solids, moisture insensitive adhesives and binders for numerous applications. This high modulus material is available in a low viscosity (LV), medium viscosity (MV) or GEL consistency. DURAL FAST SET EPOXY products are high strength, extremely fast setting (even in a thin film) adhesives and can be used at temperatures as low as 35°F (2°C).

PRIMARY APPLICATIONS

- Fast turn-around epoxy injection
- Concrete adhesive
- Anchor bolt grouting
- Sealing cracks
- Priming & sealing
- Bonding toppings
- Concrete repair
- Coating

FEATURES/BENEFITS

- Abrasion and chemical resistant coating
- Extend with aggregate for epoxy mortar
- High early strengths at normal and low ambient temperatures
- Can contribute to LEED points

TECHNICAL INFORMATION

PROPERTY	DURAL FAST SET LV	DURAL FAST SET MV	DURAL FAST SET GEL
Gel Time	6-8 minutes	6-8 minutes	6-8 minutes
Viscosity	500 cps	3,000 cps	> 80,000 cps
Bond Strength	2267 psi (16 MPa)	2800 psi (19 MPa)	2998 psi (21 MPa)
Water Absorption	0.40%	0.40%	0.66%
Compressive Modulus	378,000 psi (2,606 MPa)	>300,000 psi (2,069 MPa)	302,000 psi (2,082 MPa)
Compressive Strength	10,942 psi (75 MPa)	10,521 psi (72 MPa)	10,100 psi (70 MPa)
Appearance, Mixed	Amber	Concrete Gray	Concrete Gray

REINFORCING STEEL				THREADED ROD			
Rebar Diameter	Hole Diameter	Embedment Depth	Pull-Out Strength	Rod Diameter	Hole Diameter	Embedment Depth	Pull-Out Strength
#4: 1/2" (12.7 mm)	5/8" (15.8 mm)	4.5" (11.8 cm)	14200 lb (6441 kg)	1/2" (12.7 mm)	3/4" (19.1 mm)	5" (12.7 cm)	9200 lb (8709 kg)
#4: 1/2" (12.7 mm)	5/8" (15.8 mm)	5.3" (13.5 cm)	21900 lb (9934 kg)	3/4" (19.1 mm)	1" (25.4 mm)	7.5" (19.1 cm)	46000 lb (20865 kg)
#6: 3/4" (19.0 mm)	7/8" (22.2 mm)	5.6" (14.2 cm)	31100 lb (14107 kg)	1" (25.4 mm)	1 1/8" (28.6 mm)	9.75" (24.8 cm)	76700 lb (34790 kg)
#6: 3/4" (19.0 mm)	7/8" (22.2 mm)	7.5" (19.1 cm)	46600 lb (21137 kg)	1" (25.4 mm)	1 1/4" (31.8 mm)	11" (27.9 cm)	77600 lb (35199 kg)
#8: 1" (25.4 mm)	1 1/8" (28.6 mm)	9" (22.9 cm)	55900 lb (25356 kg)	--	--	--	--
#8: 1" (25.4 mm)	1 1/8" (28.6 mm)	10" (25.4 cm)	83900 lb (78,057 kg)	--	--	--	--

PACKAGING

LV is available in 22 oz (650 mL) dual component cartridges, 10 oz (300 mL) single cartridges, 4 gal (15.15 L) case and 10 gal (37.85 L) units.

MV is available in 1 gal (3.8 L) units.

GEL is available in 22 oz (650 mL) dual component cartridges, 10 oz (300 mL) single cartridges, 1 gal (3.8 L) units, 4 gal (15.15 L) case and 10 gal (37.85 L) units.

SHELF LIFE

2 years in original, unopened container.

SPECIFICATIONS/COMPLIANCES

Dural Fast Set LV: ASTM C 881 Type I, IV, Grade 1, Class A, B, C and Canadian MTQ

Dural Fast Set MV: ASTM C 881 Type I, IV, Grade 2, Class A, B, C

Dural Fast Set Gel: ASTM C 881 Type I, IV, Grade 3, Class A, B, C and Canadian MTQ



The Euclid Chemical Company

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 www.euclidchemical.com

An RPM Company



COVERAGE

Yield of 22 oz (650 mL) cartridges is 37 in³ (.61L). Yield of 10 oz (300 mL) cartridges is 17 in³ (.28 L)

Application ft ² /gal (m ² /L)	LV	MV	GEL
Priming & Sealing	100 to 125 (2.5 to 3.1)	----	----
Bonding Toppings	----	50 to 100 (1.2 to 3.13)	55 to 70 (1.3 to 1.7)
Coating	----	110 to 135 (2.7 to 3.3)	----
Repair Mortars 1/4 " (6.4 mm)	20 to 24 (.49 to .54)	18 to 22 (.44 to .54)	12 to 16 (.29 to .39)

DIRECTIONS FOR USE

SURFACE PREPARATION: Concrete surfaces must be structurally sound, free of loose or deteriorated concrete and free of dust, dirt, paint, efflorescence, oil and all other contaminants. Mechanically abrade the surface. Properly clean profiled area. **Priming:** Clean and prime exposed steel using a spray or brush coat of DURAPREP AC. **Mixing: Cartridge Units:** Shake cartridge vigorously before using. Place cartridge in dispenser. Remove shipping cap and plugs. Dispense small amount until an even flow out of both sides occurs. Attach static mixing nozzle and dispense. Be sure not to tilt cartridge upwards, so that mixed epoxy flows back into tube. After dispensing, remove and properly dispose of static mixer, clean off threaded end of cartridge and replace shipping cap. **Bulk Units:** Using a low speed drill motor and a "jiffy" type paddle, premix parts A and B separately for about a minute. Combine 1 part A with 1 part B and mix well for 3 minutes until there is no streaking in the mix. If aggregate is to be added, do so immediately and blend until consistent. Apply immediately.

Application: Temperatures for DURAL FAST SET EPOXY products must be at least 35°F (2°C) and rising. **Anchor Bolt Grouting:** Before grouting, the anchor bolt must be clean & free of all debris. Prime the hole with neat DURAL FAST SET EPOXY and allow 5 minutes at 75° F (24° C) for the material to penetrate and seal the walls of the hole. Fill the hole with enough material so that when the bolt is inserted excess material will come to the surface. Push the bolt into the hole using a twisting motion to ensure there are no air voids in the hole. For additional information, consult "Anchor Bolt Grouting Guidelines" from The Euclid Chemical Company.

Pressure Grouting: Vertical Cracks: Install injection ports at appropriate intervals using DURAL FAST SET EPOXY GEL. Seal surface cracks with DURAL FAST SET EPOXY GEL. Pump DURAL FAST SET EPOXY LV starting at the bottom and working up. Cracks should be clean and dry prior to injection of the DURAL FAST SET EPOXY LV. **Horizontal Cracks:** "Vee" out cracks. Cracks must be free of all debris before filling. Pressure injection method is the same as for vertical cracks. For gravity feed, pump DURAL FAST SET EPOXY LV until cracks are filled.

Priming & Sealing: Use either LV or MV formulations in these applications. Apply material by roller or squeegee in a uniform fashion. Do not allow the material to puddle. Extremely porous surfaces may require a second coat for proper ultimate performance. Note: DURAL FAST SET EPOXY is a fast setting epoxy at normal room temperatures. Arrange for quick placement of product.

Bonding: If using DURAL FAST SET EPOXY MV as a bonding agent for a cementitious topping, place the topping on the DURAL FAST SET EPOXY while the epoxy is still wet. If the epoxy has become "tacky" to the point where it is no longer a sticky liquid, a fresh coat of product must be applied before the topping is placed.

Coating: If a second coat of DURAL FAST SET EPOXY MV is to be placed on the concrete, the first coat should be slightly tacky (1 to 2 hours old) when the second coat is applied. A slip resistant surface can be created by broadcasting silica sand (20 to 50 mesh) into the coating and then backrolling to embed the sand.

Repair Mortars: The surface should be primed with DURAL FAST SET EPOXY LV prior to application of the repair mortar. Mix Part A and Part B together prior to adding the aggregate. Trowel the mortar into place. If the surface is to rough, a topcoat of DURAL FAST SET EPOXY MV can be applied.

CLEAN-UP

Clean tools and equipment immediately following use with methyl ethyl ketone or acetone. Clean drips and over spray while still wet with the same solvent. Dried epoxy materials require mechanical abrasion for removal.

PRECAUTIONS/LIMITATIONS

- Do not apply at temperatures below 35°F (2°C).
- Do not thin with any foreign material. Do not aerate materials during mixing.
- For critical grouting applications, the concrete should be cured a minimum of 28 days.
- Store between 50°F to 90°F (10°C to 32°C).
- Protect from moisture.
- In all cases, consult the Material Safety Data Sheet before use.

Rev. 10.11

WARRANTY: The Euclid Chemical Company ("Euclid") solely and expressly warrants that its products shall be free from defects in materials and workmanship for one (1) year from the date of purchase. Unless authorized in writing by an officer of Euclid, no other representations or statements made by Euclid or its representatives, in writing or orally, shall alter this warranty. EUCLID MAKES NO WARRANTIES, IMPLIED OR OTHERWISE, AS TO THE MERCHANTABILITY OR FITNESS FOR ORDINARY OR PARTICULAR PURPOSES OF ITS PRODUCTS AND EXCLUDES THE SAME. If any Euclid product fails to conform with this warranty, Euclid will replace the product at no cost to Buyer. Replacement of any product shall be the sole and exclusive remedy available and buyer shall have no claim for incidental or consequential damages. Any warranty claim must be made within one (1) year from the date of the claimed breach. Euclid does not authorize anyone on its behalf to make any written or oral statements which in any way alter Euclid's installation information or instructions in its product literature or on its packaging labels. Any installation of Euclid products which fails to conform with such installation information or instructions shall void this warranty. Product demonstrations, if any, are done for illustrative purposes only and do not constitute a warranty or warranty alteration of any kind. Buyer shall be solely responsible for determining the suitability of Euclid's products for the Buyer's intended purposes.

MTP® Polarity Management

By Doug Coleman

Introduction

Local area network (LAN) campus and building backbones as well as data center backbones are migrating to higher cabled fiber counts in order to meet system bandwidth needs and provide the highest connectivity density relative to cable diameter to maximize utilization of pathway and spaces. Network designers are turning to MTP® connectorized optical fiber trunk cable designs for today's duplex fiber transmission and to provide an easy migration path for future data rates that will use parallel optics such as 40/100G Ethernet.

Optical cables require unique polarity design considerations to ensure reliable system performance as well as support ease of installation, maintenance and reconfiguration. Guidelines for Maintaining Polarity Using Array Connectors has been incorporated into the TIA-568-C.0 standard to facilitate use of MTP connectorized optical cables.

TIA MTP Polarity Guidance

The TIA-568-C.0 standard provides serial transmission fiber polarity guidance for systems using MTP optical connectivity. Dense wiring requirements in the LAN and data center storage area network (SAN) facilitate the use of 12-fiber array style connectors like the MTP Connector. Pre-assembled and field-terminated MTP-to-MTP connectorized optical cables called trunks are often used in these locations. Since there are MTP Connectors on both ends of these trunks and the end equipment typically has standard duplex transceiver ports, the trunks are plugged into factory-made breakout furcations called modules that transition from the MTP Connector to a duplex connector/adapter style (Figure 1).

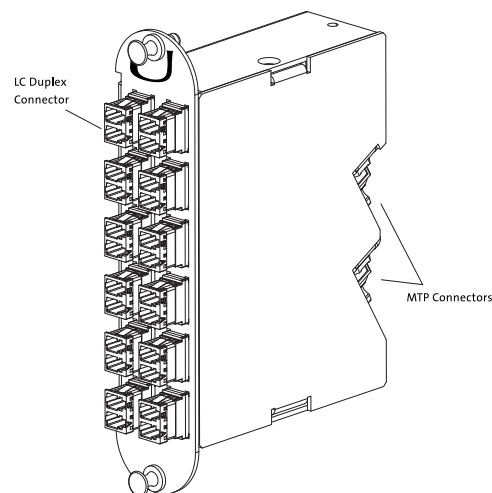


Figure 1

Each 12-fiber MTP® translates into six 2-fiber serial optical circuits that require polarity management that can be achieved using one of numerous methods. Like simplex and duplex connectors and adapters, the MTP Connectors and adapters are also keyed to ensure the proper orientation is maintained when connectors are mated. With MTP Connectors, this keying establishes the orientation of one fiber array in one connector relative to the array in the mating connector, but does not ensure that duplex fiber pair polarity is maintained.

The TIA-568-C.0 standard includes guidance on three sample methods identified as Method A, Method B and Method C. It is important to note that the standard states in paragraph B.4.1 that “While many methods are available to establish polarity, this standard outlines sample methods that may be employed for array cabling systems where the connectors have one row of fibers only.” The word “may” implies that alternate polarity methods, which are not discussed or included in the standard, are available to accomplish the same results. Thus, the standard shows three examples and recognizes that other valid methods also exist, including the Plug & Play™ Universal Systems polarity management method discussed below.

Method A

Method A (Figure 2) uses a single module type wired in a “straight-through” configuration and two different patch cords in an optical circuit. One patch cord is straight wired and the other has a pair-wise flip. All components in the channel are mated key-up to key-down. No guidance is included in the standard to differentiate where the patch cord with pair-wise flips should be used and how it should be made so that it is easily recognizable from the regular duplex patch cord “straight-wired.” Because polarity is addressed in the patch cords, the end-user is ultimately responsible for managing it.

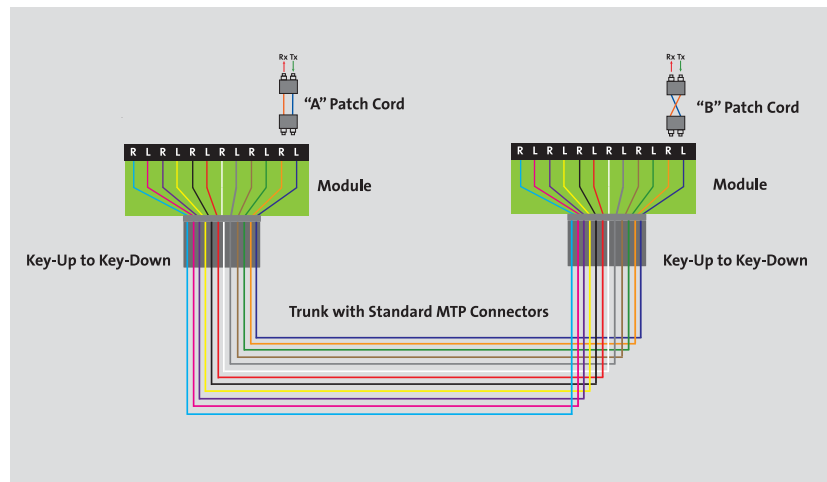


Figure 2

Method B

Method B (Figure 3) uses a single module type wired in a straight-through configuration and standard patch cords on both ends. The differences are that all components in the system are mated key-up to key-up. When the link is configured in this fashion, physical position #1 goes to physical position #12 on the other end. A module on one end is inverted so logically (label-wise) position #1 goes to position #1. This method requires advanced planning for module locations in order to identify the module types and location of the inverted module in the optical link. This adds complexity to the polarity management. Using an MTP® Connector key-up to key-up configuration does not easily accommodate angled polished (APC) single-mode connectors.

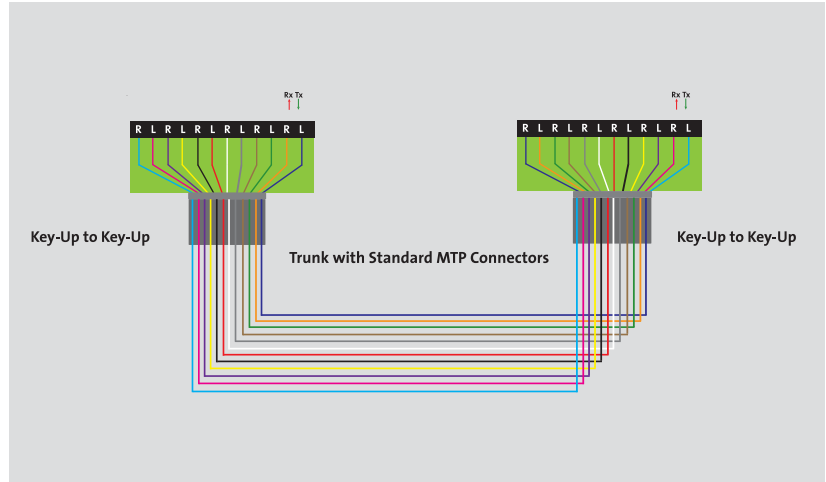


Figure 3

Method C

Method C (Figure 4) uses a pair-wise fiber flip in the trunk cable to correct for polarity. This enables the use of the same module type on both ends of the channel and standard patch cords. Because polarity is managed in the trunk, extending the links requires planning of the number of trunks in order to maintain polarity. The TIA standard does not include text regarding the ability to migrate to parallel optics for Method C, but parallel optic capability can easily be achieved with a special patch cord to reverse the pair-wise fiber flips in the trunk.

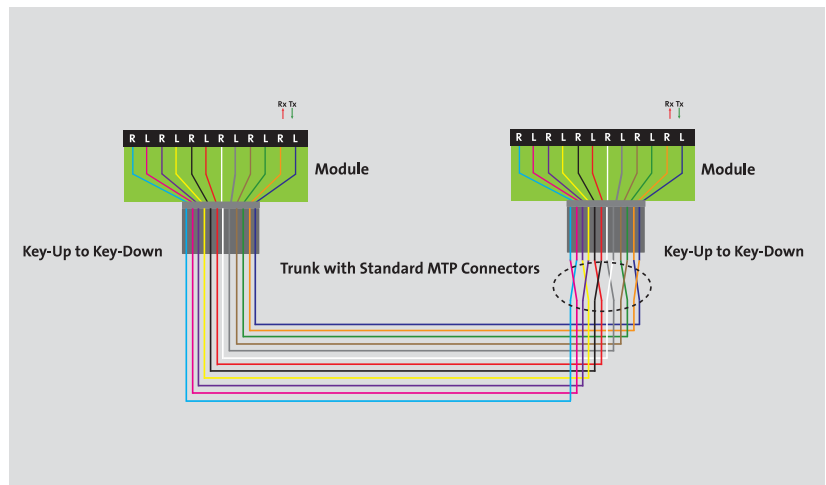


Figure 4

Universal Polarity Management Method

The Plug & Play™ Universal Systems polarity management method (Figure 5) is an enhanced polarity management method that is not included but meets the intent of the TIA standard. The method uses the same module and patch cord type at both ends with no inversion or reconfiguration needed to maintain polarity. Polarity is easily accomplished and managed with the modules internal fiber wiring scheme.

The system is mated key-up to key-down. The method supports simple concatenation of multiple trunks without effecting polarity. The method easily accommodates all simplex/duplex connector types as well as single-mode fiber APC MTP® Connectors. Similar to Methods A, B and C, the universal polarity management method easily facilitates migration to parallel optics. The wired modular system components enable fast and simple networking moves, adds and changes without polarity concerns associated with special polarity-compensating components used in Methods A, B and C.

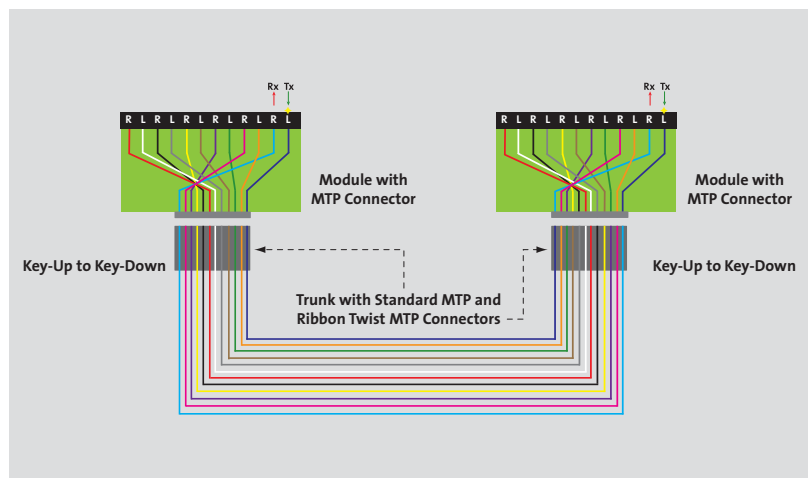


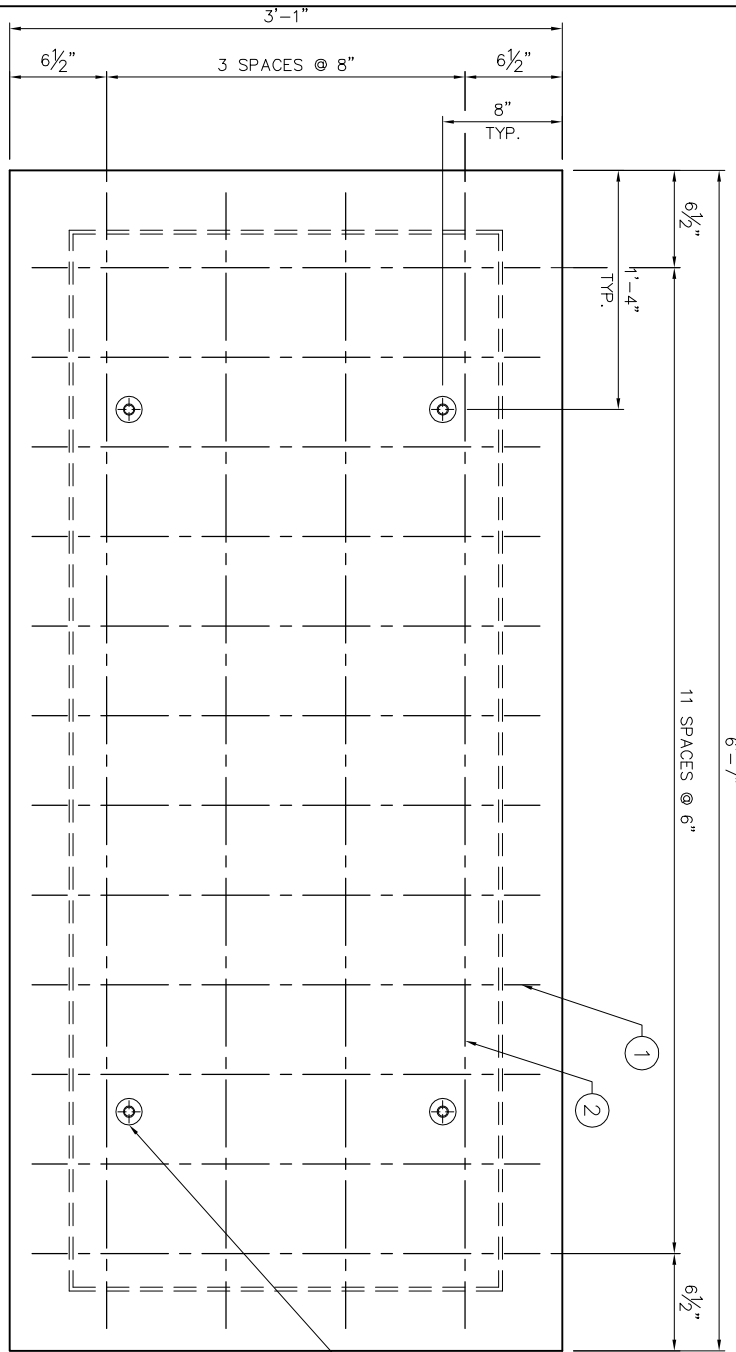
Figure 5

Each of the methods works when the rules of that method are followed. The user is cautioned, however, not to mix and mate component parts from the various methods. This will not necessarily work. The TIA-568-C.0 standard states “it is recommended that a method be selected in advance and maintained consistently throughout an installation.”

