University of Oregon
Knight Library

Elevator #4 Replacement

Project Manual

November 18, 2013

Set No. ____

BHE Project No. 8900-002-13

BALZHISER & HUBBARD ENGINEERS

Mechanical • Electrical • Civil • Surveying
100 West 13th Avenue, Eugene, Oregon 97401
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UNIVERSITY OF OREGON

Knight Library Elevator #4
Replacement

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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 public improvement project at Capital Construction Offices 1205 Franklin Blvd, until **2:00 PM**, **Pacific Time, January 6, 2014** ("Closing Date and Time") for the Knight Library Elevator #4 Replacement project located on the campus of the University of Oregon, in Eugene, Oregon ("Project"). The project includes replacing the elevator controller and elevator motor, refurbishment of elevator car, upgrade elevator components located in the elevator shaft, electrical upgrades to receptacles and lighting in elevator pit and penthouse, provide mechanical cooling of elevator machine room.

A mandatory pre-bid conference will be conducted at 2:00 PM, Pacific Time, December 3, 2013. Bidders shall meet with OUS Representative at Knight Library building, in main NW library lobby for that purpose. 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.

Questions and requests for clarifications will be accepted until 2:00 PM, Pacific Time, December 18, 2013.

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/).**

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 Knight Library Elevator #4 Replacement

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.

RESERVED

OREGON UNIVERSITY SYSTEM

STANDARD RETAINER CONTRACT

BID FORM

OUS CAMPUS: UNIVERSITY OF OREGON

PROJECT: Knight Library Elevator #4 Replacement

BID CLOSING DATE: Monday, January 6, 2014 at 2:00 PM

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
1205 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)

• Any ADDENDA numbered ____ through____, inclusive *(fill in blanks).*

2. The work shall be completed within the time stipulated and specified in Division 1, Section 01 11 00, of the Specifications.

3. 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.

4. 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.

5. 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.

6. 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.

7. 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.

8. 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.

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

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

11. 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.

12. 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.

*** * * * * *E N D O F B I D* * * * * ***

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 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.

TABLE OF SECTIONS

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 executed 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 be in the form required by OUS and as posted from time to time on the OUS website and shall include the total number of contracts and subcontracts awarded to MWESB enterprises and the dollar value of their respective contracts and subcontracts. The annual reports shall include the total number of contracts and subcontracts awarded to MWESB enterprises, the dollar value of each, and the expenditure toward each contract and subcontract during the previous twelve (12) months. The final report shall include the total number of contracts and subcontracts awarded to MWESB enterprises and the dollar value of their respective contracts and subcontracts including all 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 of any form of defense or immunity, whether sovereign immunity, governmental immunity, immunity based on the Eleventh Amendment to the Constitution of the United States or otherwise, from any claim or from the jurisdiction of any court. CONTRACTOR, BY EXECUTION OF THIS CONTRACT, HEREBY CONSENTS TO THE IN PERSONAM JURISDICTION OF THE COURTS REFERENCED IN THIS SECTION B.16.

B.17 ALLOWANCES

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

B.17.2 Unless otherwise provided in the Contract Documents:

(a) when finally reconciled, allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

(b) Contractor's costs for unloading and handling at the site, labor, installation costs, Overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Price but not in the allowances;

(c) whenever costs are more than or less than allowances, the Contract Price shall be adjusted accordingly by 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 Owner agree that a differing site condition exists, any adjustment to compensation or Contract Time will be determined based on the process set forth in Section D.1.5 for adjustments to or deletions from Work. If the Owner disagrees that a differing site condition exists and denies Contractor's request for additional compensation or Contract Time, Contractor may proceed to file a Claim under Section D.3, Claims Review Process.

(c) To the extent caused by Force Majeure acts, events or occurrences that could not have been avoided by the exercise of care, prudence, foresight, and diligence on the part of the Contractor or its Subcontractors.

(d) To the extent caused by adverse weather conditions. Any adverse weather conditions must be substantiated by documentary evidence that weather conditions were abnormal for the specific time period claimed, could not have been anticipated by the Contractor, and adversely impacted the project in a manner that could not be avoided by rescheduling the Work or by implementing measures to protect against the weather so that the Work could proceed. A rain, windstorm, high water, or other natural phenomenon for the specific locality of the Work, which might reasonably have been anticipated from the previous 10-year historical records of the general locality of the Work, shall not be construed as abnormal. The parties agree that rainfall greater than the following levels cannot be reasonably anticipated:

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

(ii) daily rainfall equal to, or greater than, 0.75 inch at any time.

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

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

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

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

(b) Contractor may be entitled to additional Contract Time for Unavoidable Delays described in Section D.2.1.2(c) and (d).

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

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

D.3 CLAIMS REVIEW PROCESS

D.3.1 All Contractor Claims shall be referred to the Owner for review. Contractor's Claims, including Claims for adjustments to compensation or Contract Time, shall be submitted in writing by Contractor to the Owner within five (5) Days after a denial of Contractor's initial request for an adjustment of Contract terms, payment of money, extension of Contract Time or other relief, provided that such initial request has been submitted in accordance with the requirements and within the time limits

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

E.3 PAYROLL CERTIFICATION REQUIREMENT

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

E.4 DUAL PAYMENT SOURCES

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

E.5 RETAINAGE

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

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

E.5.1.2 Contractor may request in writing:

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

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

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

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

E. 5.1.3 The retainage held by Owner shall be included in and paid to the Contractor as part of the final payment of the Contract Price. The Owner shall pay to Contractor interest at the rate of two-thirds of one percent per month on the final payment due Contractor, interest to commence forty five (45) Days after the date which Owner receives Contractor's final approved application for payment and Work under the Contract has been completed and accepted and to run until the date when final payment is tendered to Contractor. The Contractor shall notify Owner in writing when the Contractor considers the Work complete and deliver to Owner its final application for payment and Owner shall, within 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 Owner that the Contractor has deposited in an escrow account with a bank or trust company, in a manner authorized by the Owner, bonds and securities of equal value of a kind approved by the Owner and such bonds and securities have in fact been deposited.

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

E.6 FINAL PAYMENT

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

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

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

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

SECTION F
JOB SITE CONDITIONS

F.1 USE OF PREMISES

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

F.2 PROTECTION OF WORKERS, PROPERTY AND THE PUBLIC

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

F.2.2 Contractor shall take all necessary precautions for the safety of all personnel on the job site or otherwise engaged in the undertaking of the Work and shall comply with the Contract Documents, best practices and all applicable provisions of federal, state and municipal safety laws and building and fire codes to prevent accidents or injury to persons on, about or adjacent to the premises where the Work is being performed. Contractor shall erect and properly maintain at all times, as required by the conditions and progress of the Work, all necessary safeguards for protection of workers and the public against any hazards created by construction. Contractor shall designate a responsible employee or associate on the Work site, whose duty shall be the prevention of accidents. The name and position of the person designated shall be reported to the Owner. The Owner has no responsibility for Work site safety. Work site safety shall be the responsibility of the Contractor.

F.2.3 Contractor shall not enter upon private property without first obtaining permission from the property owner or its duly authorized representative. Contractor shall be responsible for the preservation of all public and private property along and adjacent to the Work contemplated under the Contract and shall use every precaution necessary to prevent damage thereto. In the event the Contractor damages any property, the Contractor shall at once notify the property owner and make, or arrange to make, full restitution. Contractor shall, immediately and in writing, report to the Owner, all pertinent facts relating to such property damage and the ultimate disposition of the claim for damage.

F.2.4 Contractor shall be responsible for protection of adjacent work areas including impacts brought about by activities, equipment, labor, utilities, vehicles and materials on the site.

F.2.5 Contractor shall at all times direct its activities in such a manner as to minimize adverse effects on the environment. Handling of all materials shall be conducted so no release will occur that may pollute or become hazardous.

F.2.6 In an emergency affecting the safety of life or limb or of the Work or of adjoining property, the Contractor, without special instruction or authorization from the Owner, shall act reasonably to prevent threatened loss or injury, and shall so act, without appeal, if instructed by the Owner. Any compensation claimed by the Contractor on account of emergency work shall be determined in accordance with section D.

F.3 CUTTING AND PATCHING

F.3.1 Contractor shall be responsible for coordinating all cutting, fitting, or patching of the Work to make its several parts come together properly and fit to receive or be received by work of other contractors or Subcontractors shown upon, or reasonably implied by, the Contract Documents.

F.3.2 Contractor shall be responsible for restoring all cut, fitted, or patched surfaces to an original condition; provided, however, that if a different condition is specified in the Contract Documents, then Contractor shall be responsible for restoring such surfaces to the condition specified in the Contract Documents.

F.4 CLEANING UP

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

F.5 ENVIRONMENTAL CONTAMINATION

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

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

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

(a) properly handle, use and dispose of all environmental pollutants and hazardous substances or materials brought onto the Work site, in accordance with all Applicable Laws;

(b) be responsible for any and all spills, releases, discharges, or leaks of (or from) environmental pollutants or hazardous substances or materials which Contractor has brought onto the Work site; and

(c) promptly clean up and remediate, without cost to the Owner, such spills, releases, discharges, or leaks to the Owner's satisfaction and in compliance with all Applicable Laws.