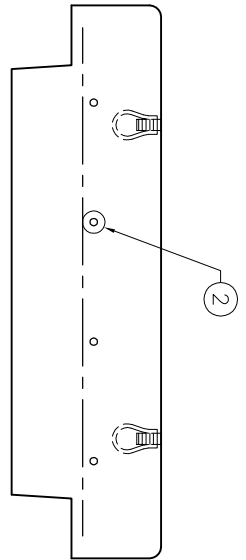
In summary, numerous MTP polarity methods are available to consider. It is essential that end-users and system designers evaluate each method before implementing to ensure that criteria such as reliability, ease of installation, maintenance and reconfiguration, as well as the ability to easily migrate to higher-data-rate solutions that may require parallel optics, are addressed and satisfied.

TR.	REVISION	DATE	BY
A	ADD. 3/4" RADIUS FILLET TOP EDGES	1-16-09	AV

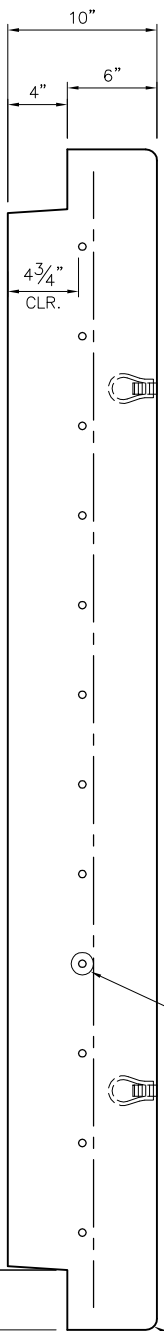
- STRUCTURAL NOTES**
1. CONCRETE: 28 DAY COMPRESSIVE STRENGTH $f_c = 5,500$ PSI
 2. REBAR: ASTM A-615 GRADE 60
 3. MESH: ASTM A-185 GRADE 65
 4. DESIGN: AASHTO BUILDING SPECIFICATIONS FOR HIGHWAY BRIDGES
 5. LOADS:
 - AASHTO TRUCK SHELL LOAD W/ IMPACT
 - ASTM C-667 "MIN. STRUCTURAL DESIGN LOADING FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES"
 - ASTM C-890 "MIN. STRUCTURAL DESIGN LOADING FOR MONOLITHIC OR SECTIONAL PRECAST CONCRETE WATER AND WASTEWATER STRUCTURES"



PLAN



END



SIDE

CONCRETE:
VOL. = 0.5531 CU YD
WT. = 2,240 LB

1/4" TYP.
4" TYP.

3/4" RADIUS FILLET - TYP.

(4) - 3/4" FERRULE LOOP
INSERTS

LEFT INSERT	4	3/4" FERRULE LOOP	17
2 #4 GR 60	4	6'-4" STR.	17
1 #4 GR 60	12	2'-10" STR.	23
PART DESCRIPTION	QTY.	SIZE	TOTAL SQ. FT.

U OF O TELECOM SERVICES
SLAB TOP REPLACEMENTS - EUGENE, OR

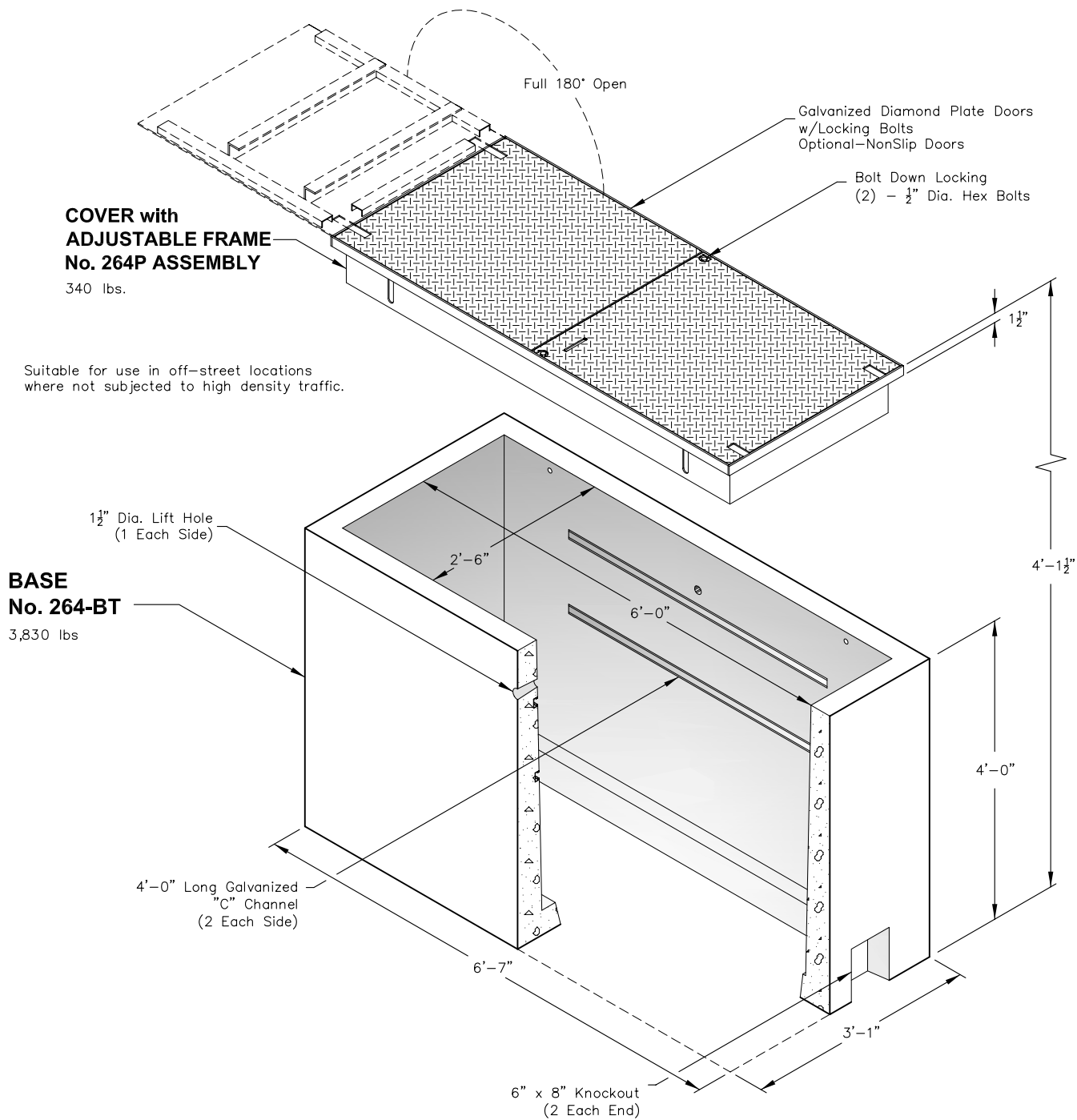
U.V. MODEL 264-TA SOLID 10" TOP W/ KEY
S.O. #71823 SP. LINE #1 DWG NO. C264-TA-SLD-TOP

Oldcastle Precast
Utility Vault
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(503) 682-2844 Fax (503) 682-2857

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DRAWN	JPM	DATE	0-30-08
CHECKED	JPM	SCALE	1"=1'
SALESPERSON	JS	SHEET	OF

264-TA

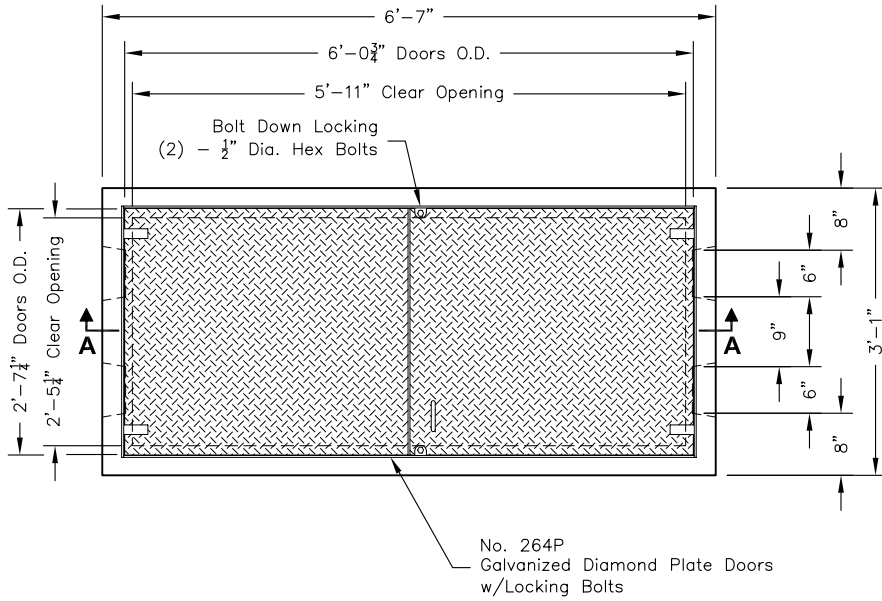


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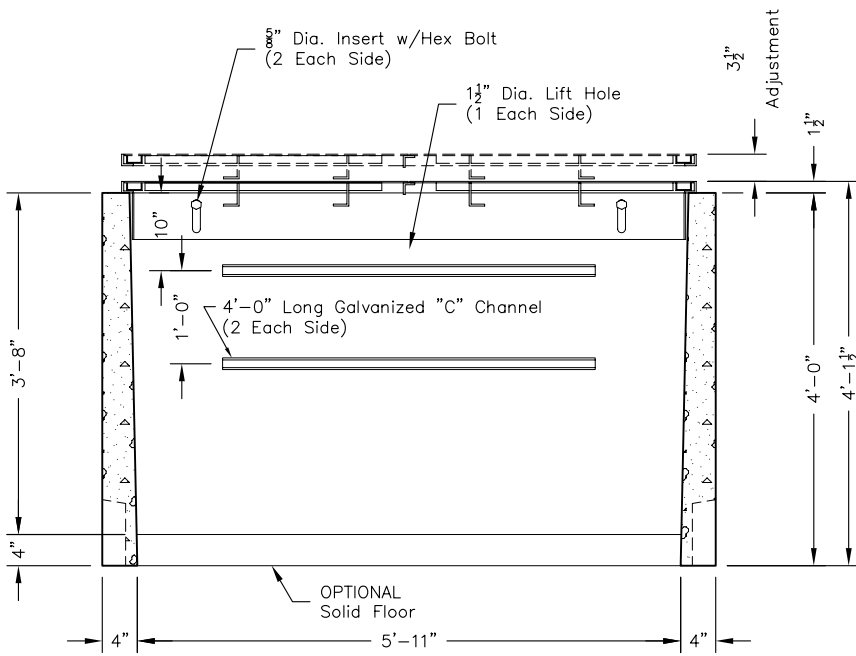
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 Oldcastle Precast® PO Box 323, Wilsonville, Oregon 97070-0323 Tel: (503) 682-2844 Fax: (503) 682-2657	264-TA	264-TA 2 x 6 x 4 COMMUNICATIONS
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	Issue Date: 2011	
	oldcastleprecast.com/wilsonville	

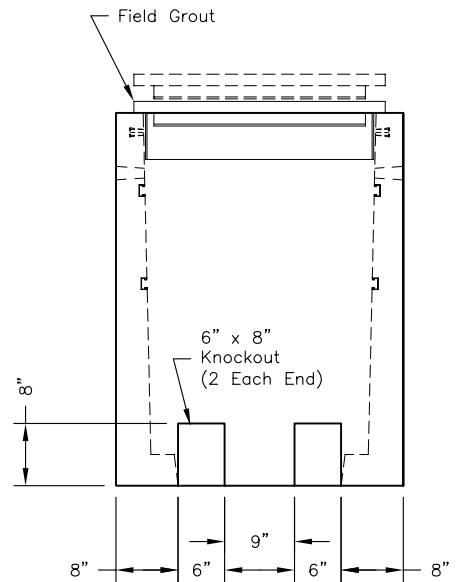
264-TA



PLAN VIEW




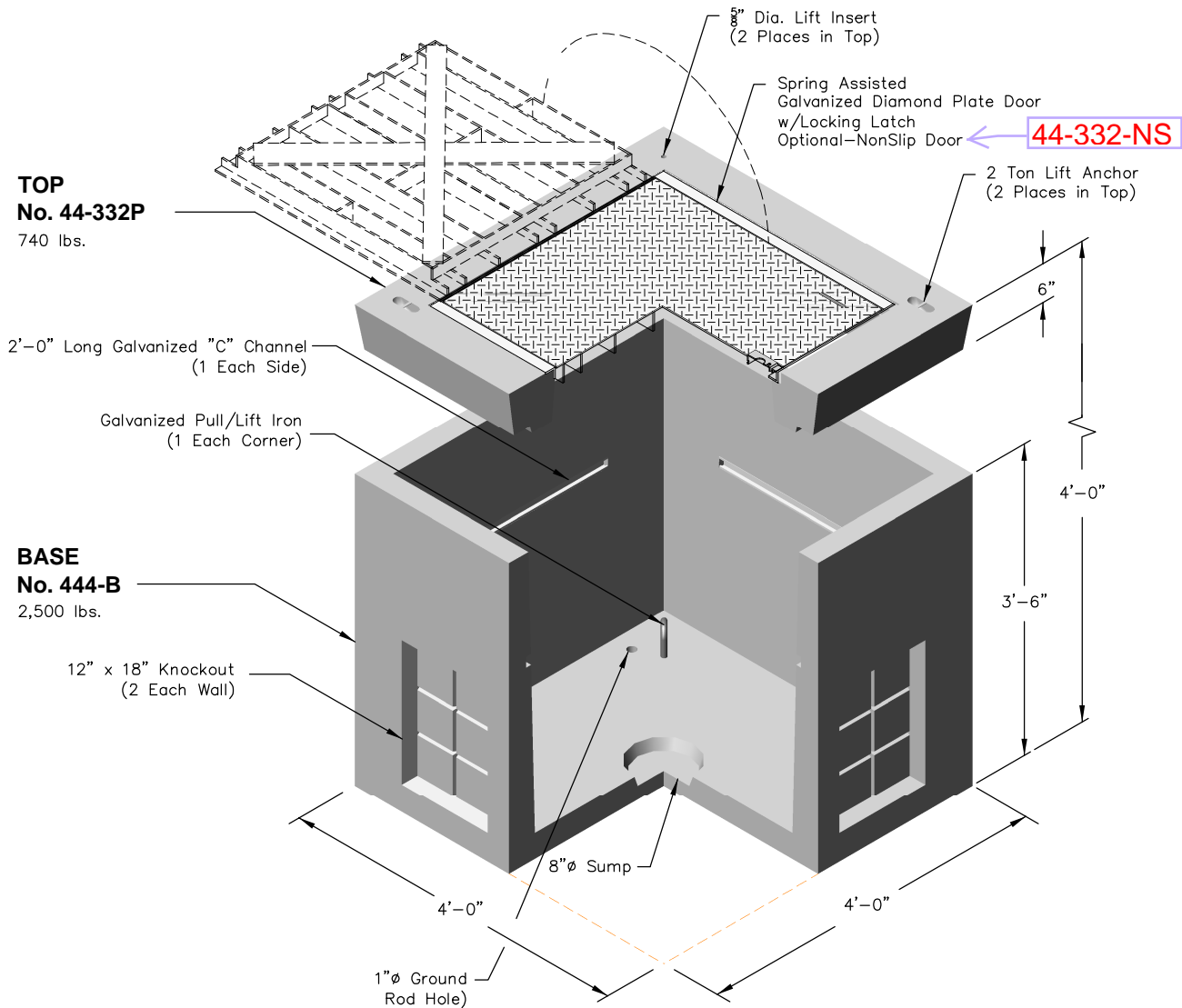
SECTION AA



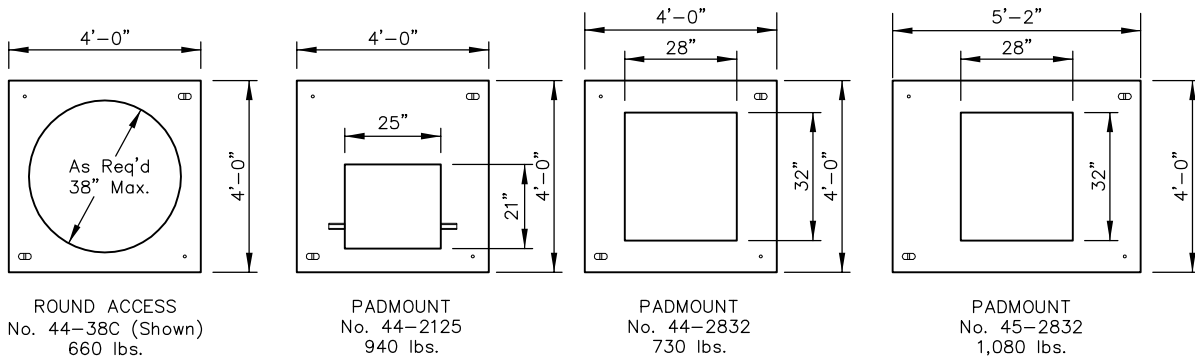
END VIEW


Scale: 1/2" = 1'-0"

 Oldcastle Precast [®] PO Box 323, Wilsonville, Oregon 97070-0323 Tel: (503) 682-2844 Fax: (503) 682-2657	264-TA	264-TA 2 x 6 x 4 COMMUNICATIONS
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	oldcastleprecast.com/wilsonville	

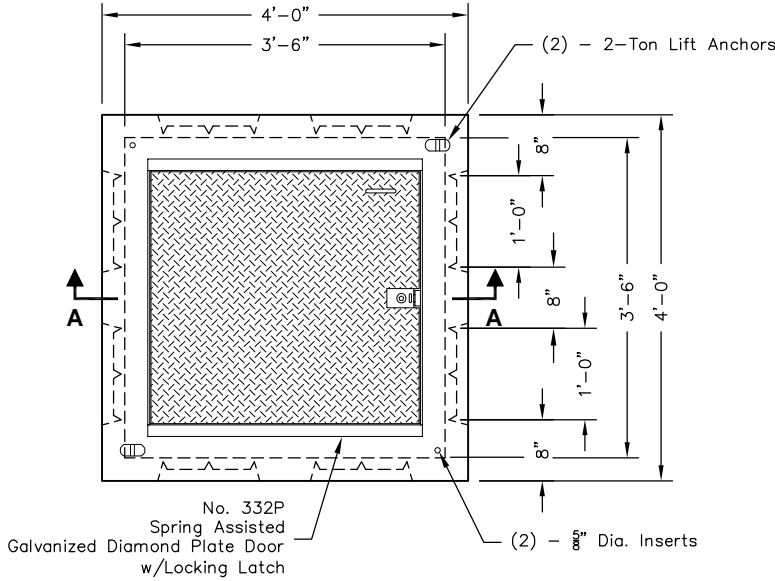


OPTIONAL TOPS

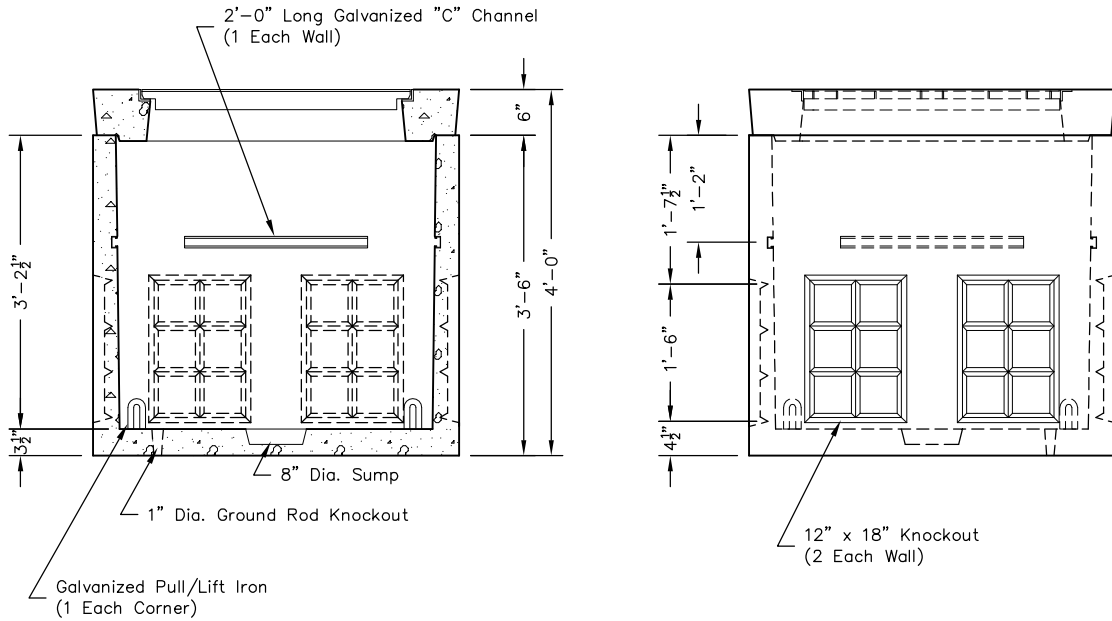


 <p>PO Box 323, Wilsonville, Oregon 97070-0323 Tel: (503) 682-2844 Fax: (503) 682-2657</p>	<p>444-LA</p>	<p>444-LA 3 x 3 x 3 POWER / WATER / GAS</p>
	File Name: 020UCP444LA	
	Issue Date: Revised 12-3-12	
	<p>oldcastleprecast.com/wilsonville</p>	

444-LA




PLAN VIEW



SECTION AA

SIDE VIEW

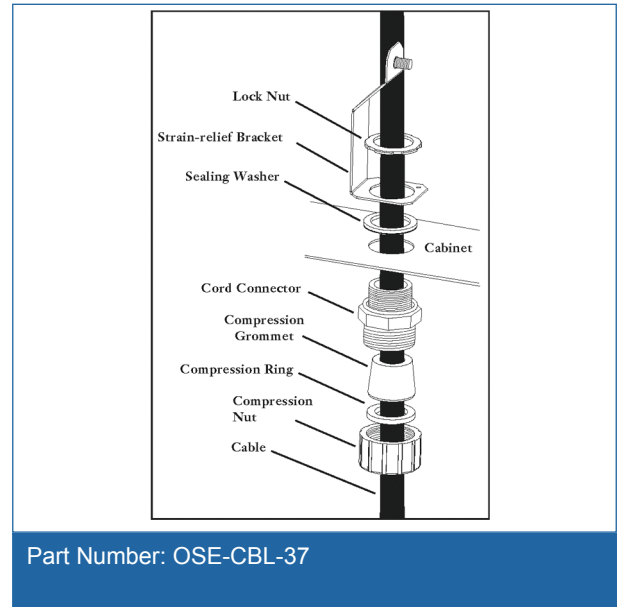
 <p>PO Box 323, Wilsonville, Oregon 97070-0323 Tel: (503) 682-2844 Fax: (503) 682-2657</p>	<h2>444-LA</h2>	<h2>444-LA</h2> <h3>3 x 3 x 3</h3> <h2>POWER / WATER / GAS</h2>
	File Name: 020UCP444LA	
	Issue Date: Revised 12-3-12	
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Optical Splice Enclosure (OSE) Cable Entry Kits

Purple, 0.750 to 0.875 (in)

CORNING

A watertight compression fitting is required for each cable. Corning Cable Systems recommends purchasing the OSE-CBL cable entry kit for all outside plant cables. Each kit includes a 1-in compression fitting as well as hardware for central member strain-relief and cable grounding.



Cable Design

Cable Diameter Range	19.0 mm to 22.2 mm (0.750 in to 0.875 in)
----------------------	---

Ordering Information

Part Number	OSE-CBL-37
Product Description	Optical Splice Enclosure (OSE), Cable Entry Kit, Purple, 0.750 to 0.875 (in)

Shipping Information

Package Contents	Optical Splice Enclosure (OSE), Cable Entry Kit, Purple, 0.750 to 0.875 (in)
Units per Delivery	1/1

Optical Splice Enclosure (OSE) Cable Entry Kits

Purple, 0.750 to 0.875 (in)

The CORNING logo is a blue square with the word "CORNING" in white, uppercase, sans-serif font centered inside.

Notes

Corning Cable Systems LLC • PO Box 489 • Hickory, NC 28603-0489 USA

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Optical Splice Enclosure (OSE) Universal™

Low Density, 432 single fiber / 864 Mass fusion splice, Standard Cable entry

The CORNING logo is displayed in white, uppercase letters on a solid blue rectangular background.

Corning Cable Systems Universal™ Optical Splice Enclosures (OSE) are designed to manage the transition between outside plant cables and fire-retardant indoor riser cables in fiber optic networks. These rugged and versatile enclosures are ideal for use in equipment rooms, splicing vaults or building entrance terminals in CATV, telco or private network environments.

The Universal OSEs were designed with flexibility in mind. An adjustable interior backplate and removable cable entry plates accommodate top-only, bottom-only or top and bottom cable entries. The removable cable entry plates also enable custom-entry options, including mid-span and combination entry configurations.

The Universal OSE was also designed to provide excellent fiber management. Throughout the cabinet, large routing and guide plates and large routing clips along the walls organize and separate stored fiber and fiber entering the splice trays. In addition, fiber may be routed through the four horizontal pass-through ports located near the top and bottom of the cabinet sides.

Each Universal OSE features a full range of capabilities for wall, 23-in rack and T-slot mounting. The T-slot mounting hardware allows for both horizontal and vertical mounting and enables tight, side-by-side mounting arrangements. In addition, Universal OSEs are especially well-suited for installations that require preconnectorized cable assemblies or stubbed optical patch panels. In these installations, the Universal OSE can actually replace the rack-mounted splice unit typically required. Corning Cable Systems offers two versions of the Universal OSE.

The High-Density Universal OSE (OSE-HD) was designed for today's higher density fiber distribution systems. Each OSE-HD supports up to 864 single-fiber splices or 144 mass fusion splices (1728 fibers) from as many as 42 cables. The Low-Density Universal OSE (OSE-LD) supports up to 432 single-fiber splices or 72 mass fusion splices (864 fibers) from as many as 28 cables.

To achieve each unit's maximum fiber density, Corning Cable Systems recommends using the splice trays designed for the Universal OSE. Each tray can accommodate up to 36 single-fiber splices or six mass fusion, 12-fiber ribbon splices. The Low-Density Universal OSE (OSE-LD) can be configured to accommodate (12) OSE splice trays, (21) 0.2-in splice trays or (14) 0.4-in splice trays. Similarly, the High-Density Universal OSE can accommodate (24) OSE splice trays, (42) 0.2-in splice trays or (28) 0.4-in splice trays.

Optical Splice Enclosure (OSE) Universal™

Low Density, 432 single fiber / 864 Mass fusion splice, Standard Cable entry



Features and Benefits

Cable entry plates allow various entry options including standard cable entry and midspan cable access

Routing and storage components are attached to a removable backplate that adjusts to accommodate top or bottom cable entry

Routing and guide plates and routing clips provide excellent fiber management

Accommodates specially designed high-density splice trays, although other splice trays can be used

OSE-HD supports up to 864 single-fiber splices or 1728 mass fusion splices

OSE-LD supports up to 432 single-fiber splices or 864 mass fusion splices

Horizontal pass-through ports provided near top and bottom of cabinet sides

Locking option for additional security

Specifications

General Specifications	
Application	Customer premises environments, Carrier Networks, CATV environments
Mounting Type	Wall-Mountable, Rack 23-in
Product Type	Wall-Mountable Hardware
Fiber Category	Single-mode (OS2)

Design - Hardware	
Number of Panels per Housing	28
Locking Availability	No
Total Splice Capacity	432 single-fiber splices 864 Mass fusion splices
Product Family	Splice Enclosure
Splice Trays Capacity	12

Optical Splice Enclosure (OSE) Universal™

Low Density, 432 single fiber / 864 Mass fusion splice, Standard Cable entry



Mechanical Characteristics

Dimensions (HxWxD)	81.3 cm x 55.9 cm x 25.4 cm (32 in x 22 in x 10 in)
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Ordering Information

Part Number	OSE-LD0-00-1
Product Description	Optical Splice Enclosure (OSE) Universal™, Low Density, 432 single fiber / 864 Mass fusion splice, Standard Cable entry

Shipping Information

Units per Delivery	1/1
Shipping Weight	34 kg (75 lb)
Package Contents	Optical Splice Enclosure (OSE) Universal™, Low Density, 432 single fiber / 864 Mass fusion splice, Standard Cable entry



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Pretium EDGE® Housing

2 rack units, holds 24 Pretium EDGE® Solutions Modules or Panels

CORNING

Pretium EDGE® HD Solutions are high-density preterminated optical cabling solutions offering industry leading connector density. With unprecedented finger access, there is no need for additional tools enabling faster moves, adds and changes.

Features and Benefits

Universal wired components

Enable moves, adds and changes without polarity concerns; provide a simple migration path between 2-fiber and parallel optic applications

Revolutionary drawer-style hardware

Offers unprecedented finger access while achieving the highest port density in the market



Pretium EDGE® Housing

2 rack units, holds 24 Pretium EDGE® Solutions Modules or Panels



Specifications

General Specifications

Application	Data Center LAN/SAN
Product Type	Housings

Design - Hardware

Housing Type	Pretium EDGE® HD
Height Unit	2U
Fiber Density per Unit	288
Number of Panels per Housing	24
Panel or Module Type	Pretium EDGE®

Mechanical Characteristics

Dimensions (W x D x H)	432 mm x 625 mm x 89 mm (17 in x 24.6 in x 3.5 in)
Minimum Cabinet Size	800 mm

Chemical Characteristics

RoHS	Free of hazardous substances according to RoHS 2002/95/EG
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Ordering Information

Part Number	EDGE-02U
Product Description	Pretium EDGE® Solutions Housing, 2 rack units, holds 24 Pretium EDGE Solutions Modules or Panels
Trunk Capacity	12 (size 1 or 2) 24 (size 1 double stack)
Module Capacity	24

Pretium EDGE® Housing

2 rack units, holds 24 Pretium EDGE® Solutions Modules or Panels



CORNING

Shipping Information

Units per Delivery	1/1
Packaging Dimensions (W x D x H)	567 mm x 696 mm x 214 mm (22.3 in x 27.4 in x 8.4 in)
Shipping Weight	12.25 kg (27 lb)



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Pretium EDGE® Housing

4 rack units, holds 48 Pretium EDGE® Solutions Modules or Panels

CORNING

Pretium EDGE® HD Solutions are high-density preterminated optical cabling solutions offering industry leading connector density. With unprecedented finger access, there is no need for additional tools enabling faster moves, adds and changes.

The Pretium EDGE® Solutions 4U housing contains 12 individually sliding trays that can accommodate as many as four 12-fiber modules per tray, resulting in improved finger access to connectors and allowing for individual access without compromising the optical connectivity of other ports. Front jumper management guides on each tray allow for jumpers to be routed to the left or right. External jumper routing guides facilitate proper slack management to ensure drawer movement. Industry-leading port labeling is available on the rear side of the housing's front door, and each housing includes mounting plug receptacle areas at the rear, which enable fast and easy installation and strain-relief of Pretium EDGE Solutions trunk cables. Brush cable entries make trunk entry quick and easy.



Features and Benefits

Universal wired components

Enable moves, adds and changes without polarity concerns; provide a simple migration path between 2-fiber and parallel optic applications

Revolutionary drawer-style hardware

Offers unprecedented finger access while achieving the highest port density in the market

Specifications

General Specifications	
Application	Data Center LAN/SAN
Product Type	Housings

Design - Hardware	
Housing Type	Pretium EDGE® HD
Height Unit	4U
Number of Panels per Housing	48
Fiber Density per Unit	576
Panel or Module Type	Pretium EDGE®

CORNING

Pretium EDGE® Housing

4 rack units, holds 48 Pretium EDGE® Solutions Modules or Panels



Mechanical Characteristics

Dimensions (W x D x H)	432 mm x 625 mm x 178 mm (17 in x 24.6 in x 7 in)
Minimum Cabinet Size	800 mm

Chemical Characteristics

RoHS	Free of hazardous substances according to RoHS 2002/95/EG
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Ordering Information

Part Number	EDGE-04U
Product Description	Pretium EDGE® Solutions Housing, 4 rack units, holds 48 Pretium EDGE Solutions Modules or Panels
Module Capacity	48
Trunk Capacity	24 (size 1 or 2) 48 (size 1 double stack)

Shipping Information

Units per Delivery	1/1
Packaging Dimensions (W x D x H)	592 mm x 727 mm x 331 mm (23.3 in x 28.6 in x 13 in)
Shipping Weight	15.42 kg (34 lb)



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Splice Trays

CORNING

Features and Benefits

Powder-coated metal trays

Ruggedness and durability

Clear plastic covers

Fiber visibility for inspection

Fiber loop retention

Controls the bend radius

Positive holding action

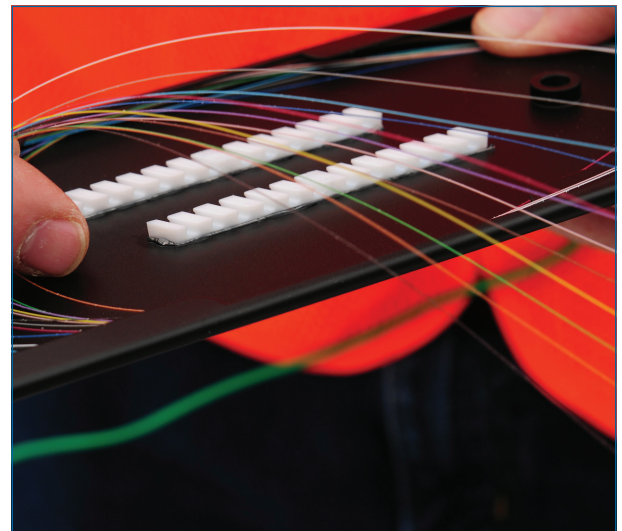
Maximum splice protection

Corning splice trays use proven designs and fiber organization technology to provide optimum physical protection for fusion and mechanical splicing methods. The trays are engineered for use with indoor or outdoor splice hardware with both loose tube and tight-buffered optical cable designs. Available in either a metallic version (M67 series) or an injection-molded plastic version (UST series), the generous size of the trays prevents induced attenuation due to fiber bending.

The metal trays have a rugged aluminum base and cover with crimpable metal tabs for buffer tube strain-relief. Additional strain-relief points are available for securing buffer tubes or pigtails to the trays using cable ties. The black powder coating allows easy fiber identification and additional protection. Designed for use with Corning interconnection hardware and splice closures, these splice trays are an integral part of a complete splicing system.



Splice Tray Installation with Gel-Sealed End Cap | Photo LAN4737



Splice Tray Installation with Gel-Sealed End Cap | Photo LAN4692

Splice Trays

CORNING

Specifications

Part Number	Type	HSF	MFHS	Mech	RTV	SPLICE PAK™
Splice Capacity						
M67-048	2S	12				
M67-031	2S			12		
M67-041	2S				12	
M67-092	2S				24	
M67-112	2S Long	24				
M67-068	2R	6				
M67-061	2R			6		
M67-060	2R				12	
M67-076	4S	12	6			
M67-086	4S				12	
M67-078	4S Wide	24				
UST-024	4A	24	24	24	24	
M67-110	4R	12	6			12

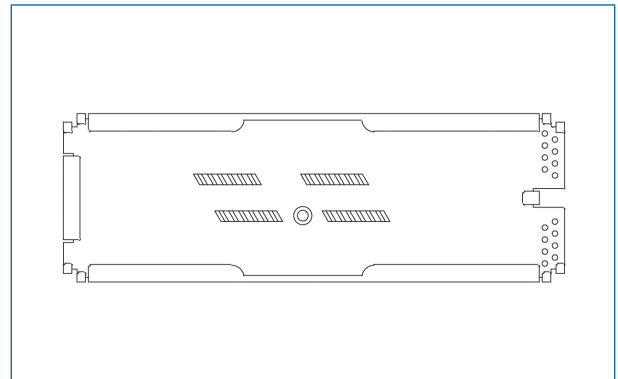
CORNING

Splice Trays

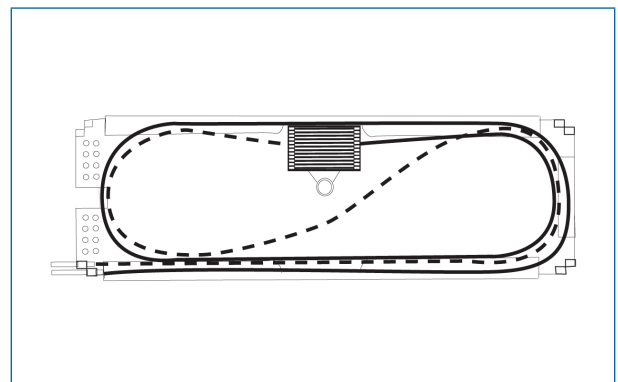
CORNING

M67-048/M67-048-C: Clear Cover and M67-041/M67-041-C: Clear Cover

The trays have a “type” that is shown in the splice tray descriptions. This type can be used to match compatibility with various Corning splice housings. RTV fusion splice trays contain an organizer that seals bare splices with the use of RTV, resulting in higher splice density than using heat-shrink fusion splice protectors. Single-fiber heat-shrink fusion splice trays will accept 60 mm single-fiber heat-shrink fusion splice protectors. Heat-shrink mass fusion splice trays accept multi-fiber heat-shrink mass fusion splice protectors. All splice trays can be used for single-mode or multimode applications.



M67-048
| Drawing ZA-2222



M67-041
| Drawing ZA-3412

Ordering Information

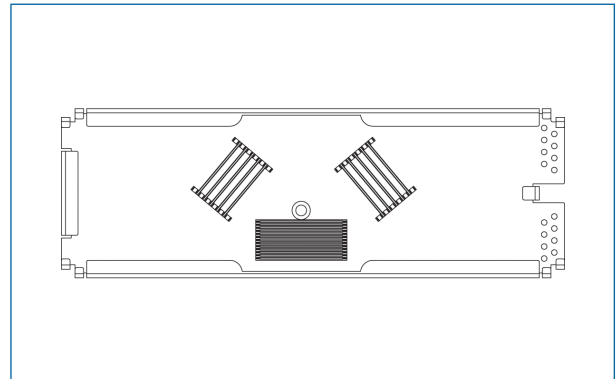
Part Number	Product Description	Dimensions (L x W x D)
M67-048	Splice Tray, heat-shrink fusion splices, 0.2-in, 12 F	297 mm x 99 mm x 5 mm (11.7 in x 3.9 in x 0.2 in)
M67-048-C	Splice Tray, heat-shrink fusion splices, clear cover, 0.2-in, 12 F	297 mm x 99 mm x 5 mm (11.7 in x 3.9 in x 0.2 in)
M67-041	Splice Tray, RTV splices, 0.2-in, 12 F	297 mm x 99 mm x 5 mm (11.7 in x 3.9 in x 0.2 in)
M67-041-C	Splice Tray, RTV splices, clear cover, 0.2-in, 12 F	297 mm x 99 mm x 5 mm (11.7 in x 3.9 in x 0.2 in)

CORNING

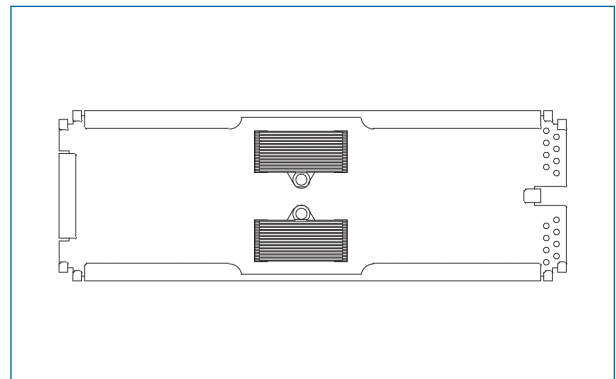
Splice Trays

CORNING

M67-031 and M67-092



M67-031
| Drawing ZA-2626



M67-092
| Drawing ZA-2223

Ordering Information

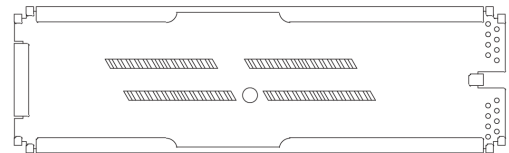
Part Number	Product Description	Dimensions (L x W x D)
M67-031	Aluminum Splice Tray; stores 12 CamSplice Mechanical Splices, Type 2S	297 mm x 99 mm x 5 mm (11.7 in x 3.9 in x 0.2 in)
M67-092	Aluminum Splice Tray; stores 24 RTV fusion splices, Type 2S	297 mm x 99 mm x 5 mm (11.7 in x 3.9 in x 0.2 in)

Splice Trays

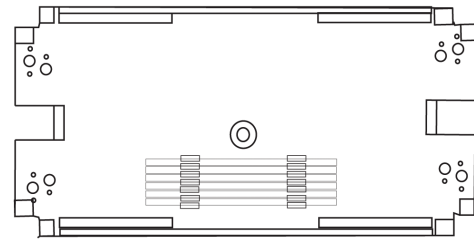
CORNING

M67-112 and M67-068

The trays have a “type” that is shown in the splice tray descriptions. This “type” can be used to match compatibility with splice housings.