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

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

(b) Whether amount of items released is EPA/DEQ reportable, and, if so, when reported.

(c) Exact time and location of release, including a description of the area involved.

(d) Containment procedures initiated.

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

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

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

F.6 ENVIRONMENTAL CLEAN-UP

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

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

F.7 FORCE MAJEURE

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

SECTION G
INDEMNITY, BONDING, AND INSURANCE

G.1 RESPONSIBILITY FOR DAMAGES / INDEMNITY

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

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

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

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

G.2 PERFORMANCE AND PAYMENT SECURITY; PUBLIC WORKS BOND

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

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

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

G.3 INSURANCE

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

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

G.3.3 Builder's Risk Insurance:

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

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

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

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

G.3.4 General Liability Insurance:

G.3.4.1 Commercial General Liability: Upon 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 remains in effect. Any failure to comply with the reporting provisions of this insurance, except for the potential exhaustion of aggregate limits, shall not affect the coverages provided to the Owner and its institutions, divisions, officers, and employees.

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

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

building and/or floor where applicable. If Owner shall so elect, Contractor shall provide the schedule in CPM format showing the graphical network of planned activities, including i) a reasonably detailed list of all activities required to complete the Work; ii) the time and duration that each activity will take to completion; and iii) the dependencies between the activities. Schedules lacking adequate detail, or unreasonably detailed, will be rejected. The schedule shall include the following: Notice to Proceed or the date the Work commences, if no Notice to Proceed is issued by Owner, Substantial Completion, and Final Completion. Schedules shall be updated monthly, unless otherwise required by the Contract Documents, and submitted with the monthly application for payment. Acceptance of the Schedule by the Owner does not constitute agreement by the Owner as to the Contractor's sequencing, means, methods, or durations. Any positive difference between the Contractor's scheduled completion and the Contract completion date is float owned by the Owner. Owner reserves the right to negotiate the float if it is deemed to be in Owner's best interest to do so. In no case shall the Contractor make a claim for delays if the Work is completed within the Contract Time but after Contractor's scheduled completion. **H.3 PARTIAL OCCUPANCY OR USE**

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

SECTION I
CORRECTION OF WORK

I.1 CORRECTION OF WORK BEFORE FINAL PAYMENT

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

I.2 WARRANTY WORK

I.2.1 Neither the final certificate of payment nor any provision of the Contract Documents shall relieve the Contractor from responsibility for defective Work and, unless a longer period is specified, Contractor shall correct all defects that appear in the Work within a period of one year from the date of issuance of the written notice of Substantial Completion by the Owner except for latent defects which will be remedied by the Contractor at any time they become apparent. The Owner shall give Contractor notice of defects with reasonable promptness. Contractor shall perform such warranty work within a reasonable time after Owner's demand. If Contractor fails to complete the warranty work within such period as Owner determines reasonable, or at any time in the event of warranty work consisting of emergency repairs, Owner may perform such work and Contractor shall reimburse Owner all costs of the same within ten (10) Days after demand, without affecting Contractor's obligations. The Contractor shall perform the warranty Work by correcting defects within twenty-four (24) hours of notification by Owner, unless otherwise specified in the Contract Documents. Should the Contractor fail to respond within the specified response time, the Owner may, at its option, complete the necessary repairs using another contractor or its own forces. If Owner completes the repairs using Owner's own forces, Contractor shall pay Owner at the rate of one and one-half (1½) times the standard hourly rate of Owner's forces, plus related overhead and any direct non-salary costs. If Owner completes the repairs using another contractor, Contractor shall pay Owner the amount of Owner's direct costs billed by the other contractor for the work, plus the direct salary costs and related overhead and direct non-salary expenses of Owner's forces who are required to monitor that contractor's work. Work performed by Owner using Owner's own forces or those of another contractor shall not affect the Contractor's contractual duties under these provisions, including warranty provisions.

I.2.2 Nothing in this Section I.2 shall negate guarantees or warranties for periods longer than one year including, without limitation, such guarantees or warranties required by other sections of the Contract Documents for specific installations, materials, processes, equipment or fixtures.

I.2.3 In addition to Contractor's warranty, manufacturer's warranties shall pass to the Owner and shall not take effect until such portion of the Work covered by the applicable warranty has been accepted in writing by the Owner.

I.2.4 The one-year period for correction of Work shall be extended with respect to portions of Work performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work, and shall be extended by corrective Work performed by the Contractor pursuant to this Section, as to the Work corrected. The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

I.2.5 Nothing contained in this Section I.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the period for correction of Work as described in this Section I.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

I.2.6 If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Price will be reduced as appropriate and

equitable. Such adjustment shall be effected whether or not final payment has been made.

SECTION J
SUSPENSION AND/OR TERMINATION OF THE WORK

J.1 OWNER'S RIGHT TO SUSPEND THE WORK

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

(a) Failure of the Contractor to correct unsafe conditions;

(b) Failure of the Contractor to carry out any provision of the Contract;

(c) Failure of the Contractor to carry out orders;

(d) Conditions, in the opinion of the Owner, which are unsuitable for performing the Work;

(e) Time required to investigate differing site conditions;

(f) Any reason considered to be in the public interest.

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

J.2 CONTRACTOR'S RESPONSIBILITIES

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

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

J.3 COMPENSATION FOR SUSPENSION

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

J.4 OWNER'S RIGHT TO TERMINATE CONTRACT

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

(a) If Contractor should, voluntarily or involuntarily, seek protection under the United States Bankruptcy Code and Contractor as debtor-in-possession or the Trustee for the estate fails to assume the Contract within a reasonable time;

(b) If Contractor should make a general assignment for the benefit of Contractor's creditors;

(c) If a receiver should be appointed on account of Contractor's insolvency;

(d) If Contractor should repeatedly refuse or fail to supply an adequate number of skilled workers or proper materials to carry on the Work as required by the Contract Documents, or otherwise fail to perform the Work in a timely manner;

(e) If Contractor should repeatedly fail to make prompt payment to Subcontractors or for material or labor, or should disregard laws, ordinances or the instructions of the Owner; or

(f) If Contractor is otherwise in breach of any part of the Contract.

(g) If Contractor is in violation of Applicable Laws, either in the conduct of its business or in its performance of the Work.

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

J.5 TERMINATION FOR CONVENIENCE

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

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

J.6 ACTION UPON TERMINATION

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

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

I.6.3 Upon Owner's notice of termination pursuant to either Section J.4 or J.5, if Owner shall so elect, Contractor shall assign to the Owner such subcontracts and orders as Owner shall specify. In

the event Owner elects to take assignment of any such subcontract or order, Contractor shall take such action and shall execute such documents as Owner shall reasonably require for the effectiveness of such assignment and Contractor shall ensure that no contractual arrangement between it and its subcontractors or suppliers of any tier or sub-tier shall prevent such assignment.

SECTION K
CONTRACT CLOSE OUT

K.1 RECORD DOCUMENTS

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

K.2 OPERATION AND MAINTENANCE MANUALS

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

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

K.4 TRAINING

As part of the Work, and prior to submission of the final application for payment, the Contractor shall schedule with the Owner training sessions for all equipment and systems as required by the Contract Documents. Contractor shall schedule training sessions at least two weeks in advance of the date of training to allow Owner to provide its personnel with adequate notice. The O & M Manual shall be used as a basis for training. Training shall be a formal session conducted at the Work site 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:*	$_____
* *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 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: July 1, 2013
http://www.oregon.gov/boli/WHD/PWR/Pages/July_2013_Index.aspx

As Amended: October 1, 2013
http://www.oregon.gov/boli/WHD/PWR/docs/October_1_2013_Amendment.pdf

CapCon MWESB Project Contract Report

File Version 4.10.13

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 helps 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.

Oregon University System

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	

Oregon University System

CapCon MWESB Subcontractor Report

Name of MWESB General/ Subcontractor/ Supplier	State of Oregon MWESB Certification Number	Self-Identified or Other Certified	Initial Sub-Contract Value	Sub-Contract value billed within the fiscal year (July 1-June 30)	Final Sub-Contract Value	Minority-Owned	Women-Owned	Emerging Small Business

SECTION 01 11 00

SUMMARY OF WORK

Part 1 - General

1.01 CONTRACT DESCRIPTION

A. Project Locations:
   1. Knight Library Elevator #4: 1501 Kincaid St, Eugene, Oregon.

B. Refurbishment of existing elevator controller, elevator car and associated equipment.

C. The work covered in the contract documents includes, but is not limited to, all necessary materials and labor to: replacing elevator controller and elevator motor, refurbishment of elevator car, upgrade elevator components located in the elevator shaft, electrical upgrades to receptacles and lighting in elevator pit and penthouse, install new panelboard in elevator machine room, provide mechanical cooling of elevator machine room, provide elevator recall panel and associated smoke detectors.

D. Contractor's Duties:
   1. Provide and pay for labor, materials, tools, equipment, superintendence, temporary facilities and services necessary for proper execution and completion of the work.
   2. Comply with building codes, ordinances and regulations of public authorities.
   3. Obtain all permits, arrange for required inspections, and provide approved inspection reports to Owner per Section 01 77 00. Owner will pay all plan check, systems development, and permit fees.