M67-112
| Drawing ZA-2226



M67-068
| Drawing ZA-376

Ordering Information

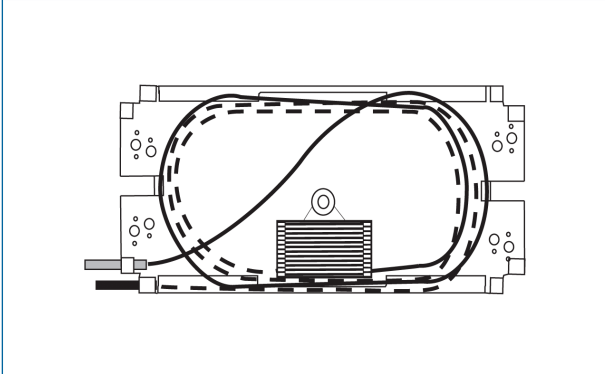
Part Number	Product Description	Dimensions (L x W x D)
M67-112	Splice Tray, heat-shrink fusion splices, long, 0.2-in, 24 F	336 mm x 99 mm x 5 mm (13.25 in x 3.9 in x 0.2 in)
M67-068	Splice Tray, heat-shrink fusion splices, 0.2-in, 6 F	185 mm x 89 mm x 5 mm (7.3 in x 3.5 in x 0.2 in)

CORNING

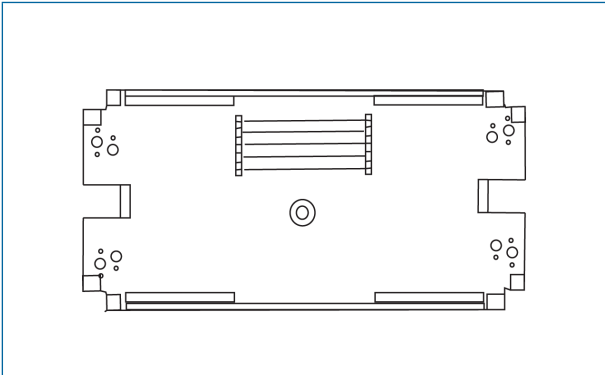
Splice Trays



M67-060 and M67-061



M67-060
| Drawing ZA-3411



M67-061
| Drawing ZA-3409

Ordering Information

Part Number	Product Description	Dimensions (L x W x D)
M67-060	Splice Tray, RTV splices, reduced length, 0.2-in, 12 F	175 mm x 89 mm x 5 mm (6.9 in x 3.5 in x 0.2 in)
M67-061	Aluminum Splice Tray; stores six CamSplice Mechanical Splices, Type 2R	185 mm x 89 mm x 5 mm (7.3 in x 3.5 in x 0.2 in)

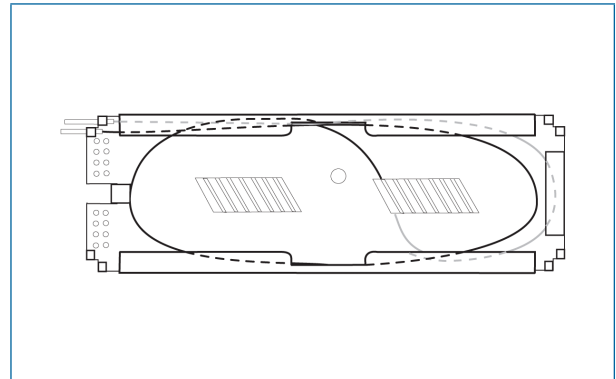
Note: Mechanical trays accept Corning CamSplice™ mechanical splice and other mechanical splices with equivalent dimensions.

Splice Trays

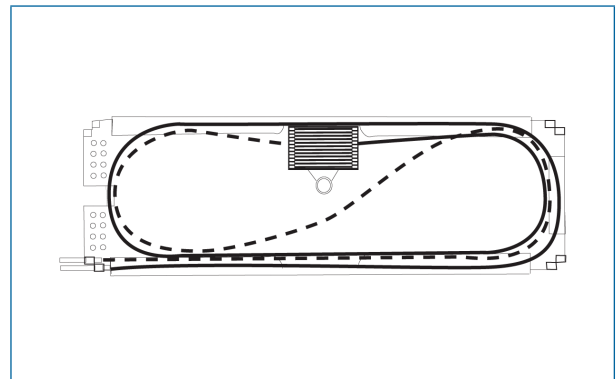
CORNING

M67-076 and M67-086

The trays have a “type” that is shown in the splice tray descriptions. This “type” can be used to match compatibility with splice housings.



M67-076
| Drawing ZA-378



M67-086
| Drawing ZA-3410

Ordering Information

Part Number	Product Description	Dimensions (L x W x D)
M67-076	Splice Tray, mass fusion splices or heat-shrink fusion splices, 0.4-in; six mass fusion splices or 12 heat-shrink fusion splices	297 mm x 99 mm x 10 mm (11.7 in x 3.9 in x 0.4 in)
M67-086	Splice Tray for 12 RTV fusion splices, Type 4S	297 mm x 99 mm x 10 mm (11.7 in x 3.9 in x 0.4 in)

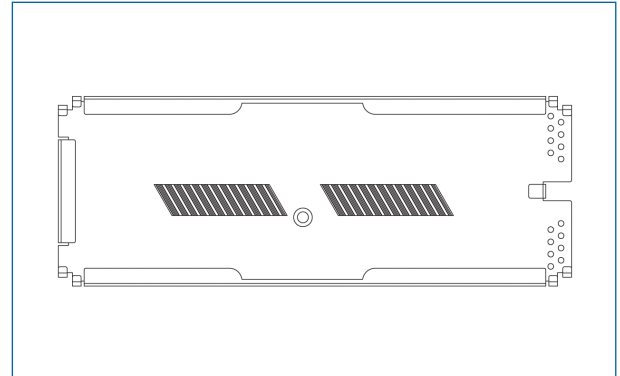
CORNING

Splice Trays

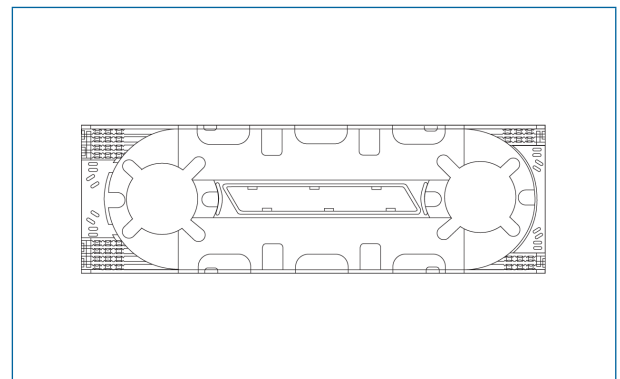
CORNING

M67-078 and UST-024

The trays have a “type” that is shown in the splice tray descriptions. This “type” can be used to match compatibility with splice housings.



M67-078
| Drawing ZA-2627



UST-024
| Drawing ZA-385

Ordering Information

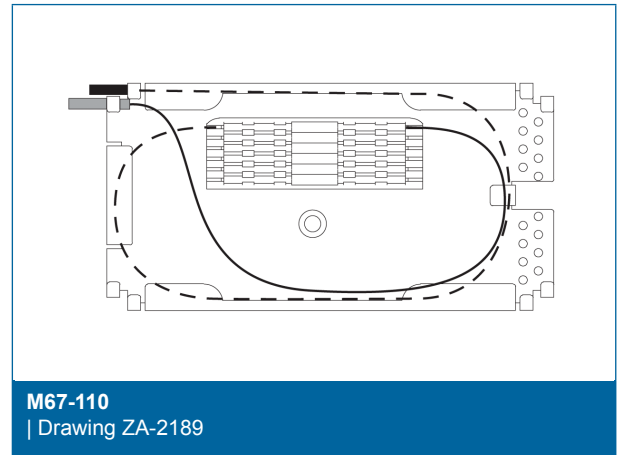
Part Number	Product Description	Dimensions (L x W x D)
M67-078	Splice Tray, heat-shrink fusion splices, wide, 0.4-in, 24 F	297 mm x 110 mm x 10 mm (11.7 in x 4.3 in x 0.4 in)
UST-024	Universal Splice Tray (organizers included for RTV fusion, heat-shrink fusion, mass fusion and mechanical splices) Type 4A; 24-splice capacity	330 mm x 108 mm x 100 mm (13 in x 4.25 in x 0.4 in)

CORNING

Splice Trays

CORNING

M67-110



Ordering Information

Part Number	Product Description	Dimensions (L x W x D)
M67-110	Splice Tray, mass fusion splices or heat-shrink fusion splices, 0.4-in; six mass fusion splices or 12 heat-shrink fusion splices	175 mm x 89 mm x 10 mm (6.9 in x 3.5 in x 0.4 in)

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CORNING

Pretium EDGE® Splice Cassette

12 F, LC duplex, Single-mode APC, Ribbon, Straight Through

CORNING

Pretium EDGE® Splice Cassettes provide the interface between the bulk cable and the LC duplex jumpers that connect directly into the electronics. The splice cassette includes a one meter bare ribbon (or twelve x 250um single fiber) pigtail, that is loaded within the cassette, and can be mass-fusion spliced directly to either ribbon or loose fiber cable. The LC duplex adapters feature hinged VFL-compatible shutters that move up and out of the way when the connector is inserted.

Features and Benefits

Shuttered adapters

Create one-hand operation while eliminating need to keep up with dust caps

Modules connectors mate directly to trunk

Eliminates one MTP Connector pair for reduced overall link loss

Splicing with EDGE cassette

Eliminates the need for a separate splice tray within the housing



Specifications

General Specifications	
Application	Data Center LAN/SAN
Product Type	Cassettes
Splice option	Yes
Fiber Category	SM (OS2)

Design - Hardware	
Fiber Count	12
Number of Adapters per Panel	6
Adapter Type Front	Shuttered LC
Adapter Color Front	Green
Connector Type	LC duplex
Fiber Capacity	12
Panel or Module Type	Pretium EDGE®

Pretium EDGE® Splice Cassette

12 F, LC duplex, Single-mode APC, Ribbon, Straight Through

CORNING

Mechanical Characteristics

Dimensions (HxWxD)	12 mm x 90 mm x 176 mm (0.46 in x 3.53 in x 6.93 in)
--------------------	--

Optical Specification - Hardware

Module Insertion Loss, Max	0.5 dB
Wavelengths	1,310 nm / 1,550 nm

Design Adapter

Adapter Type	LC duplex shuttered
--------------	---------------------

Design - Connector A

Connector Type	LC duplex
Ferrule	Ceramic

Cable Design

Fiber Count	12
Polarity	Classic

Ordering Information

Part Number	EDGE-CS12-AF-P00RJ
Product Description	Pretium EDGE® Splice Cassette, 12 F, LC duplex, Single-mode APC, Ribbon, Straight Through
Weight	0.09 kg (0.19 lb)
Module Capacity	12

Pretium EDGE® Splice Cassette

12 F, LC duplex, Single-mode APC, Ribbon, Straight Through

The CORNING logo is displayed in white, uppercase letters within a solid blue square.

Shipping Information

Units per Delivery	10/1
--------------------	------

Corning Cable Systems LLC • PO Box 489 • Hickory, NC 28603-0489 USA

800-743-2675 • FAX: 828-325-5060 • International: +1-828-901-5000 • www.corning.com/cablesystems

A complete listing of the trademarks of Corning Cable Systems is available at www.corning.com/cablesystems/trademarks.

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Ribbon Cable, Plenum

144 F, Single-mode (OS2)

CORNING

Corning ribbon plenum cables are designed for use in plenum, riser and general purpose environments for intrabuilding backbone installations and for high-fiber-count data centers. These cables consist of 12 to 216 fibers organized into 12-fiber ribbons inside a central tube. Dielectric strength members provide tensile strength while a specially formulated flame-retardant outer jacket allows the design to meet the requirements of the NFPA 262 flame test.

The 12-fiber ribbons have readily identifiable ribbon ID numbers and fiber colors with easy access to individual fibers. Precise fiber and ribbon geometries result in excellent mass splicing yields. The ribbon plenum cables are available preconnectorized for easy field installation and reduced labor costs and are compatible with standard ribbon cable procedures and hardware. These cables are also OFNP and FT-6 listed and RoHS compliant.

This cable is available in 12 different jacket colors – blue, orange, green, brown, slate, white, red, black, yellow, violet, rose and aqua. The colored jacket allows for easy visual identification of the cables. The standard jacket color will be determined by the dominant fiber type in the cable and will use the standard part numbers shown here. Contact Customer Care at 1-800-743-2675 to order other color options.

Features and Benefits

Precise fiber and ribbon geometries

Excellent mass splicing yields

Gel-free waterblocking technology

Craft-friendly cable preparation

Innovative waterblocking technology

Prevents water penetration

Flame-retardant jacket

Rugged and durable

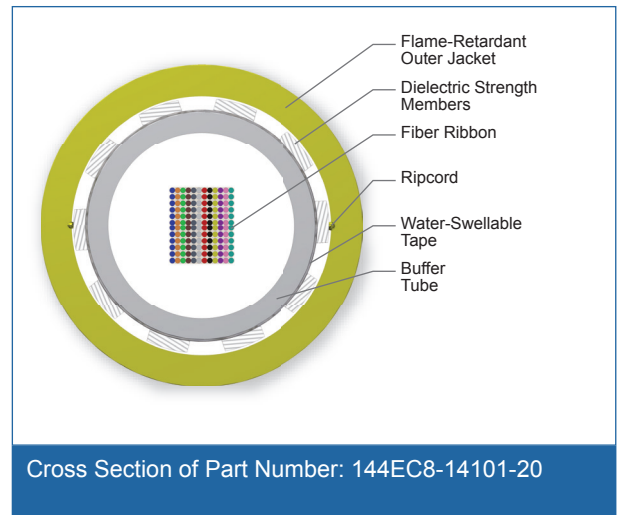
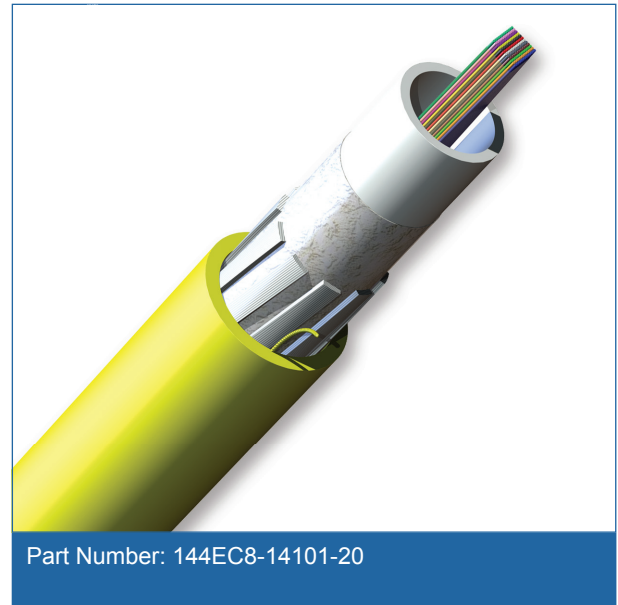
Standards

Approval and Listings

National Electrical Code® (NEC®) OFNP, CSA FT-6, ICEA S-83-596

Common Installations

Indoor plenum, riser and general building applications



Ribbon Cable, Plenum

144 F, Single-mode (OS2)



Standards

Flame Resistance NFPA 262 (for plenum, riser and general building applications)

Specifications

General Specifications

Environment	Indoor
Application	General Purpose Horizontal, Vertical Riser, Plenum
Cable Type	Ribbon
Product Type	Distribution
Flame Rating	Plenum (OFNP)
Fiber Category	Single-mode (OS2)

Temperature Range

Storage	-40 °C to 70 °C (-40 °F to 158 °F)
Installation	0 °C to 60 °C (32 °F to 140 °F)
Operation	0 °C to 70 °C (32 °F to 158 °F)

Cable Design

Fiber Count	144
Ribbons per Tube	12
Fibers per Ribbon	12
Fiber Coloring	Blue, Orange, Green, Brown, Slate, White, Red, Black, Yellow, Violet, Rose, Aqua
Buffer Tube Color	Natural
Buffer Tube Diameter	11 mm (0.43 in)
Tape	Water-swellable
Tensile Strength Elements and/or Armoring - Layer 1	Dielectric strength members
Number of Ripcords	2
Outer Jacket Material	Flame-retardant
Outer Jacket Color	Yellow

Ribbon Cable, Plenum

144 F, Single-mode (OS2)

CORNING

Mechanical Characteristics Cable

Max. Tensile Strengths, Short-Term	1320 N (300 lbf)
Max. Tensile Strengths, Long-Term	400 N (90 lbf)
Weight	220 kg/km (148 lb/1000 ft)
Nominal Outer Diameter	15.5 mm (0.61 in)
Min. Bend Radius Installation	233 mm (9.2 in)
Min. Bend Radius Operation	155 mm (6.1 in)

Chemical Characteristics

RoHS	Free of hazardous substances according to RoHS 2002/95/EG
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Fiber Specifications

Optical Characteristics (cabled)

Fiber Type	Single-mode
Fiber Core Diameter	8.2 μ m
Fiber Category	OS2
Fiber Code	E
Performance Option Code	31
Wavelengths	1310 nm / 1383 nm / 1550 nm
Maximum Attenuation	0.65 dB/km / 0.65 dB/km / 0.5 dB/km
Serial 1 Gigabit Ethernet	5000 m / - / -
Serial 10 Gigabit Ethernet	10000 m / - / 40000 m

* ITU-T G.652 D compliant.

* Meets 0.75 ns optical skew when used in all Corning Plug and Play™/Pretium EDGE® systems solutions.

- Notes:
- 1) Improved attenuation and bandwidth options available.
 - 2) Bend-insensitive single-mode fibers available on request.
 - 3) Contact a Corning Customer Care Representative for additional information.

CORNING

Ribbon Cable, Plenum

144 F, Single-mode (OS2)



Ordering Information

Part Number	144EC8-14101-20
Product Description	Ribbon Cable, Plenum, 144 F, Single-mode (OS2)



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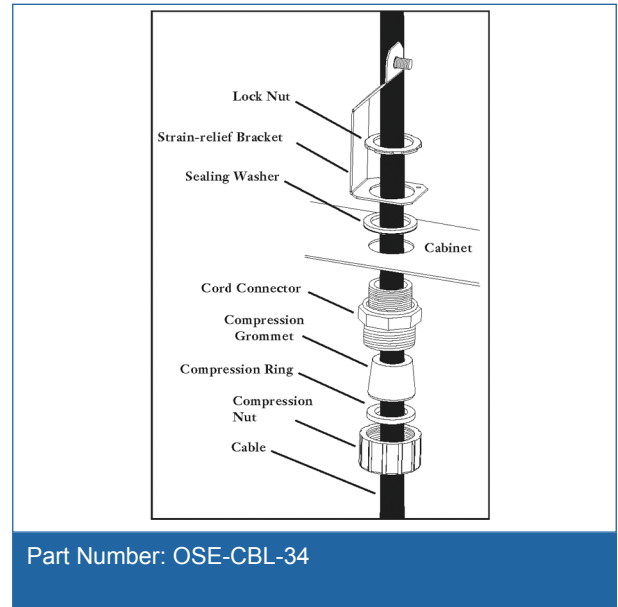
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Optical Splice Enclosure (OSE) Cable Entry Kits

Blue, 0.375 to 0.500 (in)

CORNING

A watertight compression fitting is required for each cable. Corning Cable Systems recommends purchasing the OSE-CBL cable entry kit for all outside plant cables. Each kit includes a 1-in compression fitting as well as hardware for central member strain-relief and cable grounding.



Cable Design

Cable Diameter Range	9.5 mm to 12.7 mm (0.375 in to 0.500 in)
----------------------	--

Ordering Information

Part Number	OSE-CBL-34
Product Description	Optical Splice Enclosure (OSE), Cable Entry Kit, Blue, 0.375 to 0.500 (in)

Shipping Information

Package Contents	Optical Splice Enclosure (OSE), Cable Entry Kit, Blue, 0.375 to 0.500 (in)
Units per Delivery	1/1

Optical Splice Enclosure (OSE) Cable Entry Kits

Blue, 0.375 to 0.500 (in)

The CORNING logo is a blue square with the word "CORNING" in white, uppercase, sans-serif font centered inside.

Notes

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Exhibits



Utility Public Way Use Permit Application

File with: Public Works Maintenance - 1820 Roosevelt Boulevard

A. Job address 2735 Leo Harris Pkwy
 Subdivision _____ Addition _____
 Utility Univ. of Oregon - Info Svcs. Utility type Communications Job No. _____
 Utility Address 1244 Walnut St. City Eugene Zip 97403
 Utility Contact Name Eric Fuller Utility Contact Phone 541-346-1015
 Contractor name TAD Phone _____ Address _____
 City/State/Zip _____ C.C.B. LIC. # _____ License Expires _____

B. Description of proposed activity (Engineering plans for work must be attached)
Remove existing cable, pull in new innerduct, base in new conduit under canal, set one new vault, pull new cable

C. Work Activity within public way (48 hours before digging, call 1-800-332-2344 for utility locate)
 Surface: Concrete/asphalt Gravel Dirt/grass Landscaping
 Location: Street or alley Plant Strip Sidewalk PUE Other bike path
 Method: Open trench Boring Aerial Pulling in existing conduit
 Other _____
 Project Specifics (required)
 Depth 30"
 Width 3 feet from drilled
 Length 300' of new duct
2413' in existing duct

D. Joint activity details (required to obtain joint trench permit fee): (check boxes)
 PUE: _____ N/A
 Joint activity with _____ (list of utilities)
 In street In plant strip Under sidewalk Other _____
 Joint trench notification (required if activity involves open trench more than 400' in length)

E. City trees in vicinity of proposed work Yes No Show critical root zone on plans
 F. Sensitive area (check map) Yes No If yes, apply for erosion permit
 G. As utility representative, I state that I have read and understand the conditions printed on both sides of this application for using or for doing work within the public way and further state the work/use permit being sought is for the purposes stated and no other, unless expressly requested on this application and authorized by a permit. I agree to indemnify and hold the City of Eugene, it's officers, agents, and employees harmless from any injury or damage caused by or relating to the activities specified in this application.
 Name Scott Gering Signature _____ Date 12/19/13 Phone _____
 Representative's Address 1244 Walnut St Eugene OR 97403 (Print) (As Utility Representative)

FOR OFFICE USE ONLY
 Permit approved by Brian Date 1-29-14

CONDITIONS:
 Traffic control plan required. Submit plan to Traffic Operations for review and approval prior to commencing activity.
 No lane closure before 8:15 a.m. or after 4 p.m.
 Use "Bike Lane Closed" sign if obstructiong bikeways; provide acceptable bicycle route through the work zone.
 Use "Sidewalk Closed" sign if obstructiong sidewalk; provide acceptable pedestrian route through the work zone.
 Coordinate installation with City Engineering and/or developer to avoid construction conflicts.
 Erosion permit required.
 Work shall comply with current City tree protection standards and ANSI-A-132 pruning standards.
 * See continuation of conditions on back of permit.

Additional Requirements:
2735 Leo Harris Permit # 2013-415
Preconstruction meeting required. Contact Brian siria @ 541-682-4887 to schedule meeting.
Appropriate traffic device measures shall be taken with consideration to pedestrian traffic at all times. Contractor shall provide safe pedestrian access around work zones.
Consideration to be understood that future improvements to the canal would reduce the slope of the canal bank. So, deep and gradual installation under the banks shall be needed to prevent potential future conflicts.
Vault location shall be determined and approved in the field by Parks staff and the Utility program when drilling has commenced.
Restore all work areas to a condition as good or better than found at start of work.

EROSION PERMIT APPROVED _____ Date _____

Log No. 2013-415 Login Date 12-20-13 By omn Date Application Received 12-20-13 Fee 1,270.00

CONDITIONS

1. The applicant represents all parties and interests and shall furnish material, do all work, pay all costs, and shall, within a reasonable length of time, restore any damaged portion of the public way to a condition equal to or better than existing before the commencement of the described work or uses, including any seeding or sodding necessary.
2. The applicant and the applicant's successors or assignees agree to hold harmless the City of Eugene and its duly appointed agents and employees against any action for personal injury or property damage sustained by reason of exercise of this permit, if granted.
3. All work and construction activities within the public way are subject to the regulations set forth by the Eugene City Code, and are subject to engineering standards as established by the City Engineer and conditions required by the Inspector.
4. All work and construction activities within the public way shall comply with the Utility and Right-of-Way Permits Construction Within and Use of the Public Way Policies and Procedures and the City's standard specifications with Eugene amendments, current editions.
5. The proposed work, use, etc., requested shall be located and constructed to the satisfaction of the City Engineer or a duly authorized representative. No revisions or additions shall be made to the proposed scope of work within the public way without the written permission of the Inspector. The City may require relocation of any facilities deemed necessary by the City for the public good or use of the Public Way.
6. The applicant shall, at all times, conduct the work or activity in such a manner as to minimize hazards to vehicular and pedestrian traffic. In performing work or use in the public way the applicant shall provide traffic control acceptable to the City's Traffic Engineer or designee. All required traffic controls, i.e., signs, barricades, flagpersons, etc., shall be furnished and maintained by the applicant. The actual work activity shall only be done during approved daylight hours, Monday through Friday, unless expressly authorized by the Inspector.
7. The applicant shall not trim, cut, or in any way disturb any landscaping (trees or shrubbery) within said public way without the express approval of the Urban Forester or a duly authorized City representative.
8. The work performed by the applicant is for a bona fide purpose and not for the purpose of creating parking or areas for the servicing of vehicles on the public way. Parking on the public way is prohibited, unless authorized by the appropriate permit. Commercial, non-public signs that overhang the right-of-way are prohibited, unless expressly authorized by the City's Sign Code and the appropriate permit.
9. The City reserves the right to require such changes, additions, repairs, and relocations within its statutory limits to the facilities constructed on, over, or under a public property/public way work/use permit or other appurtenances on, over, or under the public way as may at any time be considered necessary in the future to permit the relocation, reconstruction, widening, or maintaining of the street and/or to provide proper protection to life or property adjacent to the City and/or State right-of-way.

However, in the event a permit is granted to construct, locate, operate, and maintain public utility facilities on, over, or under the public way, the applicant utility company, upon written request by the City Engineer, shall perform such alterations or change of locations of the utility company's facilities without expense to the City. Should the applicant utility company fail to make satisfactory arrangements to comply with a request within a reasonable time, the City reserves the right to make such alterations or change of location or removal of the utility company's facilities. The applicant agrees to pay for all cost incurred.
10. A permit, when granted is valid only insofar as the City has jurisdiction and does not release the applicant from the need to comply with all applicable laws, statutes, codes, and standards, or obtain any other necessary permits and approvals prior to commencing work or use activities.
11. The applicant affirms that the scope of the proposal shown on submitted plans is true and correct, and binds and obligates him/herself and all parties involved to perform the operation in accordance with the application and related plans and to abide by the above conditions.
12. This permit will automatically expire six months (180 days) following the date of approval. No work is authorized under an expired permit. A six month extension may be approved by the Traffic Technical Team Supervisor if a written request is received from the applicant prior to the permit expiration date.

Erosion Prevention and Construction Site Management Program

OUTCOMES EVERY CONSTRUCTION SITE MUST MEET

An Administrative Rule (R-6.645) effective February 1, 1997 applies to any construction site located within the city limits or on any parcel annexed to the City of Eugene.

The City of Eugene's stormwater system includes not only publicly maintained pipes, culverts, gutters, and catch basins, but also streams, ditches, channels, ponds, wetlands and other related waterways. Storm drains in Eugene flow directly, untreated to local waterways.

The Administrative Rule protects these local waterways from harmful effects related to erosion, sedimentation and other construction related practices.

R-6.645-D Outcomes

1. All persons conducting construction activities covered by R-6.645-C.1. shall employ, to the maximum extent practicable, erosion prevention and construction site management practices which will achieve during both the construction period and wet weather season the following outcomes:

1.1 Adjacent properties, water features, and related natural resources are kept free of deposits or discharges of soil, sediment or construction-related material from the site except those that would occur through natural processes from an undisturbed site.

1.2 Vegetation in water features, related natural resources, and associated bank and/or riparian areas adjacent to construction sites are preserved

or protected from impacts that exceed those that occur through natural processes on an undisturbed site.

1.3 Public rights of way, private streets, and the City's stormwater system and related natural resources shall be kept free of mud, soil, sediment, concrete washout, trash, or other similar construction-related material exceeding one-half cubic foot in volume for every 1,000 square feet of disturbed area. Direct deposit, dropping, dumping, erosion, tracking, or other discharge by construction vehicles of materials shall not occur in excess of those that occur through natural processes from an undisturbed site. Any such discharges that occur shall be prevented from entering water features or the City's stormwater system and removed not later than the end of the day in which the discharge occurred, or as directed by the City. During the wet weather season corrective action shall be taken immediately for such discharges.

1.4 Soils and stockpile areas shall not be exposed to precipitation or stormwater runoff without the provision of secondary containment and treatment measures.

1.5 Earth slides, mudflows, earth sloughing, or other earth movement which may leave the property, shall not occur in excess of those that occur through natural processes on an undisturbed site.

1.6 No discharge into the City's stormwater system or related natural resources of construc-

tion related contaminants resulting from activities such as, but not limited to, cleaning or washing of equipment, tools, or vehicles, shall occur.

1.7 No hazardous substances, such as paints, thinners, fuels and other chemicals shall be released onto the site, onto adjacent properties, or into water features, the City's stormwater system, or related natural resources.

1.8 A supply of materials necessary to meet the above outcomes and implement the construction site management plan or other best management erosion practices under all weather conditions shall be maintained at all times on the construction site.

2. When designing and implementing management measures to meet the above outcomes, the applicant shall consider the seasonal variation of rainfall, temperature, and other climatic factors relative to the timing of land disturbance activities. All construction activity that will result in soil disturbance during the wet weather season shall, at a minimum, implement and maintain the following Best Management Practices (BMP) on site:

2.1 Construction site entrances shall be graveled with crushed rock of sufficient size and grading as necessary to prevent any off-site tracking.

2.2 All stormwater facilities, water features, and related natural resources shall be protected.

2.3 All exposed soil not currently protected by secondary containment or treatments shall be covered.

2.4 Sediment, soil, or construction related material shall be removed immediately from the right-of-way, adjacent property, and the city's stormwater system, including water features and related natural resources.

3. No permit or other approval issued pursuant to these rules shall be deemed to authorize any violation of the above outcomes or wet-weather requirements.

4. Maximum extent practicable. The greatest degree of pollutant reduction achievable through the application of technically feasible, cost effective best management erosion practices, processes, siting criteria, operating methods, or other alternatives approved by the City. A practice or action shall be considered "cost effective" so long as the cost is less than or equal to \$1.50 per square foot of disturbed area. Costs to be considered under the previous sentence shall include permit fees, and implementation of construction site management measures. Costs do not include: design

preparation, preparation of construction site management plan/template, maintenance of management measures, actions taken to correct violations, including any civil penalties imposed, and permanent landscape and associated design fees

**FOR MORE
INFORMATION**



City of Eugene
Public Works
Engineering
Erosion Prevention
99 West 10th Avenue
Eugene, OR 97401
Phone: (541) 682-8495
Report Complaints: (541) 682-8498

www.ci.eugene.or.us/pw

Mitrace Drive

Riverfront Research Park

Riverfront Innovation

Riverfront Parkway

Agate Street

Jaqua Academic Center

Franklin Boulevard

Garden Avenue

Garden Alley

2735 Leo Harris Permit # 2013-415

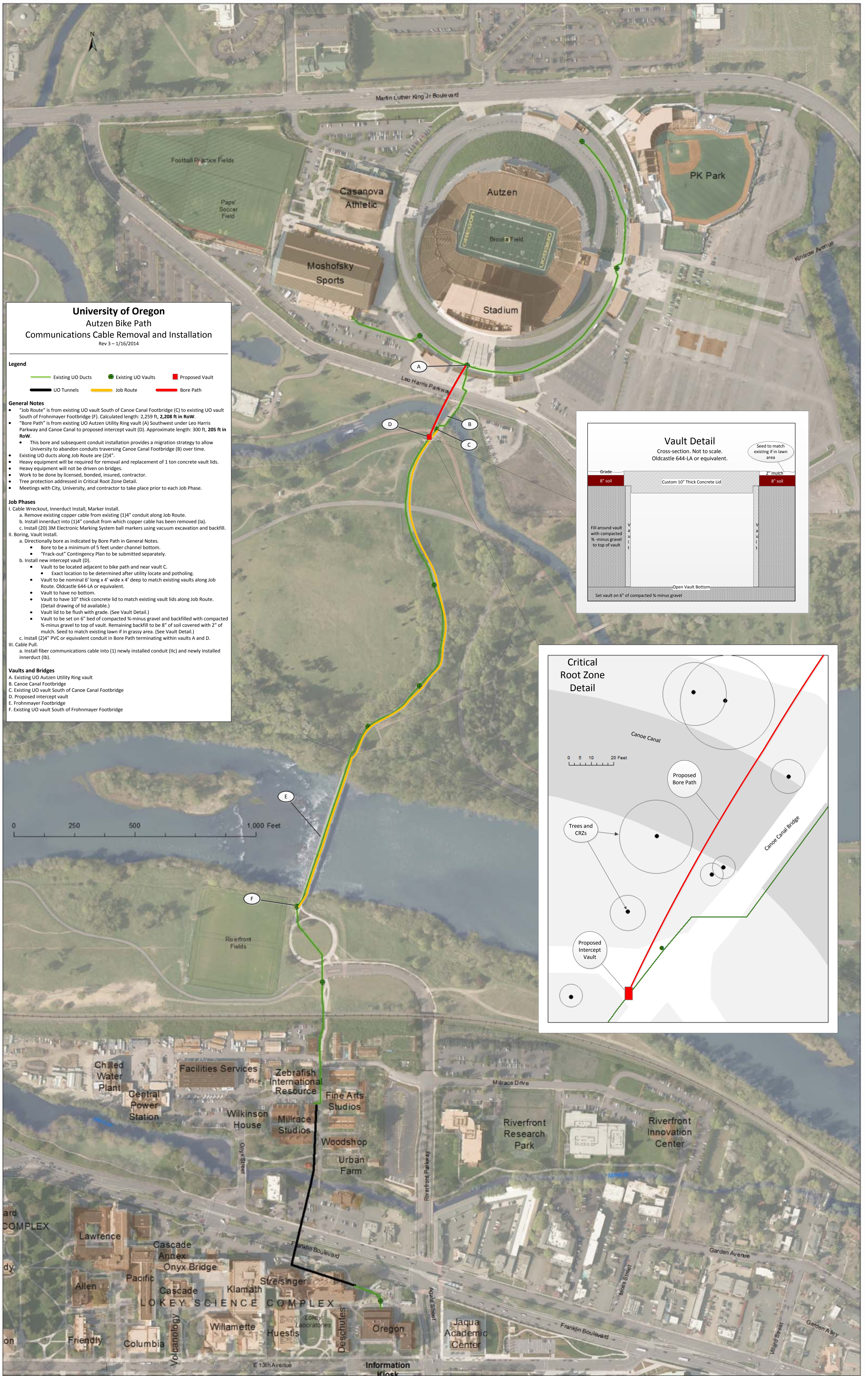
Preconstruction meeting required. Contact Brian siria @ 541-682-4887 to schedule meeting.
Appropriate traffic device measures shall be taken with consideration to pedestrian traffic at all times. Contractor shall provide safe pedestrian access around work zones. Consideration to be understood that future improvements to the canal would reduce the slope of the canal bank. So, deep and gradual installation under the banks shall be needed to prevent potential future conflicts.
Vault location shall be determined and approved in the field by Parks staff and the Utility program when drilling has commenced.
Restore all work areas to a condition as good or better than found at start of 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. (Note: the telephone number for the Oregon Utility Notification Center is 1-800-332-2344.

NOTICE:
Applicant is responsible for ensuring all activities within the public way comply with appropriate standards and conditions established by the City. Any deficiencies are the sole responsibility of the applicant and shall be corrected immediately upon notice.

CITY OF EUGENE PERMIT
Subject to current edition of the City's Utility and R/W Permit Manual
Researched by omh Date 1-4-14
 APPROVED WITHOUT CHANGE
 APPROVED AS NOTED
 Coordinate installation with City Engineering and/or developer to avoid construction conflicts.
 Attachments:
Date 1.29.14 By BS

project located in a sensitive area
NOTICE
EROSION PREVENTION PERMIT REQUIRED



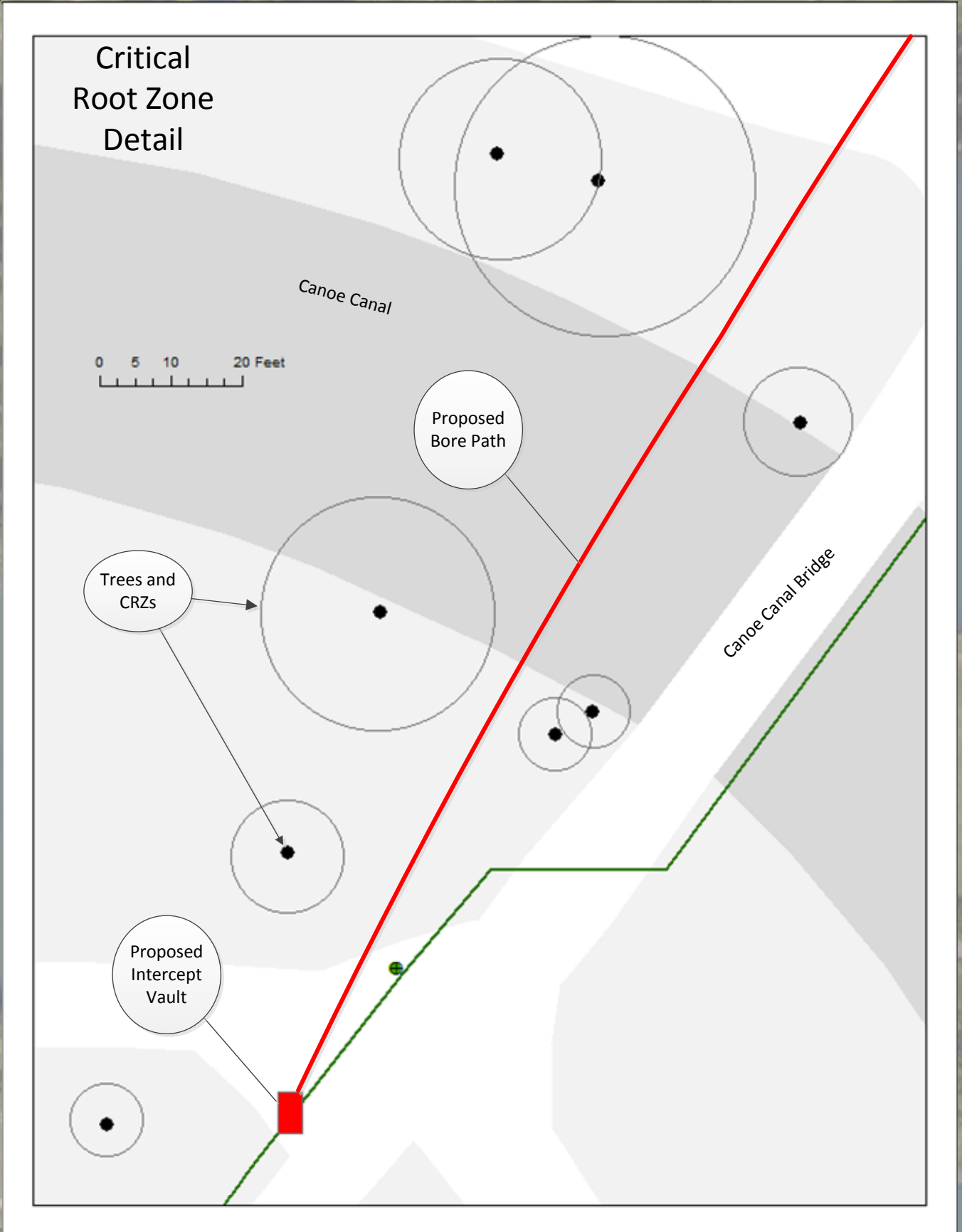
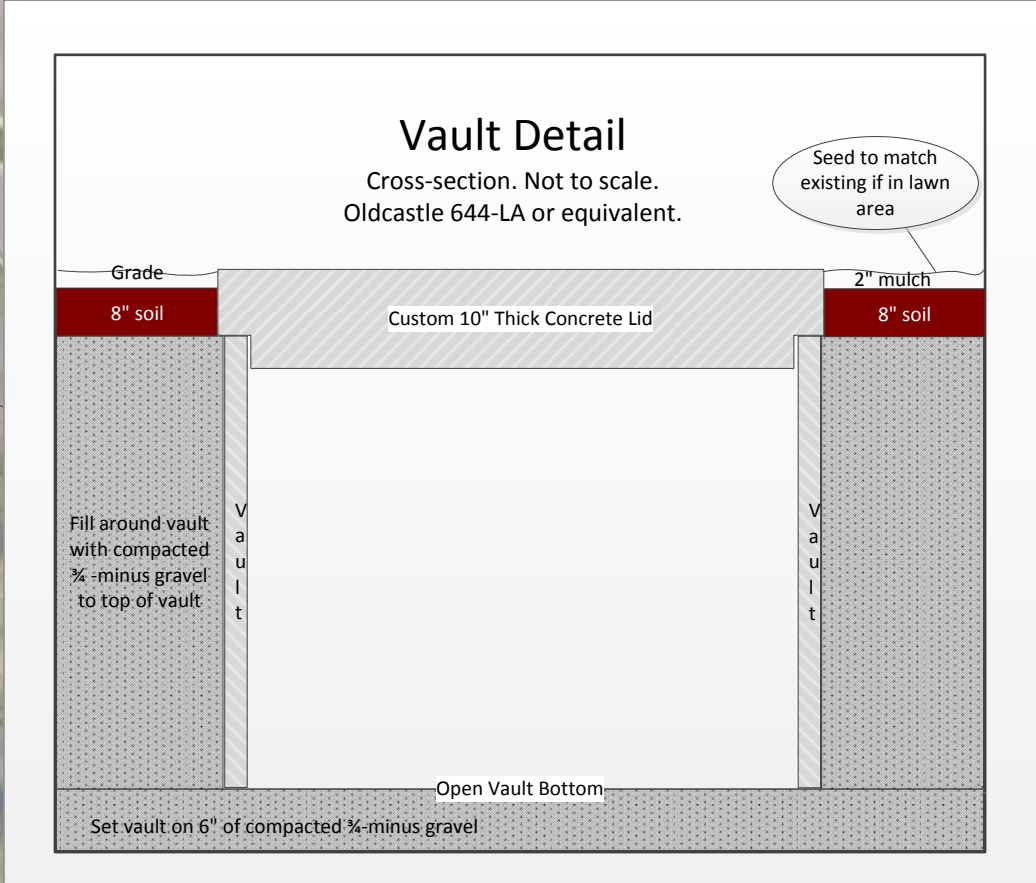
University of Oregon
Autzen Bike Path
Communications Cable Removal and Installation
 Rev 3 - 1/16/2014

- Legend**
- Existing UO Ducts
 - Existing UO Vaults
 - Proposed Vault
 - UO Tunnels
 - Job Route
 - Bore Path

- General Notes**
- "Job Route" is from existing UO vault South of Canoe Canal Footbridge (C) to existing UO vault South of Frohmayer Footbridge (F). Calculated length: 2,259 ft, **2,208 ft in RoW**.
 - "Bore Path" is from existing UO Autzen Utility Ring vault (A) Southwest under Leo Harris Parkway and Canoe Canal to proposed intercept vault (D). Approximate length: 300 ft, **205 ft in RoW**.
 - This bore and subsequent conduit installation provides a migration strategy to allow University to abandon conduits traversing Canoe Canal Footbridge (B) over time.
 - Existing UO ducts along Job Route are 214".
 - Heavy equipment will be required for removal and replacement of 1 ton concrete vault lids.
 - Heavy equipment will not be driven on bridges.
 - Work to be done by licensed, bonded, insured, contractor.
 - Tree protection addressed in Critical Root Zone Detail.
 - Meetings with City, University, and contractor to take place prior to each Job Phase.