E. Milestones:
   1. Start Construction..... June 18, 2014
   2. Project Substantial Completion Date ..... September 16, 2014
   3. Final Completion Date..... September 26, 2014

F. Do not commence Work until after execution of the Agreement, and receipt of Notice to Proceed from Owner.

1.02 CONTRACTORS USE OF PREMISES

A. Contractor shall limit use of the premises for work and storage to allow for:
   1. Public access around the facility.
   2. Owner access to the facility.
   3. Security.
   4. Safe entry and exit for vehicles and pedestrians.

B. Coordinate operations with the Owner's Representative during the construction period.

C. Limit Contractor's employee parking to locations designated at the Pre-construction Conference.

D. Site visits for the purpose of dimensional verification and coordination will be allowed before the on-site Work start date but must be coordinated with the Owner's Representative.

E. All required shutdowns must be requested by the Contractor to the Owner’s Project Manager a minimum of two (2) weeks in advance. Coordinate duration and scheduling of the shutdown with the Owner's Representative.

F. Contractor shall coordinate access to premises with Owner's Representative for execution of the work. Emergency situations may cause the temporary suspension of the work.

G. Confine operations at site to areas permitted by Owner's Representative.

H. Do not unreasonably encumber Site with materials or equipment. Contractor shall move any stored products, under Contractor's control, which interfere with operations of Building.

I. Do not load structure with weight that will endanger structure.

J. Assume full responsibility for protection and safekeeping of products and equipment stored on premises.

K. Obtain and pay for use of additional storage or work areas required for operations.

L. In general storage and/or parking is not available in this area.

M. For all disruptive, noise, odor, etc work within occupied buildings (or close neighboring buildings) the Contractor must notify the Owner's Project Manager for distribution of such notice to campus a minimum of 48 hours prior to start of such work.

N. Owner will provide two hanging type parking permits for use by the Contractor during the project construction period. Any additional space or extension of parking beyond the construction period can be arranged at the Contractor's expense through the University of Oregon, Office of Public Safety, 541-346-5444.

1.03 OWNER OCCUPANCY

A. Owner, staff, and students will partially occupy the building during construction. Maintain full required egress from building during the construction period.

B. All existing building systems shall be operational during the construction period.

C. Coordinate with owner to minimize disruption or interruption of building access, exitways, and utilities.

D. Coordinate construction schedule and site operations with Owner's Representative to eliminate schedule conflicts and to facilitate Owner, staff and student use of the site. On-site work hours are 7:00 a.m. to 5:00 p.m., unless specifically modified in writing by the Owner's Project Manager.

1.04 EXAMINATION OF SITE

A. Data in these Specifications and on the Drawings are as accurate as possible, but are not guaranteed. Bidders shall visit the site, familiarize themselves with all existing conditions and be prepared to carry out the work within the existing limitations. The Contractor shall verify locations, levels, distances, conditions of finishes, and features related to the improvements that may affect the work. No allowances will be made in the Contractor's behalf for any extra expense resulting from failure or neglect in determining the conditions under which work is to be performed.

1.05 CHANGES TO THE WORK

A. Changes to the work may be initiated by Engineer, Owner, or Contractor. Contractor is not to proceed with any changes to the work until request has been made in writing. Changes shall be made in accordance with Section 01 26 00 Change Order Procedures.

1.06 MATERIALS AND PRODUCT OPTIONS

A. Product listings are for informational purposes establishing a general standard of quality and the University of Oregon is making no warranty of availability or fitness of the products for use. See Section 01 16 00, Material and Equipment, and Section 01 25 00, Substitutions and Product Options.

1.07 SAFETY

A. Precaution shall be exercised at all times for the protection of persons (including employees) and property. The safety provisions of applicable laws, building and construction codes shall be observed. In no case shall the Owner or Engineer be responsible for construction means, methods, techniques, sequences or procedures or for safety precautions and programs in connection with the work, nor shall the Owner or Engineer be responsible for the Contractor's failure to employ proper safety procedures.

1.08 REUSE OF EXISTING MATERIAL

A. Except as specifically indicated or specified, materials and equipment removed from existing construction shall not be used in the completed Work.

B. For material and equipment specifically indicated or specified to be reused in the Work:
   1. Use special care in removal, handling, storage, and reinstallation to assure proper function in the completed Work.
   2. Arrange for transportation, storage, and handling of products which require off site storage, restoration, or renovation. Pay costs for such work.
   3. Contractor shall be responsible for removal and reinstallation of the item as well as supporting components.

1.09 MATERIALS AND EQUIPMENT

A. Unless otherwise specified, material and equipment shall be new; free from defects impairing strength, durability, and appearance; of current manufacture. Items specified shall be considered minimum as to quality, function, capacity, and suitability for application intended.

B. Items incorporated into the Work shall conform to applicable specifications and standards designated, and shall be of size, make, type, and quality specified, unless otherwise approved.

C. Product listings are for informational purposes establishing a general standard of quality and the Owner is making no warranty of availability or fitness of the products for use. Refer to Section 01 60 00, MATERIAL AND EQUIPMENT, and Section 01 25 00, SUBSTITUTIONS AND PRODUCT OPTIONS.

1.10 MANUFACTURED AND FABRICATED PRODUCTS

A. Design, fabricate, and assemble in accordance with current best engineering, industry, and shop practices. Manufacture like parts of duplicate units to standard size and gauge to make them interchangeable.

B. Two or more items of the same kind shall be identical and made by the same manufacturer.

1.11 USE OF SITE

A. Work Area Access: Buildings may be partially occupied during work. Access to the work area will be available on a week day basis from approximately 7:00 a.m. to 5:00 p.m. Coordinate all other work hour schedules with Owner so as not to interfere with Owner's use of the building.

B. Limit use of the premises to construction activities in areas indicated; allow for student occupancy, subject to approval by an Owner’s project manager.

C. Site Access: Maintain drives and building entrances and exits clear at all times to Owner's, employees, and public access and for use by emergency personnel. Do not use these areas for parking or storage. Schedule deliveries to minimize space and time requirements for storage of materials at site.

D. Parking: Contractor may use existing parking areas as approved by Owner’s Project Manager.

E. Contractor Staging Areas: Limit staging to areas as approved by Owner’s Project Manager.

F. Construction Operations: Limited to areas indicated on Drawings.

1.12 POTENTIALLY HAZARDOUS PRODUCTS

A. The Owner attempts to maintain a safe and healthy environment for students and staff. The Contractor is therefore required to follow Owner guidelines controlling the use of potentially hazardous products and to use these products in a safe manner.

B. MSDS information is required for all potentially hazardous products. The Owner's Project Manager will review these and determine what, if any, mitigation procedures will be required.

C. Contractor is to maintain and post copies of all MSDS information at the project site and adhere to the required controls.

D. Contractor is to ensure that work area by students and teachers is restricted. The Owner will provide signage appropriate for this purpose. The Contractor is to construct and maintain appropriate barriers.

1.13 PREPARATION

A. Inspect existing conditions, project requirements and the Contract Documents. Verify that materials and equipment being furnished meet requirements specified.

1.14 MATERIAL HANDLING

A. If, in the opinion of the Contractor, lifting devices are necessary for the proper and efficient movement of materials, comply with these requirements;
   1. Use only experienced personnel.
   2. Remove equipment as soon as possible after task is ended.
   3. Coordinate the placement of such equipment with the Owner's Representative to insure that utility tunnels, utilities and surfaces are not damaged.
   4. Obtain required permits and meet the requirements of governing authorities regarding street and sidewalk closures, safety, noise, and other applicable regulations.

1.15 QUALITY OF WORK

A. Unless otherwise specified, perform the Work using workers skilled in the particular type of work involved.

B. Should the Owner, in writing, deem anyone on the Work incompetent or unfit for the assigned duties, dismiss the worker immediately or reassign the worker to a different task requiring a lesser degree of competence.

C. Work shall be first class in every respect and Work performed shall be according to the best trade practices.

D. The Contractor shall maintain effective supervision on the project during any time Work is being performed. The Superintendent shall be the same person throughout the project and shall attend the Pre-construction Conference.

1.16 TESTING

A. The Owner reserves the right to perform any testing as may be required to determine compliance with the Project Manual. Costs for such testing will be the Owner's responsibility unless testing indicates noncompliance. Cost for such testing indicating noncompliance shall be borne by the Contractor. Non-complying Work shall be corrected and testing will be repeated until the Work complies with the Project Manual. Contractor will pay costs for retesting non-complying Work.

B. The Contractor shall cooperate in every respect with the activities of the testing agency.

Part 2 - Products (Not used)

Part 3 - Execution (Not used)

END OF SECTION

SECTION 01 23 00

ALTERNATES

Part 1 - General

1.01 DESCRIPTION

A. Alternates described in this Section may be exercised at the option of the Owner with execution of the Owner/Contractor Agreement.

B. The Owner generally exercises Alternates in numerical order. Alternates may be accepted, however, without regard to order or sequence. Such acceptance shall not impair selection of a low, responsible and responsive bidder to whom the Contract may be awarded under an equitable bid procedure.