- Job Phases**
- I. Cable Wreckout, Innerduct Install, Marker Install.**
- a. Remove existing copper cable from existing (114" conduit along Job Route.
 - b. Install innerduct into (114" conduit from which copper cable has been removed (1a).
 - c. Install (20) 3M Electronic Marking System ball markers using vacuum excavation and backfill.
- II. Boring, Vault Install.**
- a. Directionally bore as indicated by Bore Path in General Notes.
 - Bore to be a minimum of 5 feet under channel bottom.
 - "Frack-out" Contingency Plan to be submitted separately.
 - b. Install new intercept vault (D).
 - Vault to be located adjacent to bike path and near vault C.
 - Exact location to be determined after utility locate and potholing.
 - Vault to be nominal 6' long x 4' wide x 4' deep to match existing vaults along Job Route. Oldcastle 644-LA or equivalent.
 - Vault to have no bottom.
 - Vault to have 10" thick concrete lid to match existing vault lids along Job Route. (Detail drawing of lid available.)
 - Vault lid to be flush with grade. (See Vault Detail.)
 - Vault to be set on 6" bed of compacted ¾-minus gravel and backfilled with compacted ¾-minus gravel to top of vault. Remaining backfill to be 8" of soil covered with 2" of mulch. Seed to match existing lawn if in grassy area. (See Vault Detail.)
 - c. Install (2) 4" PVC or equivalent conduit in Bore Path terminating within vaults A and D.
- III. Cable Pull.**
- a. Install fiber communications cable into (1) newly installed conduit (1c) and newly installed innerduct (1b).

- Vaults and Bridges**
- A. Existing UO Autzen Utility Ring vault
 - B. Canoe Canal Footbridge
 - C. Existing UO vault South of Canoe Canal Footbridge
 - D. Proposed intercept vault
 - E. Frohmayer Footbridge
 - F. Existing UO vault South of Frohmayer Footbridge



“Frack-Out” Plan for Horizontal Directional Drilling

Developed by UO with input from HDD contractors. January, 2014.

In the event of a “frack-out” (drilling slurry blowout) in a waterway during horizontal directional drilling, the contractor will case around the frack to mitigate further spread of the slurry, vacuum out the bore mud, and dispose of it off site. In the event that the casing cannot fully contain the frack-out, the contractor will place flotation filter booms in the water as the casing and vacuum procedure continues. Drilling will halt for at least one hour to allow the bentonite slurry to seal the frack.

If at the end of one hour, the frack continues, industry standard hole sealer will be injected downhole and the contractor will wait 24 hours before attempting to continue boring.

If after 24 hours the hole is not sealed and the frack-out continues, contractor will reevaluate the situation and develop a plan that will not allow bore mud into streams or storm runoff.

In the event of a frack-out not in a waterway, the contractor will be able to continue drilling once they have constructed a sediment barrier of straw and subsequently vacuum out the slurry and dispose of it off site, as necessary.



Utility Public Way Use Permit Application

File with: Public Works Maintenance - 1820 Roosevelt Boulevard

A. Job address 2760 Martin Luther King Jr. Blvd.
 Subdivision _____ Addition _____
 Utility Univ of Oregon - Info Srvcs Utility type Communications Job No. _____
 Utility Address 1244 Walnut St. City Eugene Zip 97403
 Utility Contact Name Bruce McCarthy Utility Contact Phone 541-346-1019
 Contractor name TBD Phone _____ Address _____
 City/State/Zip _____ C.C.B. LIC. # _____ License Expires _____

B. Description of proposed activity (Engineering plans for work must be attached)
Bore in new conduit under and along MLK. Set (1) vault in side-walk, set (1) vault near Row on UO property. Pull in new F/O cables.

C. Work Activity within public way (48 hours before digging, call 1-800-332-2344 for utility locate)
 Surface: Concrete/asphalt Gravel Dirt/grass Landscaping
 Location: Street or alley Plant Strip Sidewalk PUE Other _____
 Method: Open trench Boring Aerial Pulling in existing conduit
 Other _____
 Project Specifics (required)
 Depth 40"
 Width 570'
 Length 100'
Approx. 650 linear ft in Row

D. Joint activity details (required to obtain joint trench permit fee): (check boxes)
 PUE: _____
 Joint activity with _____ (list of utilities)
 In street In plant strip Under sidewalk Other _____
 Joint trench notification (required if activity involves open trench more than 400' in length)
N/A Boring/Notrench

E. City trees in vicinity of proposed work Yes No Show critical root zone on plans
 F. Sensitive area (check map) Yes No If yes, apply for erosion permit
 G. As utility representative, I state that I have read and understand the conditions printed on both sides of this application for using or for doing work within the public way and further state the work/use permit being sought is for the purposes stated and no other, unless expressly requested on this application and authorized by a permit. I agree to indemnify and hold the City of Eugene, it's officers, agents, and employees harmless from any injury or damage caused by or relating to the activities specified in this application.
 Name Scott Gehung Signature [Signature] Date 2/21/14 Phone (541) 346-7141
 Representative's Address 1244 Walnut St. Eugene OR 97403

FOR OFFICE USE ONLY
 Permit approved by [Signature] Date 3-11-14

- CONDITIONS:*
- Traffic control plan required. Submit plan to Traffic Operations for review and approval prior to commencing activity.
 - No lane closure before 8:15 a.m. or after 4 p.m.
 - Use "Bike Lane Closed" sign if obstructioning bikeways; provide acceptable bicycle route through the work zone.
 - Use "Sidewalk Closed" sign if obstructioning sidewalk; provide acceptable pedestrian route through the work zone.
 - Coordinate installation with City Engineering and/or developer to avoid construction conflicts. Uofo
 - Erosion permit required.
 - Work shall comply with current City tree protection standards and ANSI-Z-133 pruning standards.
- * See continuation of conditions on back of form.

EROSION PERMIT
 APPROVED _____
 Date _____

Additional Requirements:

2760 MLK Permit # 2014-067

Permit valid for directional drilling across MLK only. If open excavation is needed due to existing conditions, prior approval by the City will be required and street restoration requirements will be expanded and reconditioned through the permit.

Approved traffic control plan required for any lane closures on MLK.

Work to be coordinated with Uofo not to conflict with events that produce high vehicular and pedestrian traffic.

Tree protection standards to be followed. Reference Eugene standard drawing LS120 for detail.

Log No. 2014-067 Login Date 3-26-14 By DMN Date Application Received 3-26-14 Fee \$1,670.00

CONDITIONS

1. The applicant represents all parties and interests and shall furnish material, do all work, pay all costs, and shall, within a reasonable length of time, restore any damaged portion of the public way to a condition equal to or better than existing before the commencement of the described work or uses, including any seeding or sodding necessary.
2. The applicant and the applicant's successors or assignees agree to hold harmless the City of Eugene and its duly appointed agents and employees against any action for personal injury or property damage sustained by reason of exercise of this permit, if granted.
3. All work and construction activities within the public way are subject to the regulations set forth by the Eugene City Code, and are subject to engineering standards as established by the City Engineer and conditions required by the Inspector.
4. All work and construction activities within the public way shall comply with the Utility and Right-of-Way Permits Construction Within and Use of the Public Way Policies and Procedures and the City's standard specifications with Eugene amendments, current editions.
5. The proposed work, use, etc., requested shall be located and constructed to the satisfaction of the City Engineer or a duly authorized representative. No revisions or additions shall be made to the proposed scope of work within the public way without the written permission of the Inspector. The City may require relocation of any facilities deemed necessary by the City for the public good or use of the Public Way.
6. The applicant shall, at all times, conduct the work or activity in such a manner as to minimize hazards to vehicular and pedestrian traffic. In performing work or use in the public way the applicant shall provide traffic control acceptable to the City's Traffic Engineer or designee. All required traffic controls, i.e., signs, barricades, flagpersons, etc., shall be furnished and maintained by the applicant. The actual work activity shall only be done during approved daylight hours, Monday through Friday, unless expressly authorized by the Inspector.
7. The applicant shall not trim, cut, or in any way disturb any landscaping (trees or shrubbery) within said public way without the express approval of the Urban Forester or a duly authorized City representative.
8. The work performed by the applicant is for a bona fide purpose and not for the purpose of creating parking or areas for the servicing of vehicles on the public way. Parking on the public way is prohibited, unless authorized by the appropriate permit. Commercial, non-public signs that overhang the right-of-way are prohibited, unless expressly authorized by the City's Sign Code and the appropriate permit.
9. The City reserves the right to require such changes, additions, repairs, and relocations within its statutory limits to the facilities constructed on, over, or under a public property/public way work/use permit or other appurtenances on, over, or under the public way as may at any time be considered necessary in the future to permit the relocation, reconstruction, widening, or maintaining of the street and/or to provide proper protection to life or property adjacent to the City and/or State right-of-way.

However, in the event a permit is granted to construct, locate, operate, and maintain public utility facilities on, over, or under the public way, the applicant utility company, upon written request by the City Engineer, shall perform such alterations or change of locations of the utility company's facilities without expense to the City. Should the applicant utility company fail to make satisfactory arrangements to comply with a request within a reasonable time, the City reserves the right to make such alterations or change of location or removal of the utility company's facilities. The applicant agrees to pay for all cost incurred.
10. A permit, when granted is valid only insofar as the City has jurisdiction and does not release the applicant from the need to comply with all applicable laws, statutes, codes, and standards, or obtain any other necessary permits and approvals prior to commencing work or use activities.
11. The applicant affirms that the scope of the proposal shown on submitted plans is true and correct, and binds and obligates him/herself and all parties involved to perform the operation in accordance with the application and related plans and to abide by the above conditions.
12. This permit will automatically expire six months (180 days) following the date of approval. No work is authorized under an expired permit. A six month extension may be approved by the Traffic Technical Team Supervisor if a written request is received from the applicant prior to the permit expiration date.

Erosion Prevention and Construction Site Management Program

OUTCOMES EVERY CONSTRUCTION SITE MUST MEET

An Administrative Rule (R-6.645) effective February 1, 1997 applies to any construction site located within the city limits or on any parcel annexed to the City of Eugene.

The City of Eugene's stormwater system includes not only publicly maintained pipes, culverts, gutters, and catch basins, but also streams, ditches, channels, ponds, wetlands and other related waterways. Storm drains in Eugene flow directly, untreated to local waterways.

The Administrative Rule protects these local waterways from harmful effects related to erosion, sedimentation and other construction related practices.

R-6.645-D Outcomes

1. All persons conducting construction activities covered by R-6.645-C.1. shall employ, to the maximum extent practicable, erosion prevention and construction site management practices which will achieve during both the construction period and wet weather season the following outcomes:

1.1 Adjacent properties, water features, and related natural resources are kept free of deposits or discharges of soil, sediment or construction-related material from the site except those that would occur through natural processes from an undisturbed site.

1.2 Vegetation in water features, related natural resources, and associated bank and/or riparian areas adjacent to construction sites are preserved

or protected from impacts that exceed those that occur through natural processes on an undisturbed site.

1.3 Public rights of way, private streets, and the City's stormwater system and related natural resources shall be kept free of mud, soil, sediment, concrete washout, trash, or other similar construction-related material exceeding one-half cubic foot in volume for every 1,000 square feet of disturbed area. Direct deposit, dropping, dumping, erosion, tracking, or other discharge by construction vehicles of materials shall not occur in excess of those that occur through natural processes from an undisturbed site. Any such discharges that occur shall be prevented from entering water features or the City's stormwater system and removed not later than the end of the day in which the discharge occurred, or as directed by the City. During the wet weather season corrective action shall be taken immediately for such discharges.

1.4 Soils and stockpile areas shall not be exposed to precipitation or stormwater runoff without the provision of secondary containment and treatment measures.

1.5 Earth slides, mudflows, earth sloughing, or other earth movement which may leave the property, shall not occur in excess of those that occur through natural processes on an undisturbed site.

1.6 No discharge into the City's stormwater system or related natural resources of construc-

tion related contaminants resulting from activities such as, but not limited to, cleaning or washing of equipment, tools, or vehicles, shall occur.

1.7 No hazardous substances, such as paints, thinners, fuels and other chemicals shall be released onto the site, onto adjacent properties, or into water features, the City's stormwater system, or related natural resources.

1.8 A supply of materials necessary to meet the above outcomes and implement the construction site management plan or other best management erosion practices under all weather conditions shall be maintained at all times on the construction site.

2. When designing and implementing management measures to meet the above outcomes, the applicant shall consider the seasonal variation of rainfall, temperature, and other climatic factors relative to the timing of land disturbance activities. All construction activity that will result in soil disturbance during the wet weather season shall, at a minimum, implement and maintain the following Best Management Practices (BMP) on site:

2.1 Construction site entrances shall be graveled with crushed rock of sufficient size and grading as necessary to prevent any off-site tracking.

2.2 All stormwater facilities, water features, and related natural resources shall be protected.

2.3 All exposed soil not currently protected by secondary containment or treatments shall be covered.

2.4 Sediment, soil, or construction related material shall be removed immediately from the right-of-way, adjacent property, and the city's stormwater system, including water features and related natural resources.

3. No permit or other approval issued pursuant to these rules shall be deemed to authorize any violation of the above outcomes or wet-weather requirements.

4. Maximum extent practicable. The greatest degree of pollutant reduction achievable through the application of technically feasible, cost effective best management erosion practices, processes, siting criteria, operating methods, or other alternatives approved by the City. A practice or action shall be considered "cost effective" so long as the cost is less than or equal to \$1.50 per square foot of disturbed area. Costs to be considered under the previous sentence shall include permit fees, and implementation of construction site management measures. Costs do not include: design

preparation, preparation of construction site management plan/template, maintenance of management measures, actions taken to correct violations, including any civil penalties imposed, and permanent landscape and associated design fees.

**FOR MORE
INFORMATION**



City of Eugene
Public Works
Engineering
Erosion Prevention
99 West 10th Avenue
Eugene, OR 97401
Phone: (541) 682-8495
Report Complaints: (541) 682-8498

www.ci.eugene.or.us/pw



MARCH 2001

University of Oregon Duct and Cable Install Under and Along MLK Blvd.

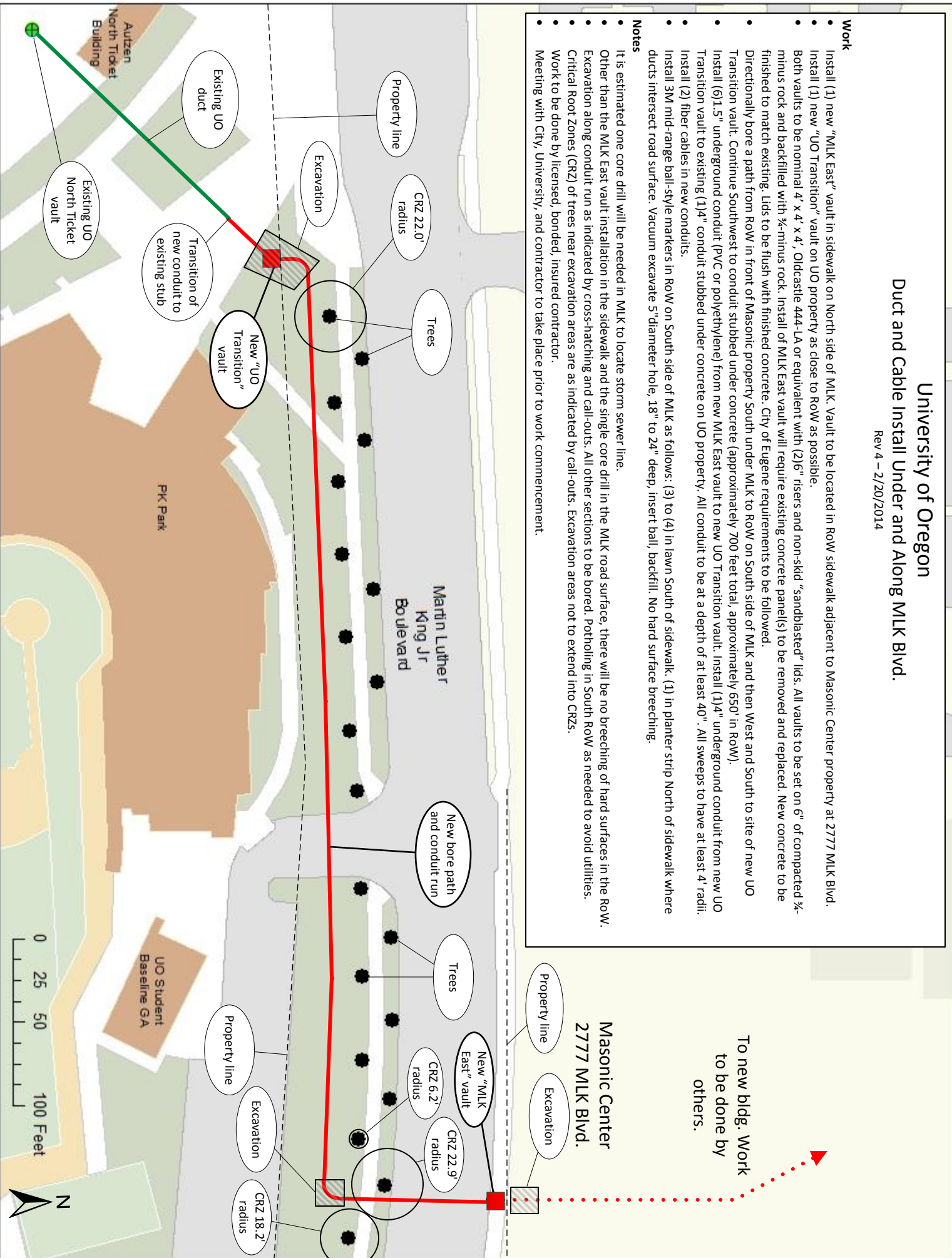
Rev 4 - 2/20/2014

Work

- Install (1) new "MLK East" vault in sidewalk on North side of MLK. Vault to be located in Row sidewalk adjacent to Masonic Center property at 2777 MLK Blvd.
- Install (1) new "UO Transition" vault on UO property as close to Row as possible.
- Both vaults to be nominal 4' x 4' x 4', Oldcastle 444-LA or equivalent with (2)6" risers and non-skid "sandblasted" lids. All vaults to be set on 6" of compacted ¾-minus rock and backfilled with ¾-minus rock. Install of MLK East vault will require existing concrete panel(s) to be removed and replaced. New concrete to be finished to match existing. Lids to be flush with finished concrete. City of Eugene requirements to be followed.
- Directionally bore a path from Row in front of Masonic property South under MLK to Row on South side of MLK and then West and South to site of new UO Transition vault. Continue Southwest to conduit stubbed under concrete (approximately 700 feet total, approximately 650' in Row).
- Install (6)1.5" underground conduit (PVC or polyethylene) from new MLK East vault to new UO Transition vault. Install (1)4" underground conduit from new UO Transition vault to existing (1)4" conduit stubbed under concrete on UO property. All conduit to be at a depth of at least 40". All sweeps to have at least 4' radii.
- Install (2) fiber cables in new conduits.
- Install 3M mid-range ball-style markers in Row on South side of MLK as follows: (3) to (4) in lawn South of sidewalk. (1) in planter strip North of sidewalk where ducts intersect road surface. Vacuum excavate 5" diameter hole, 18" to 24" deep, insert ball, backfill. No hard surface breaching.

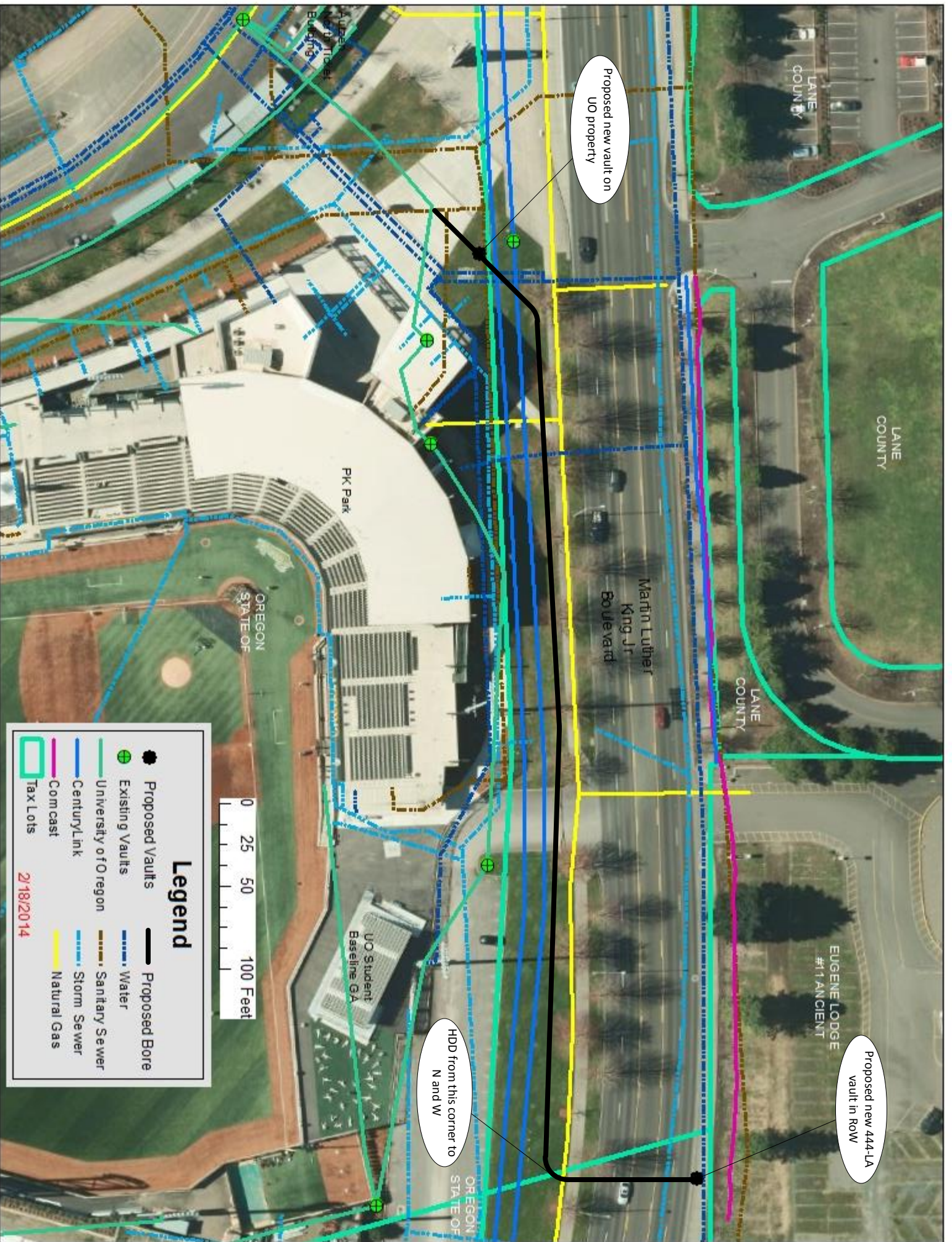
Notes

- It is estimated one core drill will be needed in MLK to locate storm sewer line.
- Other than the MLK East vault installation in the sidewalk and the single core drill in the MLK road surface, there will be no breaching of hard surfaces in the Row.
- Excavation along conduit run as indicated by cross-hatching and call-outs. All other sections to be bored. Potholing in South Row as needed to avoid utilities.
- Critical Root Zones (CRZ) of trees near excavation areas are as indicated by call-outs. Excavation areas not to extend into CRZs.
- Work to be done by licensed, bonded, insured contractor.
- Meeting with City, University, and contractor to take place prior to work commencement.



To new bldg. Work
to be done by
others.

Masonic Center
2777 MLK Blvd.



Proposed new vault on UO property

Proposed new 444-LA vault in ROW

HDD from this corner to N and W

Legend

-  Proposed Vaults
-  Existing Vaults
-  Proposed Bore
-  Water
-  University of Oregon Sanitary Sewer
-  Storm Sewer
-  Natural Gas
-  Tax Lots



2/18/2014

CITY OF EUGENE PERMIT

Subject to current edition of the

City's Utility and R/W Permit Manual
Researched by J.M.M. Date 3-4-14

APPROVED WITHOUT CHANGE

APPROVED AS NOTED

Coordinate installation with City Engineering and/or developer to avoid construction conflicts.

Attachments:

Date 3.11.14 By BS

2760 MLK Permit # 2014-067

Permit valid for directional drilling across MLK only. If open excavation needed due to existing conditions, prior approval by the City will be required and street restoration requirements will be expanded and reconditioned through the permit.

Approved traffic control plan required for any lane closures on MLK. Work to be coordinated with UofO not to conflict with events that produce high vehicular and pedestrian traffic.

The protection standards to be followed. Reference Eugene standard drawing LS120 for detail.

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. (Note: the telephone number for the Oregon Utility Notification Center is 1-800-332-2344.)

NOTICE: Applicant is responsible for ensuring activities within the public way comply with appropriate standards and conditions established by the City. Any deficiencies are the sole responsibility of the applicant and shall be corrected immediately upon notice.

**EROSION PREVENTION
PERMIT NOT REQUIRED
PROJECT MUST COMPLY
WITH PROGRAM OUTCOMES**

“Frack-Out” Plan for Horizontal Directional Drilling

Rev 2 - January, 2014.

Developed by UO with input from HDD contractors.
Approved by City of Eugene as part of permit process.

In the event of a “frack-out” (drilling slurry blowout) in a waterway during horizontal directional drilling, the contractor will insert large-diameter rigid pipe (“casing”) vertically into the waterway at the point of the blowout to trap and mitigate further spread of the slurry. They will then vacuum out the slurry from the top of the inserted pipe casing, and dispose of it off site. In the event that the casing cannot fully contain the frack-out, the contractor will place flotation filter booms in the water as the casing and vacuum procedure continues. Drilling will halt for at least one hour to allow the bentonite slurry to seal the frack.

If at the end of one hour, the frack continues, industry standard hole sealer will be injected downhole and the contractor will wait 24 hours before attempting to continue boring. A spec sheet for the hole sealer shall be presented to and approved by permit authority prior to drilling commencement.

If after 24 hours the hole is not sealed and the frack-out continues, contractor will reevaluate the situation and develop a plan that will not allow bore mud into streams or storm runoff.

In the event of a frack-out not in a waterway, the contractor will be able to continue drilling once they have constructed a sediment barrier of straw and subsequently vacuum out the slurry and dispose of it off site, as necessary.

Exhibit 4A

BIKE PATH ACCESS NORTH OF THE RIVER

Access to the bike path on the North side of the river is via Day Island Road: starting at the South end of Alton Baker Park parking lot, travel East on Day Island Road until reaching bollards. Remove bollard to pass and immediately replace it. Continue East to bike path.

Canoe Canal Bridge.
No motor vehicles permitted.

Bike Path

Alton Baker
Parking Lot

Day Island Road

Day Island Road

Day Island Road

Bike Path

Bollards

Bike Path

Frohmayer Bridge.
No motor vehicles permitted.



Exhibit 4B

Frohnmayr Bridge.
No motor vehicles
permitted.

BIKE PATH ACCESS SOUTH OF THE RIVER

Access to the bike path on the South side of the river is via Agate/Riverfront Parkway: starting at the intersection of Franklin Boulevard and Agate Street, travel North on Riverfront Parkway to bollards. Remove bollard to pass and immediately replace it. Follow the road North under train tracks and then West to the bike path.

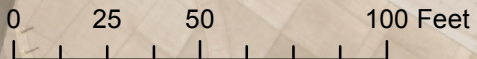
Bike Path

Bollards



Exhibit 5A

Autzen South
Ticket
Building



Leo Harris Parkway

Comm Ducts & Other Lines

- University of Oregon, Active Line
- Water
- Sanitary Sewer
- Storm Sewer
- Primary Elec
- Branch Elec
- Natural Gas

1/23/2014

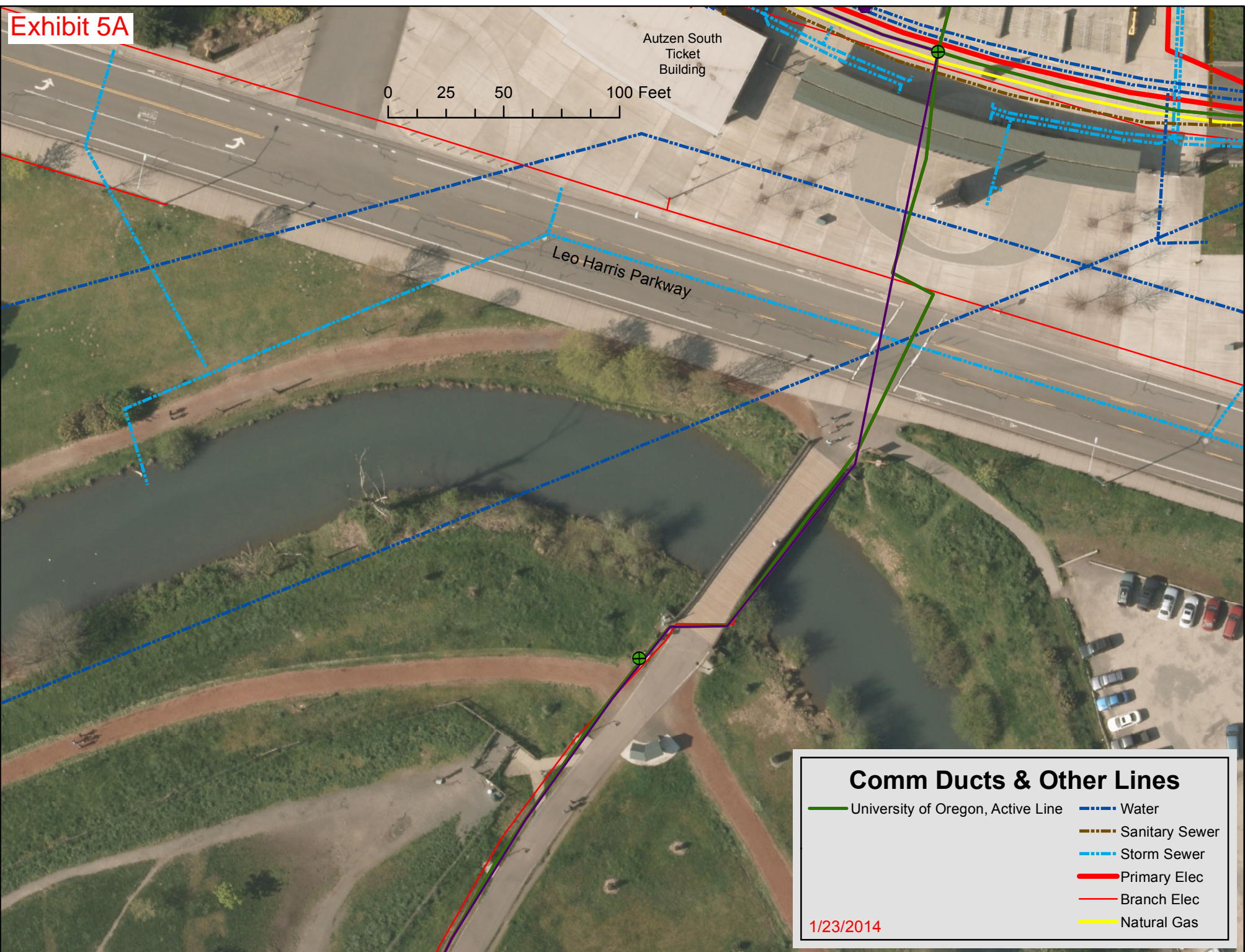
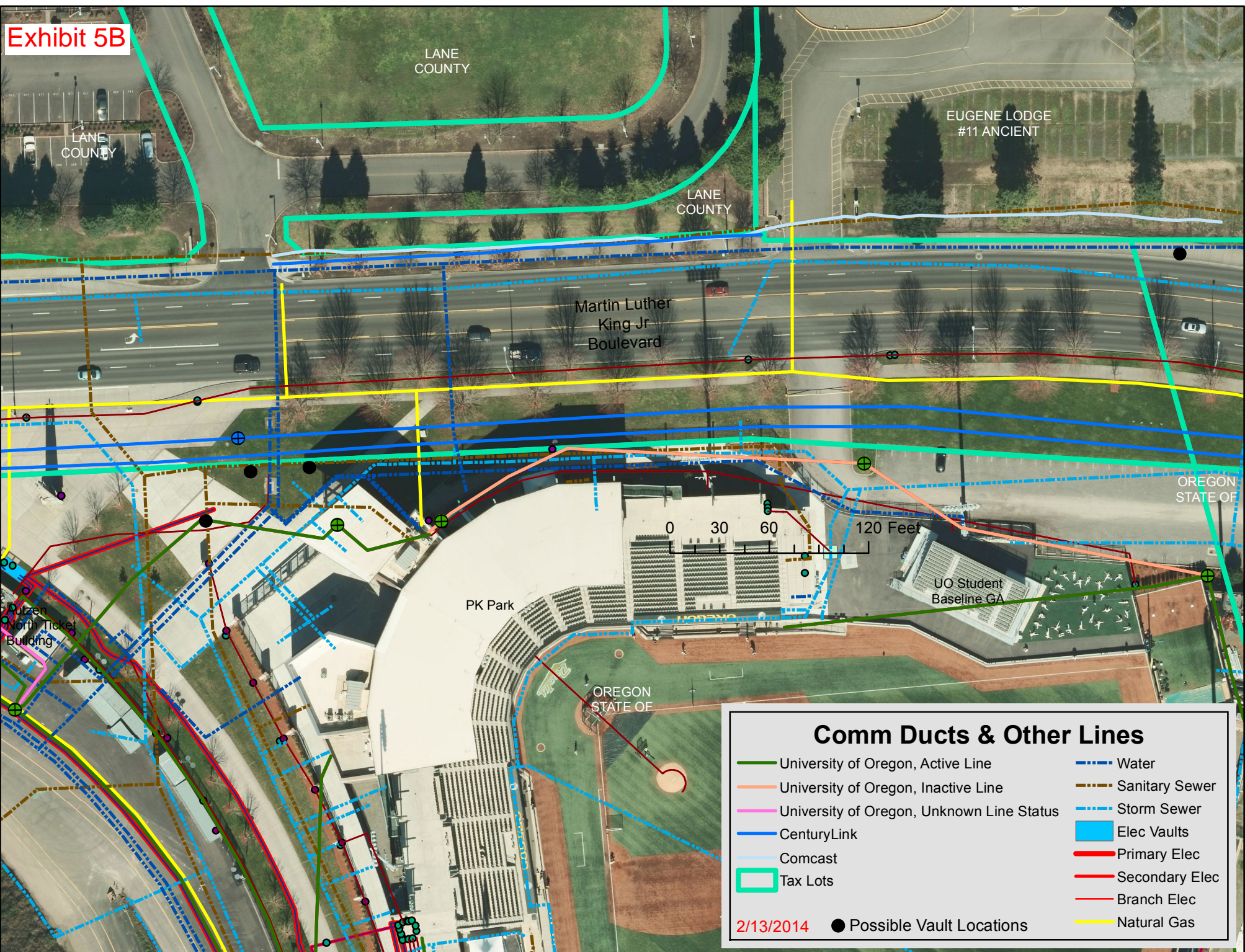


Exhibit 5B

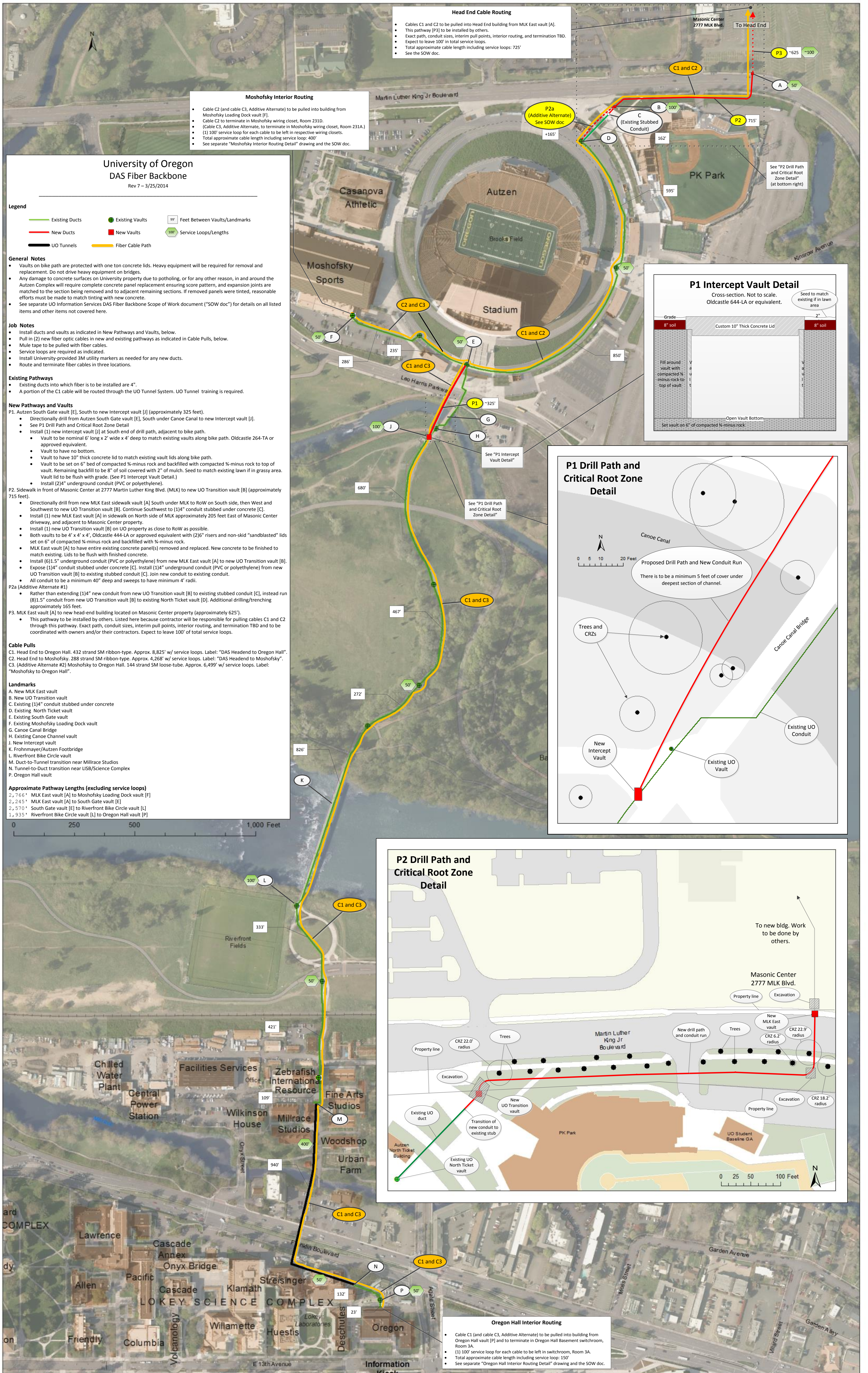


Comm Ducts & Other Lines

University of Oregon, Active Line	Water
University of Oregon, Inactive Line	Sanitary Sewer
University of Oregon, Unknown Line Status	Storm Sewer
CenturyLink	Elec Vaults
Comcast	Primary Elec
Tax Lots	Secondary Elec
	Branch Elec
	Natural Gas

2/13/2014 ● Possible Vault Locations

Drawings



Head End Cable Routing

- Cables C1 and C2 to be pulled into Head End building from MLK East vault [A].
- This pathway [P3] to be installed by others.
- Exact path, conduit sizes, interim pull points, interior routing, and termination TBD.
- Expect to leave 100' in total service loops.
- Total approximate cable length including service loops: 725'
- See the SOW doc.

Moshofsky Interior Routing

- Cable C2 (and cable C3, Additive Alternate) to be pulled into building from Moshofsky Loading Dock vault [F].
- Cable C2 to terminate in Moshofsky wiring closet, Room 231D.
- (Cable C3, Additive Alternate, to terminate in Moshofsky wiring closet, Room 231A.)
- (1) 100' service loop for each cable to be left in respective wiring closets.
- Total approximate cable length including service loop: 400'
- See separate "Moshofsky Interior Routing Detail" drawing and the SOW doc.

**University of Oregon
DAS Fiber Backbone**
Rev 7 - 3/25/2014

- Legend**
- Existing Ducts
 - New Ducts
 - Existing Vaults
 - New Vaults
 - Feet Between Vaults/Landmarks
 - Service Loops/Lengths
 - UO Tunnels
 - Fiber Cable Path

General Notes

- Vaults on bike path are protected with one ton concrete lids. Heavy equipment will be required for removal and replacement. Do not drive heavy equipment on bridges.
- Any damage to concrete surfaces on University property due to potholing, or for any other reason, in and around the Autzen Complex will require complete concrete panel replacement ensuring score pattern, and expansion joints are matched to the section being removed and to adjacent remaining sections. If removed panels were tinted, reasonable efforts must be made to match tinting with new concrete.
- See separate UO Information Services DAS Fiber Backbone Scope of Work document ("SOW doc") for details on all listed items and other items not covered here.