C. Alternate: An amount proposed by Bidder and stated on Bid form, to be added to or deducted from the Base Bid amount when the Owner elects to implement the Scope of Work represented by the corresponding alternate as defined by the Contract Documents and including miscellaneous devices, appurtenances and accessories necessary for a complete installation regardless of whether specifically mentioned as part of the alternate.
   1. Additive Alternate: Adds to the Base Bid if selected for implementation by the Owner.
   2. Deductive Alternate: Deducts from the Base Bid if selected for implementation by the Owner.
   3. Alternate Sums Stated on the Bid Form: Valid for 90 days from the bid due date, and the Owner shall have the right to modify the Contract in accordance with the requirements for each and any Alternate at the as-bid sum during that period.

1.02 QUALITY ASSURANCE

A. Coordinate the Work of the various trades involved for each Alternate Accepted, and modify surrounding Work as required to complete the Project as intended.

B. Change-in-price figure for each Alternate, shall include incidental costs attributable to adjustments in the Work of other trades which may be required to achieve the contemplated and final conditions.

C. For questions regarding extent, scope, nature, or intent of alternate(s), contact Owner for clarification. Failure on the part of Contractor to clarify unclear items shall not relieve Contractor of responsibility for performing selected Alternate(s) in accordance with the intent and requirements of the Contract Documents.

D. Description of Alternates hereinafter is qualitative not quantitative. Contractor shall determine quantities of labor and materials and extent of same required to execute selected Alternates in accordance with the intent and requirements of the Contract Documents.

Part 2 - Products

2.01 GENERAL

A. The applicable Sections of the Specifications apply to the Work under each Alternate.

Part 3 - Execution

3.01 LIST OF ALTERNATES

A. There are no alternates for this project.

END OF SECTION

SECTION 01 25 00

SUBSTITUTIONS AND PRODUCT OPTIONS

Part 1 - General

1.01 DESCRIPTION

A. Section describes requirements for product substitutions during the course of Work.

1.02 CONTRACTOR'S OPTIONS

A. For products specified only by reference standards, select any product meeting standards by any manufacturer.

B. For products specified by naming products or manufacturers, select any product and manufacturer named.

C. For products specified by naming only one product and manufacturer when necessary there is no option.

1.03 SUBSTITUTIONS

A. During bidding period, Instructions to Bidders govern times for submitting requests for substitutions under requirements specified in this Section.

B. After Bid award, Engineer and Owner will consider formal requests for Contractor for substitution of products in place of those specified when submitted in accordance with the requirements of this Section. One or more of the following conditions must also be documented:
   1. Substitution shall be required for compliance with final interpretation of code requirements or insurance regulations.
   2. Substitution shall be due to unavailability of specified products, through no fault of Contractor.
   3. Substitution may be requested when subsequent information discloses inability of specified products to perform properly or to fit in designated space.
   4. Substitution may be due to manufacturer's or fabricator's refusal to certify or guarantee performance of specified product as required.
   5. Owners request.
   6. Reduction in Contract time or Contract sum. Substitution may be allowed if any product specified is significantly higher in cost than the proposed substitution and the proposed substitution receives the Engineers approval and the contractor is willing to negotiate a credit to the contract sum.

C. Submit seven copies of Request for Substitution. Include in request:
   1. Complete data substantiating compliance of proposed substitution with Contract Documents.
   2. Product identification, including manufacturer's name and address.
   3. Manufacturer's literature:
      a. Product description.
      b. Performance and test data.
      c. Reference standards.
   4. Samples.
   5. Name and address of similar projects on which product was used and date of installation.
   6. Itemized comparison of proposed substitution with product or method specified.
   7. Data relating to changes in construction schedule.

D. For requests submitted after Contract Award, provide accurate cost data on proposed substitution in comparison with product or method specified.

E. In making Request for Substitution, contractor represents:
   1. He has personally investigated proposed product or method and determined it equal or superior in all respects to that specified.

2. He will provide same guarantee for substitution as for product specified.
3. He will coordinate installation of accepted substitution into Work, making such changes as required for Work to be complete in all respects.
4. He waives all claims for additional costs related to substitution which consequently become apparent.
5. Cost data is complete and includes all related costs under his Contract, but excludes cost under separate contracts and Engineer redesign.

F. Substitutions will not be considered if:
1. They are indicated or implied on shop drawings or project data submittals without request submitted as specified in this section.
2. Acceptance will require substantial revision of Contract Documents.

1.04 ACCEPTANCE

A. If the Contractor complies with the requirements of this Section and in the Engineer's opinion, the proposed product is acceptable in lieu of the one or more specified, the Engineer will issue an Architect's Supplemental Instructions (AIA G710) where contract sum or time is not effected, or a Change Order Request where contract sum or time is effected.

Part 2 - Products (Not Used)

Part 3 - Execution (Not Used)

END OF SECTION

SECTION 01 26 00

CHANGE ORDER PROCEDURES

Part 1 - General

1.01 SECTION INCLUDES

A. Submittals.

B. Documentation of change in Contract Sum/Price and Contract time.

C. Change procedures.

D. Construction Change Directive

E. Stipulated sum change order.

F. Time and material change order.

G. Execution of change orders.

H. Correlation of Contractor submittals.

1.02 SUBMITTALS

A. Contractor shall submit in writing, the names of those individuals considered to be "authorized" to execute agreements, Change Orders, Construction Change Directives, certifications, etc. on behalf of the Contractor and be responsible for informing others in Contractor's employ or subcontractors of changes to the Work.

1.03 DOCUMENTATION OF CHANGE IN CONTRACT SUM/PRICE AND CONTRACT TIME

A. Maintain detailed records of work done on a time and material basis, submitted to Owner's representative daily. Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the Work.

B. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation.

C. On request, provide additional data to support computations:
   1. Quantities of products, labor, and equipment.
   2. Taxes, insurance and bonds.
   3. Overhead and profit.
   4. Justification for any change in Contract Time.
   5. Credit for deletions from Contract, similarly documented.

D. Support each claim for additional costs, and for work done on a time and material basis, with additional information:
   1. Origin and date of claim.
   2. Dates and times work was performed, and by whom.
   3. Time records and wage rates paid.
   4. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
   5. Submit an itemized list of labor and materials including not more than 15 percent overhead and profit with each Construction Change Directive.

1.04 CHANGE PROCEDURES

A. Comply with Oregon University System Standard General Conditions, Changes in Work Ordered by Owner and Basis of Adjustment in Contract Amount.

B. The Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract time by issuing supplemental written instructions.

C. The Engineer may issue a Proposal Request (PR) which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications, a change in Contract time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor will prepare and submit fixed price quotation within 5 working days.

D. The Engineer may issue an Engineer's Supplemental Instruction (ESI) which includes a detailed description of a proposed clarification with supplementary or revised Drawings and Specifications. Contractor will advise and submit fixed price quotation within 5 working days, if clarification has costs involved.

E. The Contractor may propose a change by submitting a request for change to the Engineer, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 25 00.

F. All Proposal Requests shall result in a Construction Change Directive (CCD) for review and action by Owner.

1.05 CONSTRUCTION CHANGE DIRECTIVE (CCD)

A. Engineer may issue a Construction Change Directive (CCD) signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

B. The document will describe changes in the Work, and will designate method of determining any change in Contract Sum/Price or Contract Time.

C. Contractor shall promptly execute the change in Work.

1.06 STIPULATED SUM CHANGE ORDER

A. Based on Construction Change Directive (CCD) and Contractor's fixed price quotation, a Change Order will be prepared and processed for those items accepted.

1.07 TIME AND MATERIAL CHANGE ORDER

A. Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

B. Engineer will recommend to the Owner any change allowable in Contract Sum/Price and Contract time as provided in the Contract Documents.

C. Maintain detailed records of work done on Time and Material basis, submitted to Owner's representative daily.

D. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.

1.08 EXECUTION OF CHANGE ORDERS

A. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

B. Change Orders are not authorized unless signed by Owner, Contractor, and Engineer.

C. Order of Signature: All Change Orders shall be signed in the following order:
   1. Contractor.
   2. Engineer.
   3. Owner.

1.09 CORRELATION OF CONTRACTOR SUBMITTALS

A. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum/Price.

B. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust time for other items of work affected by the change, and resubmit.

C. Promptly enter changes in Project Record Documents.

1.10 LOGS

A. Contractor shall maintain accurate logs for all Proposal Requests, Construction Change Directives, and Change Orders showing amount, status, etc.

B. Logs to be submitted with each Application for Payment.

Part 2 - Products (Not Used)

Part 3 - Execution

3.01 FORMS

A. Sample forms follow this Section.

END OF SECTION

SECTION 01 29 00

APPLICATIONS FOR PAYMENT

Part 1 - General

1.01 SECTION INCLUDES

A. Procedures for preparation and submittal of Applications for Payment.

1.02 FORMAT

A. AIA Document G702 - Application and Certificate for Payment 1992 Edition, including continuation sheets when required or Owner approved equal.

1.03 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
   1. Correlate line items in the Schedule of Values with other required administrative forms and schedule, including the following:
      a. Application for Payment forms with Continuation Sheets
      b. Submittals Schedule
      c. Contractor's Construction Schedule
   2. Provide a separate Schedule of Values for each Barnhart and Riley Halls, for maintaining an accounting of each building separately.
   3. Submit the Schedule of Values to Engineer and Owner at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Application for Payment.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each specification section.
   1. Identification: Include the following Project identification on the Schedule of Values.
      a. Project name and location
      b. Name of Architect
      c. Architect's project number
      d. Contractor's name and address
      e. Date of submittal
   2. Submit draft of AIA Document G703, Continuation Sheets or Owner approved equal.
   3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
   4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
   5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
      a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.
   6. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of the part of the Work.
   7. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
   8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
      a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.

9. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.04 PREPARATION OF APPLICATIONS

A. Present required information in typewritten form or on electronic media print, with a separate Application for Payment for each Barnhart and Riley Halls.

B. Execute certification by signature of authorized officer. Contractor shall designate in writing, the names of those individuals considered to be "authorized" to execute agreements, certifications, etc. on behalf of the Contractor.

C. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.

D. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of Work. Do not include change orders which have not been fully executed prior to the date of application for payment.

E. Prepare Application for Final Payment as specified in Section 01 77 00.

1.05 SUBMITTAL PROCEDURES

A. Submit 3 copies of each Application for Payment.

B. Submit an updated construction schedule with each Application for Payment.

C. Payment Period: Submit at monthly intervals.

D. Comply with General Conditions, Application for Payments by Contractor.

E. Provide Certificate of Insurance covering the value of materials stored off-site.

F. Pay Owner's and Engineer's travel and subsistence costs to inspect items stored off-site for which payment is requested.

G. Prevailing Wage Rates: Submit 3 copies of wage certifications with Application for Payment in accordance with ORS Chapter 279. Submit in accordance with prescribed schedule. Submit certified copies of wage certifications to State of Oregon, BOLI in accordance with ORS Chapter 279.

1.06 SUBSTANTIATING DATA

A. When Owner or Engineer requires substantiating information, submit data justifying dollar amounts in question.

B. Provide 3 copies of data with cover letter for each item submitted. Show application number and date, and line item by number and description.

1.07 PROGRESS SCHEDULE

A. Submit in accordance with Section 01 32 00.

Part 2 - Products (Not Used)

Part 3 - Execution (Not Used)

END OF SECTION

SECTION 01 31 00

COORDINATION

Part 1 - General

1.01 GENERAL

A. Coordinator: Contractor is responsible for overall coordination of Project.
   1. 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.
   2. Coordination shall not be limited to Contractor's activities under this project, but shall extend to all trades, delivery activities, and work of other projects including work of the Owner in accordance with General Conditions.
   3. Contractor shall coordinate all work so that all specified individual work tolerances are achieved. Tolerances shown or specified within assemblies are not cumulative.
   4. Schedule and coordinate the performance of all work on site with the Owner's Representative.

B. Schedule work in accordance with current Project Progress Schedule and other work in this space.
   1. Coordinate schedules of all trades.
   2. Verify timely deliveries of products for installation by all trades.
   3. Verify that labor and equipment are adequate for work and schedule.
   4. Verify that material deliveries are adequate to maintain schedule.

C. Coordinate changes to assure that:
   1. Requirements of Contract Documents are fulfilled.
   2. Changes in Contract requirements of all affected trades are reflected in executed Change Orders.

D. Maintain Record Documents.

E. Ascertain need for cutting and patching.
   1. Coordinate with work of other trades.

1.02 DIVISION OF RESPONSIBILITIES

A. For convenience, these Specifications are arranged in several trade sections, but in no case shall such separation be considered as the limits of the work required of any sub-contractor or trade. The terms and conditions of such limitations are wholly between the Contractor and the subcontractor(s).

1.03 PROJECT DRAWINGS

A. Mechanical, architectural, structural, and electrical drawings are diagrammatic. Additional components, offsets and bends may be required.

Part 2 - Products (Not Used)

Part 3 - Execution (Not Used)

END OF SECTION

SECTION 01 31 50

PROJECT MEETINGS

Part 1 - General

1.01 PRE-CONSTRUCTION MEETING

A. Engineer, Contractor, and Owner will meet prior to start of construction (within seven days after notice to proceed) to discuss at least the following topics and any others of mutual interest.
   1. Signed contracts.
   2. List of subcontractors.
   3. Insurance coverage.
   4. Bonds.
   5. Job Inspections.
   6. Early purchase of, and/or lead time requirements for material and equipment.
   7. Pre-purchased equipment
   8. Monthly payment date.
   9. Portion of site to be occupied by construction.
   10. Parking.
   11. Maintenance of access and safety.
   12. Processing of field decisions and change orders.
   13. Labor provisions.
   14. Material Submittals.
   15. Owner access during construction.
   16. Review of Contract Documents.
   17. Coordination procedures and separate contracts.
   18. Progress Schedule.
   19. Critical work sequencing.
   20. Safety and Emergency Procedures.
   21. Security Procedures
   22. Hazardous Materials.

1.02 PROGRESS MEETINGS

A. The Contractor will schedule and administer Progress Meetings and will:
   1. Prepare Agendas.
   2. Schedule progress meetings each week at time and day to be determined.
   3. Make physical arrangements for and preside at meetings.
   4. Record minutes and include decisions.
   5. Distribute copies of minutes to the following, within 4 days after meetings:
      a. Meeting participants
      b. Parties affected by decisions
      c. Owner
      d. Engineer
      e. Architect

B. Location of Meetings: Project site.

C. Attendance:
   1. The Owner or the Owner's Representative
   2. Contractor
   3. Subcontractors affected by agenda
   4. Project Engineer

5. Minimum Agenda:
6. Review and approve minutes from previous meeting.
7. Review work progress since previous meeting.
8. Discuss field observations, conflicts, and issues.
9. Review delivery schedules, construction schedule, and identify problems which impede planned progress.
10. Review proposed changes.
11. Material Submittals.
12. Note all new subcontractors performing work at the job site.

Part 2 - Products (Not Used)

Part 3 - Execution (Not Used)

END OF SECTION

SECTION 01 32 00

PROGRESS SCHEDULE

Part 1 - General

1.01 DESCRIPTION

A. WORK INCLUDED: Submit progress schedule as specified in this and other Sections.

B. Submit to Owner for Approval: Progress Schedules.

C. Owners Representative and Contracting Officer will review submittals for conformance with Contract Documents.

1.02 PROGRESS SCHEDULE AND PROGRESS REPORT REQUIREMENTS

A. Content:
   1. Show product delivery and installation dates for all major products.
   2. Show dates for Substantial Completion and Final Completion.
   3. Show anticipated dates for outages of any building utilities.

B. Updating:
   1. Indicate progress of each activity, show revised completion dates.
   2. Provide listing of current and anticipated accelerations and delays.
   3. Describe proposed corrective action when required.

1.03 CORRECTIONS

A. Owner will review for conformance with the contract documents and return the submittals requiring corrective action, with such corrections noted thereon.

B. Immediately incorporate required corrections in submittals and resubmit for further review, if required.

1.04 REQUIRED SUBMITTAL QUANTITIES TO CONTRACTING OFFICER

	Reproducible Transparencies	Opaque Prints
A. Construction Schedule: 8-1/2 x 11 in. size	0	1

1.05 SCHEDULE FOR SUBMITTALS: (QUANTITIES IN DAYS)

Contractor	First Submittal	Update and Resubmit
A. Progress	5 days after notice to proceed	Full Schedule - Monthly with pay request. 3 week look ahead - every two weeks

Part 2 – Products (Not Used)

Part 3 – Execution (Not Used)

END OF SECTION

SECTION 01 33 00

SUBMITTALS

Part 1 - General

1.01 SECTION INCLUDES

A. Submittal procedures.

B. Submittal Schedule.

C. Shop Drawings.

D. Product Data.

E. Samples.

F. Manufacturer's installation instructions.

G. Manufacturers' certificates.

1.02 RELATED SECTIONS

A. Section 01 45 00 - Quality Control: Manufacturers' field services and reports.

B. Section 01 77 00 - Contract Closeout: Contract warranties, bonds, manufacturers' certificates, and closeout submittals.

C. General Mechanical Provisions – As shown on drawings

D. Section 26 10 00 - General Electrical Provisions

1.03 SUBMITTAL SCHEDULE

A. Contractor to furnish Engineer with a list of submittals required by individual specification sections.

B. Coordinate schedule with Progress Schedule specified in Section 01 32 00 - Progress Schedule.

1.04 SUBMITTAL PROCEDURES

A. Submittal Format: Electronic and Hard-Copy. Provide Electronic copies of submittal information to the Engineer. A minimum of one Hard-Copy of the information must be submitted with the (the Hard-Copy will not be returned).

B. Submittal formats shall conform with the following requirements:
   1. Each hard-copy Submittal package shall be formatted as follows:
      a. Use three-ring loose leaf binders.
      b. Provide index referencing specification section and page.
      c. Tab individual sections.
   2. Each Electronic Submittal package shall be formatted as follows:
      a. The full extent of the submitted data shall be presented in a single electronic file on a CD-ROM.
      b. File Format Type: Adobe PDF, or universally readable equivalent.
      c. Scanned information: Minimum 400 dpi.
      d. Provide index referencing specification section and page.
      e. Bookmark individual sections.
      f. One file per CD-ROM.
         1) Format CD-ROM for use in PC compatible hardware
         2) Format CD-ROM so that additional files may be written to it (read-write).

C. Transmit one copy of each submittal with Contractors standard transmittal to the Engineer.

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

E. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate.