Job Notes

- Install ducts and vaults as indicated in New Pathways and Vaults, below.
- Pull in (2) new fiber optic cables in new and existing pathways as indicated in Cable Pulls, below.
- Mule tape to be pulled with fiber cables.
- Service loops are required as indicated.
- Install University-provided 3M utility markers as needed for any new ducts.
- Route and terminate fiber cables in three locations.

Existing Pathways

- Existing ducts into which fiber is to be installed are 4".
- A portion of the C1 cable will be routed through the UO Tunnel System. UO Tunnel training is required.

New Pathways and Vaults

P1. Autzen South Gate vault [E], South to new Intercept vault [J] (approximately 325 feet).

- Directionally drill from Autzen South Gate vault [E], South under Canoe Canal to new Intercept vault [J].
- See "P1 Drill Path and Critical Root Zone Detail".
- Install (1) new intercept vault [J] at South end of drill path, adjacent to bike path.
- Vault to be nominal 6' long x 2' wide x 4' deep to match existing vaults along bike path. Oldcastle 264-TA or approved equivalent.
- Vault to have no bottom.
- Vault to have 10" thick concrete lid to match existing vault lids along bike path.
- Vault to be set on 6" bed of compacted 3/4-min rock and backfilled with compacted 3/4-min rock to top of vault. Remaining backfill to be 8" of soil covered with 2" of mulch. Seed to match existing lawn if in grassy area. Vault lid to be flush with grade. (See "P1 Intercept Vault Detail".)
- Install (2) 1/4" underground conduit (PVC or polyethylene).

P2. Sidewalk in front of Masonic Center at 2777 Martin Luther King Blvd. (MLK) to new UO Transition vault [B] (approximately 715 feet).

- Directionally drill from new MLK East sidewalk vault [A] South under MLK to RoW on South side, then West and Southwest to new UO Transition vault [B]. Continue Southwest to (1) 1/4" conduit stubbed under concrete [C].
- Install (1) new MLK East vault [A] in sidewalk on North side of MLK approximately 205 feet East of Masonic Center driveway, and adjacent to Masonic Center property.
- Install (1) new UO Transition vault [B] on UO property as close to RoW as possible.
- Both vaults to be 4' x 4' x 4', Oldcastle 444-LA or approved equivalent with (2) 6" risers and non-skid "sandblasted" lids set on 6" of compacted 3/4-min rock and backfilled with 3/4-min rock.
- MLK East vault [A] to have entire existing concrete panel(s) removed and replaced. New concrete to be finished to match existing. Lids to be flush with finished concrete.
- Install (6) 1/4" underground conduit (PVC or polyethylene) from new MLK East vault [A] to new UO Transition vault [B].
- Expose (1) 1/4" conduit stubbed under concrete [C]. Install (1) 1/4" underground conduit (PVC or polyethylene) from new UO Transition vault [B] to existing stubbed conduit [C]. Join new conduit to existing conduit.
- All conduit to be a minimum 40" deep and sweeps to have minimum 4' radii.

P2a (Additive Alternate #1)

- Rather than extending (1) 1/4" new conduit from new UO Transition vault [B] to existing stubbed conduit [C], instead run (8) 1/4" conduit from new UO Transition vault [B] to existing North Ticket vault [D]. Additional drilling/trenching approximately 165 feet.

P3. MLK East vault [A] to new head-end building located on Masonic Center property (approximately 625').

- This pathway [P3] to be installed by others. Listed here because contractor will be responsible for pulling cables C1 and C2 through this pathway. Exact path, conduit sizes, interim pull points, interior routing, and termination TBD and to be coordinated with owners and/or their contractors. Expect to leave 100' of total service loops.

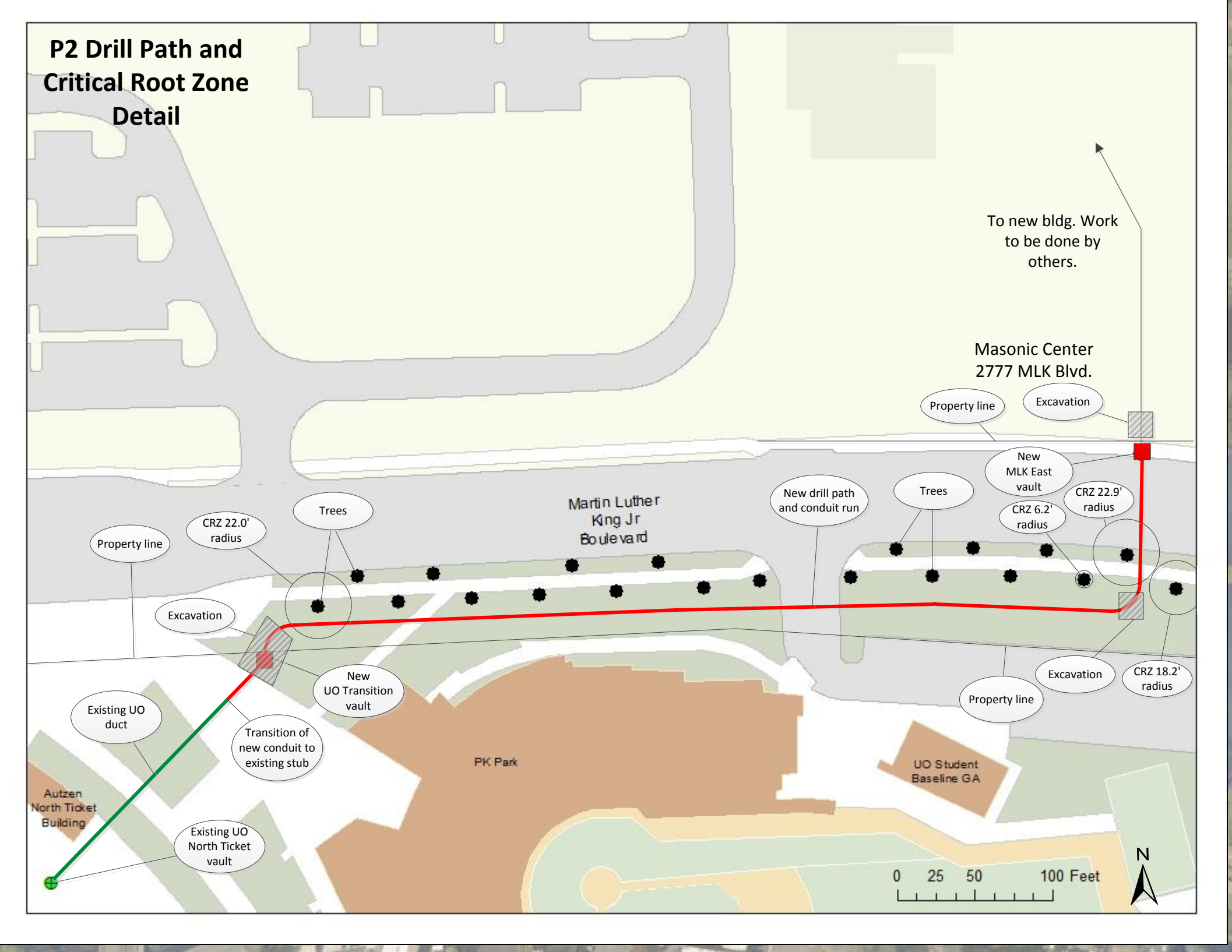
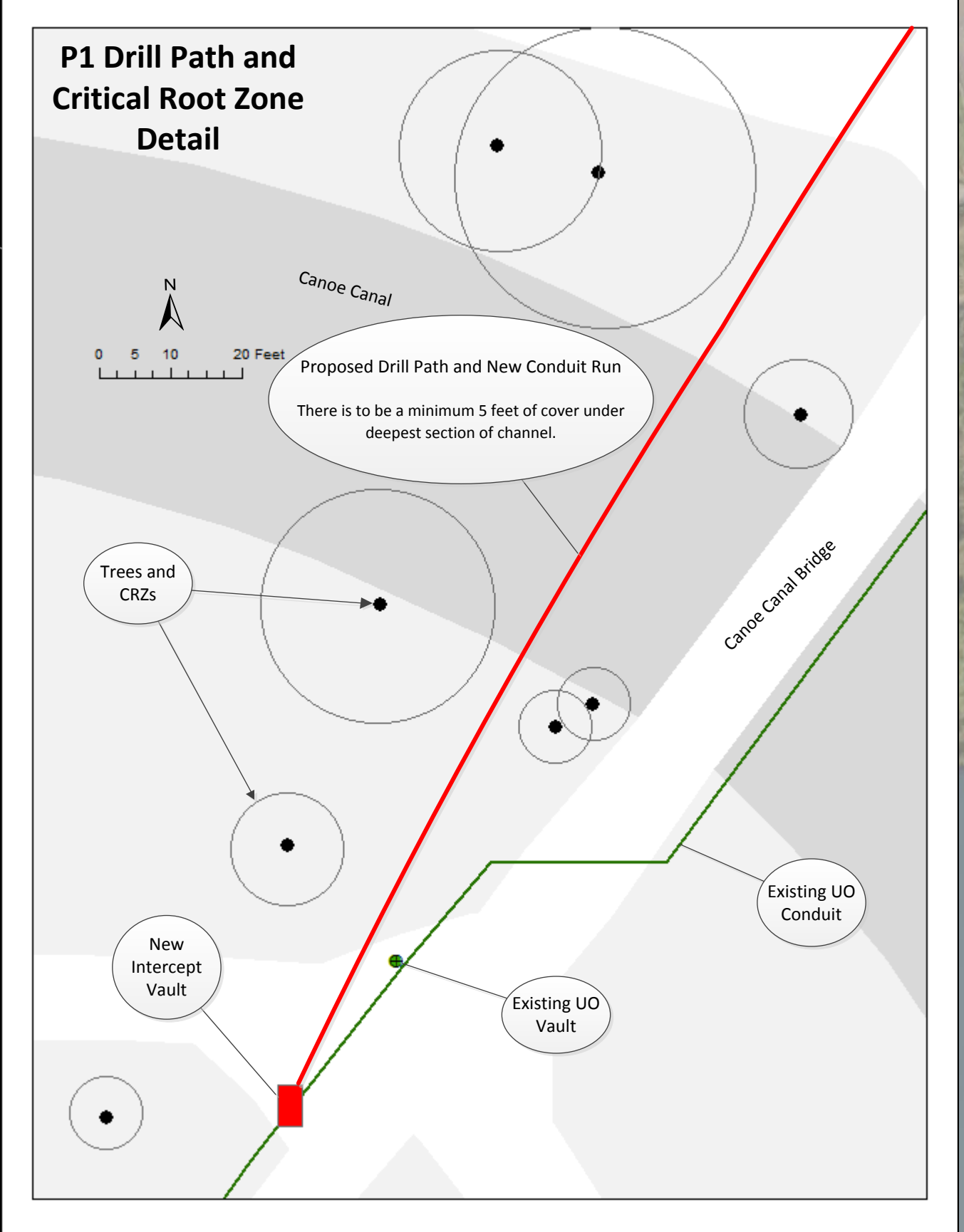
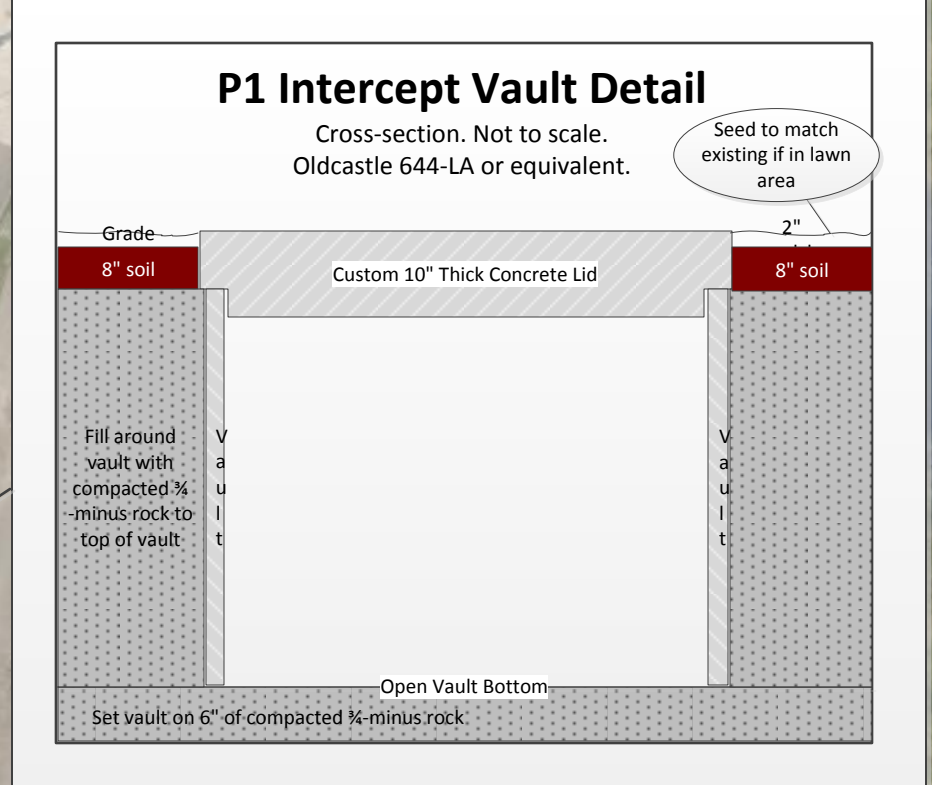
Cable Pulls

- C1. Head End to Oregon Hall. 432 strand SM ribbon-type. Approx. 8,825' w/ service loops. Label: "DAS Headend to Oregon Hall".
- C2. Head End to Moshofsky. 288 strand SM ribbon-type. Approx. 4,268' w/ service loops. Label: "DAS Headend to Moshofsky".
- C3. (Additive Alternate #2) Moshofsky to Oregon Hall. 144 strand SM loose-tube. Approx. 6,499' w/ service loops. Label: "Moshofsky to Oregon Hall".

- Landmarks**
- A. New MLK East vault
 - B. New UO Transition vault
 - C. Existing (1) 1/4" conduit stubbed under concrete
 - D. Existing North Ticket vault
 - E. Existing South Gate vault
 - F. Existing Moshofsky Loading Dock vault
 - G. Canoe Canal Bridge
 - H. Existing Canoe Channel vault
 - J. New Intercept vault
 - K. Frohnmayer/Autzen Footbridge
 - L. Riverfront Bike Circle vault
 - M. Duct-to-Tunnel transition near Millrace Studios
 - N. Tunnel-to-Duct transition near LSB/Science Complex
 - P. Oregon Hall vault

Approximate Pathway Lengths (excluding service loops)

- 2,766' MLK East vault [A] to Moshofsky Loading Dock vault [F]
- 2,245' MLK East vault [A] to South Gate vault [E]
- 2,570' South Gate vault [E] to Riverfront Bike Circle vault [L]
- 1,935' Riverfront Bike Circle vault [L] to Oregon Hall vault [P]



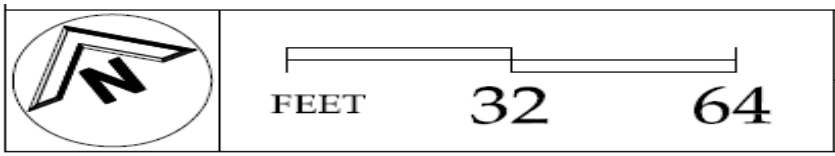
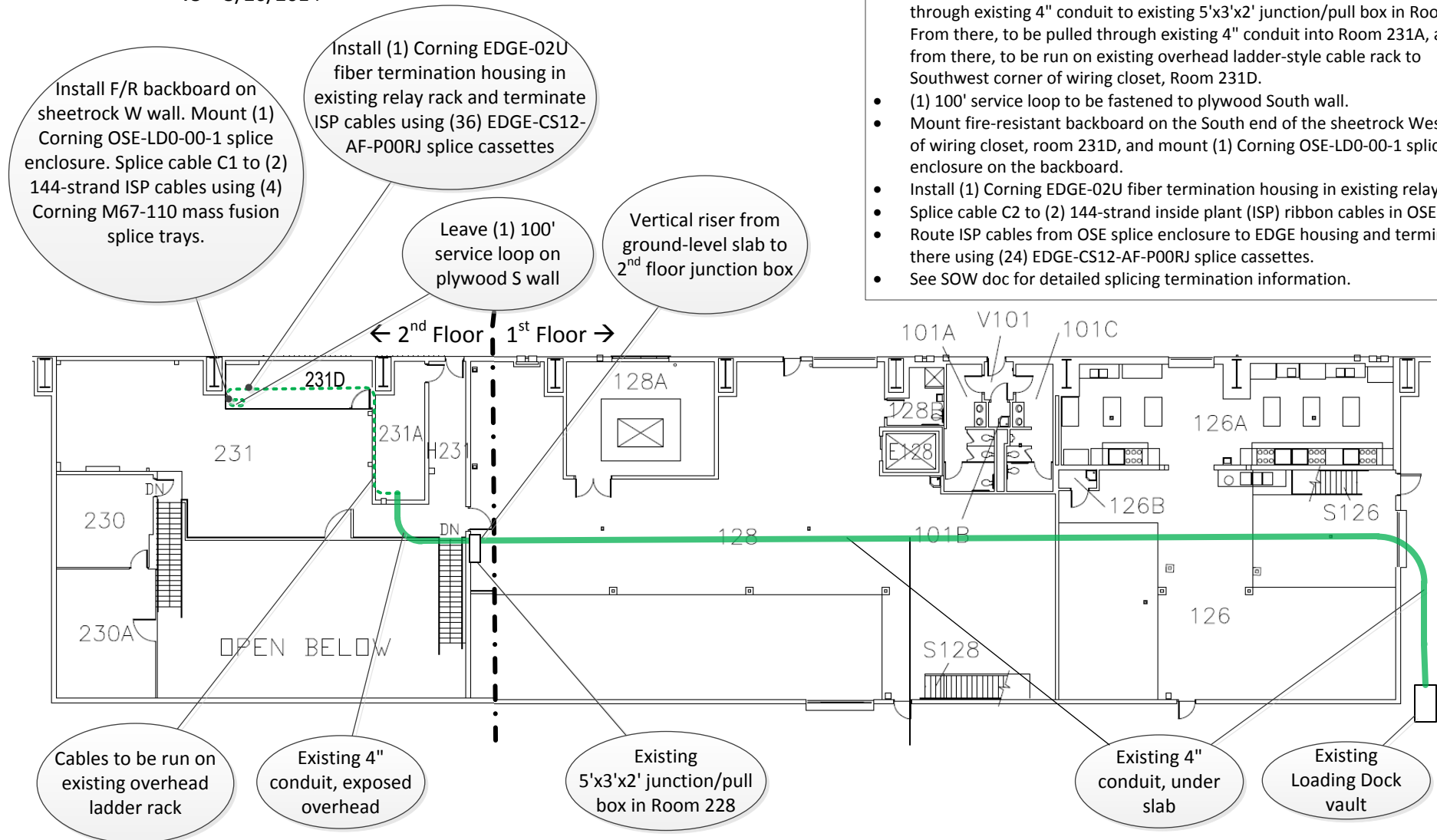
Oregon Hall Interior Routing

- Cable C1 (and cable C3, Additive Alternate) to be pulled into building from Oregon Hall vault [P] and to terminate in Oregon Hall Basement switchroom, Room 3A.
- (1) 100' service loop for each cable to be left in switchroom, Room 3A.
- Total approximate cable length including service loop: 150'
- See separate "Oregon Hall Interior Routing Detail" drawing and the SOW doc.

Moshofsky Interior Routing Detail

v5 – 3/26/2014

- Total approximate cable length including (1) 100' service loop: 400'.
- See also, SOW doc and Plan Drawing.
- Cable C2 (288-strand) to be pulled from Moshofsky Loading Dock vault through existing 4" conduit to existing 5'x3'x2' junction/pull box in Room 228. From there, to be pulled through existing 4" conduit into Room 231A, and from there, to be run on existing overhead ladder-style cable rack to Southwest corner of wiring closet, Room 231D.
- (1) 100' service loop to be fastened to plywood South wall.
- Mount fire-resistant backboard on the South end of the sheetrock West wall of wiring closet, room 231D, and mount (1) Corning OSE-LD0-00-1 splice enclosure on the backboard.
- Install (1) Corning EDGE-02U fiber termination housing in existing relay rack.
- Splice cable C2 to (2) 144-strand inside plant (ISP) ribbon cables in OSE.
- Route ISP cables from OSE splice enclosure to EDGE housing and terminate there using (24) EDGE-CS12-AF-P00RJ splice cassettes.
- See SOW doc for detailed splicing termination information.



Oregon Hall Interior Routing Detail

v5 – 3/27/2014

- Total approximate cable length including (1) 100' service loop: 150'.
- See also, SOW doc and Plan Drawing.
- Cable C1 (432 strand) to be pulled from Oregon Hall vault through existing 4" conduit into Oregon Hall switchroom, Room 3A to marked area on West wall approximately 10' South of Northwest corner.
- (1) 100' service loop to be left on existing strut on West wall just South of Northwest corner.
- Mount (1) Corning OSE-LD0-00-1 splice enclosure in marked area on West wall.
- Install (1) Corning EDGE-04U fiber termination housing in existing relay rack.
- Splice cable C1 to (3) 144-strand inside plant (ISP) ribbon cables in OSE using (6) Corning M67-110 mass fusion splice trays.
- Route ISP cables from OSE splice enclosure to EDGE housing and terminate there using (36) EDGE-CS12-AF-P00RJ splice cassettes.
- See SOW doc for more detailed splicing and termination information.