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

G. Schedule submittals to expedite the Project, and deliver to Engineer at business address. Coordinate submission of related items.

H. For each submittal, allow 10 days for Engineer’s review excluding delivery time to and from the contractor.

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

J. Provide space for Contractor and Engineer review stamps.

K. For submittals required to be revised and resubmitted, identify all changes made since previous submission.

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

M. Submittals not required in the Project Manual will not be recognized or processed.

1.05 SHOP DRAWINGS

A. Submit in the form of multiple opaque copies. Number required by Contractor, plus three which will be retained by Engineer, Owner, and consultants. At Contractors option submit one reproducible transparency and one opaque reproduction.

B. Shop Drawings: Submit for review. After review, produce copies and distribute in accordance with the Submittal Procedures article above and for record documents purposes described in Section 01 77 00 - Contract Closeout.

C. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

1.06 PRODUCT DATA

A. Submit the number of copies which the Contractor requires, plus three copies which will be retained by the Engineer.

B. Mark each copy to identify applicable products, models, options, and other data required by individual Sections. Supplement manufacturers' standard data to provide information unique to this Project.

C. Indicate Product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

D. Submit MSDS information for all products for which they are available.

E. After review distribute in accordance with the Submittal Procedures article above and provide copies for record documents described in Section 01 77 00 - Contract Closeout.

1.07 SAMPLES

A. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

B. Submit samples of finishes from the full range of manufacturers' standard colors, and in custom colors where specified, textures, and patterns for Engineer selection.

C. Include identification on each sample, with full Project information.

D. Submit the number of samples specified in individual specification sections; one of which will be retained by Engineer.

E. Reviewed samples which may be used in the Work are indicated in individual specification sections.

1.08 MANUFACTURER INSTALLATION INSTRUCTIONS

A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Engineer in quantities specified for Product Data.

B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.09 MANUFACTURER CERTIFICATES

A. When specified in individual specification sections, submit certification by manufacturer to Engineer, in quantities specified for Product Data.

B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Engineer.

1.10 SCHEDULE OF SUBMITTALS

A. Provide as required by individual sections.

Part 2 - Products (Not Used)

Part 3 - Execution (Not Used)

END OF SECTION

SECTION 01 45 00

QUALITY CONTROL

Part 1 - General

1.01 SECTION INCLUDES

A. Quality assurance - Control of installation.

B. Tolerances.

C. Manufacturers' field services and reports.

1.02 QUALITY ASSURANCE - CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform work by persons qualified to produce workmanship of specified quality.

F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.03 TOLERANCES

A. Monitor tolerance control of installed Products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.

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

1.04 MANUFACTURERS' FIELD SERVICES AND REPORTS

A. When specified in individual specification sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance of equipment as applicable, and to initiate instructions when necessary.

B. Submit qualifications of observer to Engineer 30 days in advance of required observations. Observer subject to approval of Engineer. Notify Engineer of time and date of manufacturer's on-site field service 10 days in advance of service.

C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

D. Submit report in duplicate within 30 days of observation to Engineer for information.

Part 2 - Products (Not Used)

Part 3 - Execution (Not Used)

END OF SECTION

SECTION 01 50 00

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

Part 1 - General

1.01 DESCRIPTION

A. Requirements for temporary services and facilities including utility services for construction and support facilities.

1.02 UTILITIES AVAILABILITY TO CONTRACTOR

A. For the purpose of construction, the Owner will furnish reasonable quantities of water and electricity to the contractor without charge.

B. The contractor shall be responsible for both temporary utility connections and disconnects, and shall obtain permission of the Owner's Representative prior to accomplishing either.

1.03 TEMPORARY LIGHTING

A. Provide temporary lighting throughout the construction period as required. Provide 5 foot candles minimum in occupied spaces during presence of authorized personnel and 10 foot candles minimum in areas of construction activity during scheduled work periods. Provide additional lighting for finish work when required.

1.04 TEMPORARY SUPPORT FACILITIES

A. Temporary Sanitary Facilities
   1. Contractor shall provide sanitary facilities in accordance with the following:
      a. Provide and maintain an adequate number of facilities for the use of persons employed on the Work during construction.
      b. Provide enclosed, weatherproof facilities with heat as required.
      c. Use of new or existing Owner's facilities will not be permitted.

B. Temporary heat and ventilation
   1. Minimum Interior Ventilation: Provide local exhaust ventilation to prevent harmful dispersal of hazardous substances into atmosphere at all times. Provide ventilation for materials being cured.
   2. Ventilation air must continue to be supplied to those areas outside of the active scheduled work boundary. Protect air intakes for building air systems from dust entry during construction.

C. Provide lifting devices necessary for the proper and efficient movement of materials; provide operating personnel for equipment as required. Allow use of all hoisting equipment on project during "off-hours" for the cost of the workers involved.

1.05 FIRST AID

A. Provide required first aid facilities as required by OSHA governing regulations.

1.06 FIRE PROTECTION

A. Fire Safety: Take precautions to prevent the possibility of fire resulting from construction operations. Particularly avoid hazardous accumulations of rubbish and unsecured flammable materials.

B. Fire Fighting Equipment: Provide emergency fire extinguishers of adequate type and quantity, properly maintained. Obtain local Fire department approval of emergency fire extinguisher.

C. Keep the local Fire Department's telephone number prominently displayed.

1.07 CONSTRUCTION AIDS

A. Provide and maintain temporary stairs, ramps, ladders, walkways, chutes, and material hoists for handling materials and proper execution of Work.

B. Construct and maintain to requirements of governing agencies. Furnish for safety of public and construction personnel.

C. Completely remove temporary materials and equipment upon completion of construction.

D. Repair damage caused by installation of temporary items and restore finishes to specified condition.

1.08 BARRIERS

A. Provide and maintain barricades around construction operations, as required to protect public, construction personnel, existing facilities and new Work.

1.09 PROTECTION OF WORK AND PROPERTY

A. Clean, repair, resurface, or restore existing surfaces to their original, or better, condition, or completely replace such surfaces to match existing, where damaged by construction operations.

B. The Owner will not be responsible for protection of materials or equipment from vandalism or theft. Security is the responsibility of the Contractor.

C. Protect adjacent new and existing construction, against spillage of materials used in carrying out Work.

D. Keep and store combustible materials at a reasonable distance from buildings.

1.10 POLLUTION CONTROL

A. The contractor shall at all times, on a continuous basis, during the course of this contract keep buildings and the adjoining paving and premises free from all waste materials and rubbish caused by his employees and/or his subcontractors.

B. Burning or burying of rubbish and waste materials on Site is prohibited. Provide dump box for collection of waste materials.

C. Disposal of volatile fluid wastes (such as mineral spirits, oil, or paint thinner) in storm or sanitary sewer systems is prohibited.

1.11 DISPOSAL AREAS

A. Disposal: Disposal of all waste materials and building debris waste items caused by the construction, will be off the site and will be the responsibility of the Contractor.

Part 2 - Products (Not Used)

Part 3 - Execution (Not Used)

END OF SECTION

SECTION 01 60 00

MATERIAL AND EQUIPMENT

Part 1 - General

1.01 DESCRIPTION

A. Section includes general requirements for handling and storage of construction materials.

1.02 JOB CONDITIONS

A. Manufacturer's Instructions: Make available, for consultation at job site during installation of the specific item, a copy of manufacturer's installation procedure. For those items provided by Owner, obtain manufacturer instructions from Owner.

1.03 MATERIAL AND EQUIPMENT SELECTION

A. Comply with standards and specifications including: Size, make, type and quality specified, or as approved in writing by the Engineer.

B. Manufactured and Fabricated products:
   1. Design, fabricate and assemble in accordance with the best engineering and shop practices.
   2. Manufacturer like parts of duplicate units to standard sizes and gauges, to be interchangeable.
   3. Two or more items of the same kind shall be identical and by the same manufacturer.
   4. Provide products suitable for service conditions.
   5. Adhere to equipment capacities, sizes and dimensions shown or specified unless variations are specifically approved in writing.

C. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

D. Select and install equipment to operate at full capacity without excessive noise or vibration.

1.04 MANUFACTURER'S INSTRUCTIONS

A. Perform work in accordance with manufacturer's printed installation instructions, obtain and distribute copies of such instructions to parties involved in the installation, including two copies to the Engineer.

B. Maintain one set of complete instructions at the job site during installation and until completion.

C. Handle, install, connect clean, condition and adjust products in strict accordance with the manufacturer's printed instructions and in conformity with specified requirements.
   1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with the Engineer for further instructions.
   2. Do not proceed with work without clear instructions.

1.05 TRANSPORTATION AND HANDLING

A. Coordinate product deliveries to avoid work schedule conflicts and/or delays.

B. Deliver products undamaged, in manufacturers' original containers, with labels intact and legible.

C. Immediately on delivery, inspect shipments to assure compliance with Contract Documents and approved submittals, and that products are properly protected and undamaged.

D. Provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.

1.06 STORAGE AND PROTECTION

A. Store products in accordance with Manufacturer's Instructions, with seals and labels intact and legible, and in a manner to assure they will remain free from damage or deterioration.
   1. Store products subject to damage by the elements in weather-tight enclosures.
   2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
   3. Protect equipment and systems from moisture, chemical, or mechanical damage before and after installation.
   4. Protect shafts and bearing housings from rust.

B. Exterior Storage:
   1. Store fabricated products above the ground, on blocking or skids, prevent soiling or staining. Cover products which are subject to deterioration with impervious sheet coverings, provide adequate ventilation to avoid condensation.
   2. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

C. Provide easy access for inspections of stored products. Make periodic inspections for stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.

D. Protection After Installation:
   1. Provide substantial coverings to protect installed products from traffic and subsequent construction operations.
   2. Plug or cap pipe and conduit openings to prevent the entrance of foreign matter. Remove when no longer needed.

Part 2 - Products

2.01 MATERIALS

A. All equipment, material, and articles incorporated into the work covered by the contract shall be new and of the most suitable grade for the purpose intended, unless otherwise specifically provided in this contract, and shall be asbestos free. References in the specifications to equipment, material, articles or patented processes by trade name, make, or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition. The Contractor may exercise the option to use any equipment, material, article, or process that, in the judgment of the Engineer, is equal to that named in the specification, unless otherwise specifically provided in this contract.

B. Furnish items new and free from defects; of size, make, type and quality specified, or equal.
   1. When two or more items of same kind are required under work, use items of single manufacturer except where specifically exempted.

C. Component parts of an assembly need not be the product of a single manufacturer unless otherwise indicated.

D. Capacities, rating, grades, thicknesses, requirements, and equipment sizes and dimensions shown or specified are minimum unless otherwise indicated.

2.02 PRODUCTS AND EQUIPMENT

A. Meet detailed requirements indicated in various sections and provide products and equipment suitable for installation shown. Products and equipment not meeting all specified requirements will not be accepted, even though specified by name along with other manufacturer.

B. Tolerances used in specified rating or testing standards will not be allowed in determining capacities of products and equipment.

C. The Drawings are based upon one of the specified manufacturers listed for each particular product or equipment item.
   1. The other specified manufacturers and other acceptable manufacturers of products and equipment may require deviations from the drawings to properly install the particular item in accord with manufacturer's recommendations and to provide the results required.
   2. Under this Contract provide all work essential to install this equipment at not change in Contract amount and provide shop drawings for review showing deviations required for installation of specific equipment item.

D. Electrical Products:
   1. The Contractor shall submit proof that the items which he proposes to furnish under this specification conform to the standard of Underwriters' Laboratories (UL) and/or Canadian Standards Association (CSA). The label of UL and/or CSA shall be accepted as conforming to this requirement.

Part 3 - Execution

3.01 PREPARATION

A. Inspect existing conditions, project requirements and Contract Documents.

B. Verify that materials and equipment furnished meet specified requirements.

C. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by the Contract Documents.

3.02 INSTALLATION

A. Install work in neat and workmanlike manner of highest quality for nature of work performed.

B. Perform the work, handle, install, connect, clean, condition, and adjust products in strict accordance with manufacturer's printed instructions and with Contract Document requirements.

C. In case of conflict, Contract Documents shall govern. When in doubt, request clarification.

END OF SECTION

SECTION 01 73 00

CUTTING AND PATCHING

Part 1 - General

1.01 DESCRIPTION

A. Execute cutting, and fitting of Work required to:
   1. Uncover Work to provide for installation of ill-timed Work.
   2. Remove and repair defective Work.
   3. Remove and replace Work not conforming to requirements of Contract Documents.
   4. Install specified Work in existing construction.

B. In addition to Contract requirements, upon written instruction of Owner.
   1. Uncover Work to provide for Engineer's observation of covered Work.
   2. Remove samples of installed materials for testing.
   3. Remove Work to provide for alteration of existing Work.

C. Do not endanger any Work or any existing construction through cutting or altering Work or any part of it. Do not cut or alter Work of another contractor without written consent of Owner.

1.02 SUBMITTALS

A. Cutting of building structural elements is prohibited.

B. Prior to cutting being done, if outside the original scope of Work, submit cost estimate.

C. Should conditions of Work or schedule indicate change of materials or methods submit written recommendations to Engineer including conditions indicating change, recommendations for alternative materials or methods and submittals as required for substitutions.

D. Submit written notice to the Engineer designating time Work will be uncovered to provide for observation.

1.03 PAYMENT FOR COSTS

A. Cost caused by ill-timed or defective Work, or Work not conforming to Contract Documents including costs for additional services of Engineer shall be borne by the party responsible for the deficiency.

Part 2 - Products

2.01 MATERIALS

A. For replacement of Work removed, comply with pertinent specification sections for type of Work to be done.

Part 3 - Execution

3.01 INSPECTION

A. Inspect existing conditions of Work including elements subject to movement or damage during cutting and patching.

B. After uncovering Work, inspect conditions affecting installation of new products.

3.02 PREPARATION

A. Prior to cutting provide shoring, bracing and support as required to maintain integrity of the element and surrounding elements.

B. Provide protection for elements for other portions of Project.

3.03 PERFORMANCE

A. Execute fitting and adjustment of products to provide finished installation conforming with specified tolerances.

B. Execute cutting and demolition by methods which will prevent damage to other Work and provide proper surfaces to receive installation of repairs and new Work.

C. Restore Work which has been cut or removed; install new products to provide completed Work in accord with requirements of Contract Documents.

D. Refinish entire surface as necessary to provide an even finish.
   1. Refinish continuous surfaces to nearest intersections.
   2. Refinish assemblies in entirety.

END OF SECTION

SECTION 01 74 00

CLEANING

Part 1 - General

1.01 PROTECTION OF FINISHES

A. The various materials, work, equipment, and finishes provided by the trades are all to be protected from other operations or work such that all items are in perfect condition at the time project is turned over to the Owners. The final responsibility for this protection rests with the Contractor, even though various Sections of Specifications may contain specific comments or precautions about protection.

1.02 PREMISES

A. The Contractor shall at all times during the course of this contract keep the building, the Owner's premises and the adjoining premises, including streets and other areas assigned to Contractor, free from accumulations of waste materials and rubbish caused by the Contractor's employees or subcontractors. See also section 01 50 00 for additional requirements.

1.03 FINAL CLEANING

A. At completion of the work, or prior thereto if so directed, the Contractor shall remove from the buildings and/or the premises all of the Contractor's tools, appliances, surplus materials, debris, temporary structures, temporary construction for which he has been responsible and/or rubbish, and shall be responsible for clean-up of the work under this contract as well as work under other contracts affected by this work. Cleaning, sealing and all other such finish operations noted on the Drawings or required in the Specifications shall be taken to indicate the required condition at the time of acceptance of work under the Contract.

B. At completion of work, the Contractor shall sweep, dust and clean thoroughly all surfaces. All marks, stains, fingerprints, dust, dirt paint, drippings, and the like shall be removed throughout the building. All equipment and paint work shall be cleaned and touched up if necessary and all temporary labels, tape, and paper coverings shall be removed, all to the approval of the Owner and Engineer. Final acceptance of this facility is dependent upon final cleaning being complete.

C. If the Contractor, upon request by the Owner, does not attend to such cleaning with reasonable promptness, the Owner may cause such cleaning to be done by others and charge the cost of the same to the Contractor or deduct the cost from payments still due the Contractor under the Contract.

D. Maintain in cleaned condition until final acceptance.

Part 2 - Products

2.01 MATERIALS

A. Cleaning agents, implements, and methods used for the cleaning, polishing or sealing of any surface shall be products recommended and approved by the manufacturer of the item or surface to be cleaned. The Contractor shall be fully responsible for any damage to any surface or substrate caused by the improper use of cleaning materials.

Part 3 - Execution (Not Used)

END OF SECTION

SECTION 01 77 00

CONTRACT CLOSEOUT

Part 1 - General

1.01 SUBSTANTIAL COMPLETION

A. Submit written Notice to the Engineer that work, or designated portion thereof, is substantially complete for each phase of construction.
   1. Submit list of major items remaining to be completed or corrected.
   2. The Project will not be substantially complete unless all cleaning is complete and in accordance with the Contract Documents. See Section 01 74 00.

B. Engineer will inspect Work within 3 days.

C. If Engineer determines Work to be substantially complete:
   1. Engineer will prepare a tentative list of items to be completed or corrected.
   2. Engineer will submit the tentative list to the contractor for written acceptance and correction of the deficiencies.
   3. Engineer will prepare and issue a Certificate of Substantial Completion, AIA G704.
   4. Owner may occupy Project, or designated portion of Project, under provisions of Certificate of Substantial Completion.

D. If Engineer determines that work is not substantially complete, he will immediately notify Contractor in writing. Contractor shall complete work and submit a second written notice of substantial completion to the Engineer. The Engineer will reinspect the work.

1.02 FINAL INSPECTION

A. Submit written certificate that Contract Documents have been reviewed, project has been inspected, work is completed in accordance with Contract Documents, equipment and systems have been tested in the presence of the Owner Representative and are operational and work is ready for final inspection at the conclusion of each phase. Engineer will inspect work within 3 days.

B. Should Engineer consider that the work is incomplete or defective, he will notify contractor in writing, listing the incomplete or defective work. Contractor shall remedy the deficiencies and send a second written certification to Contracting Officer that the work is complete. Engineer will reinspect the work.

C. When the Engineer finds that work is acceptable under the contract Documents, he shall request the Contractor to make closeout submittals.

1.03 REINSPECTION FEES

A. All costs for any additional inspections following the first inspection shall be the responsibility of the Contractor, and all costs, including those costs incurred by the Owner and the Engineer shall be deducted from the Contractor's final payment.

1.04 CONTRACT COMPLETION

A. Contractor will insure that the project is complete to include final inspection and acceptance by the Owner prior to the scheduled completion date.

1.05 PROJECT RECORD DOCUMENTS

A. In accordance with Section 01 77 50.

1.06 CLOSEOUT MANUALS

A. Form of Manuals:
   1. Prepared data in the form of instruction manuals for use by the owner. Use 8½"x11" manual format in 3 ring binder. Provide four (4) complete sets.
   2. Include drawings, indexed tabs and title for each manual.

B. Content of Manuals:
   1. List products, equipment and systems used in the Project. List project installers, maintenance program and local source of supply for replacement parts.
   2. Include product data with specific product clearly identified.
   3. Include drawings of control diagrams, flow diagrams and system relationships.
   4. Include above data for Owner provided products.

C. Materials and Finishes Manual:
   1. Product information on all finish materials.
   2. Paint numbers.
   3. Locations of paint finishes.

D. Equipment and System Manual:
   1. Include manufacturer's description, operating characteristics, performance data, and printed operating and maintenance instructions.
   2. Include manufacturers' catalog number and replaceable parts list.
   3. Include start-up, break-in, operating instructions, control, stopping, shut-down, emergency instructions, and operating sequence.
   4. Include copies of approval for City final building permit inspections and Certificate of Occupancy, if applicable.
   5. Include as-installed color coded piping diagrams and list of piping identification markers.
   6. Include circuit directories of panel boards and as-installed color coded wiring diagrams.
   7. Include valve tag directory listing tag number, location, service, size, manufacturer, model number and normal position.
   8. Include name plate directory listing equipment designation, name plate data, location of equipment, location of switch and normal position of switch.

E. Warranties and Bonds Manual:
   1. Assemble warranties, bonds and service and maintenance contracts, executed by each manufacturer, supplier and subcontractor.
   2. Include table of contents, beginning date and duration of warranty, bond or service contract, and party to contract in case of claim against warranty.

F. Spare Parts and Maintenance Materials Manual:
   1. Tabulate list of spare parts and maintenance materials showing product description, paragraph in Project Manual listing product and quantity delivered to the Owner.

1.07 INSTRUCTION OF OPERATING PERSONNEL

A. Prior to final inspection or acceptance, fully instruct Owner's designated personnel in the operation, adjustment and maintenance of all products, equipment and systems.

B. Operating and maintenance manual shall constitute the basis of instruction.
   1. Review contents of manual with Owner's personnel in full detail to explain all aspects of operations and maintenance.

1.08 MAINTENANCE MATERIAL HANDLING

A. Label packages and deliver spare parts and maintenance materials to Owner's storage area. Submit quantity specified in each product section.

1.09 SCHEDULE OF CLOSEOUT SUBMITTALS

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
   1. AIA Document G706 Contractor's Affidavit of Payment of Debts and Claims.
   2. AIA Document G706A Contractor's Affidavit of Release of Liens.
   3. AIA Document G707 Consent of Surety Company to Final Payment.
   4. Operation and Maintenance Manuals.
   5. Warranties and Bonds. Submit original documents, including Contractor's General Warranty.
   6. Record Documents
   7. Keys.
   8. Proof of final acceptance and compliance from governing authorities having jurisdiction.

B. Provide electronic copies of closeout submittals, as applicable, in accordance with Section 01 33 00.

C. Certificate of Completion:
   1. Obtain and Submit Certificate of Completion and schedule date for warranty inspection.

Part 2 - Products (Not Used)

Part 3 - Execution (Not Used)

END OF SECTION

SECTION 01 77 50

RECORD DOCUMENTS

Part 1 - General

1.01 DESCRIPTION

A. Project document maintenance procedures.

1.02 MAINTENANCE OF DOCUMENTS

A. Maintain on site, one set of the following record documents; record actual revisions to the Work:
   1. Bid Documents
   2. Contract Forms
   3. Project manual
   4. Contract Drawings
   5. Addenda
   6. Change Orders and other modifications to the Contract
   7. Reviewed Shop Drawings, Product Data, and Samples
   8. Office Samples
   9. Field Test Records
   10. Engineer's Supplemental Instructions
   11. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

1.03 HANDLING AND RECORDING

A. Store documents and samples in Contractor's field office separate from documents used for construction. Ensure entries are complete and accurate, enabling future reference by Owner. Provide felt tip marking pens, maintaining separate colors for each major system, for recording information.

B. Keep current record of documents and label each document "Project Record". Information shall be correct, accurate, neat, and finished in appearance. Recorded field data shall show accurate dimensions vertical and horizontal for location of concealed items, utility lines, recording field changes of dimensions, and changes in materials furnished on project record documents. Record changes from Engineer's Supplemental Instruction, change orders and details not on contract drawings. Store record documents separately from documents used for construction.

C. Information shall be recorded concurrently with construction progress. Record documents shall not be more than 7 days behind construction progress. Deliver to Engineer for review and approval with request for final payment. Meet with the Engineer to review field recorded information. Final payment will not be authorized until acceptance of field recorded data by the Engineer and Owner.

D. Project record documents will be reviewed twice monthly. Review of updated project record documents will be part of approval by the Owner's representative on a twice monthly basis of the Contractor's application for payment and failure to have project record documents updated will delay payment.

E. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

F. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
   2. Field changes of dimension and detail.
   3. Details not on original Contract drawings.

1.04 SUBMITTAL

A. Format:
   1. Identify and date each Record Drawing, including the designation “Project Record Drawing” on each sheet.
   2. Organize Record Drawings in order of construction documents sets, and bind together.

B. Provide scanned electronic copies of Record Drawings on CD-ROM, with format per Submittal Procedures in Section 01 33 00.

C. Submit documents to Engineer prior to submittal of final Application for Payment.

Part 2 - Products (Not Used)

Part 3 - Execution (Not Used)

END OF SECTION

SECTION 01 78 00

OPERATION AND MAINTENANCE DATA

Part 1 - General

1.01 QUALITY ASSURANCE

A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

1.02 FORMAT

A. Prepare data in the form of an instructional manual. Refer to Section 20 20 00 for specific format requirements.

1.03 CONTENTS, GENERAL, EACH VOLUME

A. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Engineer, Sub-consultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

B. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

C. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

D. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

E. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 60 00.

F. Warranties: Bind in copy of each. As specified in Section 01 77 00.

1.04 MANUAL FOR MATERIALS AND FINISHES

A. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Provide information for re-ordering custom manufactured Products.

B. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

C. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

D. Additional Requirements: As specified in individual Product specification sections.

E. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.05 MANUAL FOR EQUIPMENT AND SYSTEMS

A. Refer to section 26 10 00 and individual Divisions 14, 20, 23 and 26 specification sections for Manual content related to equipment and systems.

1.06 INSTRUCTION OF OWNER PERSONNEL

A. Before final completion, instruct Owner's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems, at agreed upon times.

B. Use operation and maintenance manuals as basis for instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.

C. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.

1.07 SUBMITTALS

A. Submit two copies of preliminary draft or proposed formats and outlines of contents before 75% Pay Request. Engineer will review draft and return one copy with comments.

B. Submit 1 copy of completed volumes 15 days prior to final completion. This copy will be reviewed and returned after final inspection, with Engineer’s comments. Revise content of all document sets as required prior to final submission.

C. Submit three (3) binder sets and two CD-ROM disks of revised final volumes, in final form within 30 days after final inspection. Electronic file format shall be organized with individual sections in accordance with submittal requirements listed in Section 01 33 00.

1.08 SCHEDULE OF SUBMITTALS

A. Provide as required by individual sections.

Part 2 - Products (Not Used)

Part 3 - Execution (Not Used)

END OF SECTION

SECTION 01 79 00

WARRANTIES

Part 1 - General

1.01 SECTION INCLUDES

A. Preparation and Submittal.

B. Time and Schedule of Submittals.

1.02 FORM OF SUBMITTALS

A. Bind in commercial quality 8-1/2 x 11 inch three D side ring binders with durable plastic covers.

B. Cover: Identify each binder with typed or printed title, “WARRANTIES AND BONDS”, with title of Project; name, address and telephone number of Contractor; and name of responsible company principal.

C. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of Product or Wok item.

D. Separate each extended correction period warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

1.03 PREPARATION OF SUBMITTALS

A. Obtain extended correction period warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

1.04 TIME OF SUBMITTALS

A. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.

B. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.

C. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty period.

1.05 SCHEDULE OF WARRANTIES

A. The following warranties are an extension of the one-year warranty called for in the General Conditions. The Owner reserves the right to make temporary or emergency repairs as necessary to maintain Products without voiding specified warranties nor relieving Contractor of responsibility during warranty periods.

Description	Duration
Elevator Work:	As specified in Division 14
Mechanical:	As specified on mechanical drawing
Electrical Work:	As specified in Division 26

Part 2 - Products (Not Used)

Part 3 - Execution (Not Used)

END OF SECTION

SECTION 07 84 00

FIRE STOPPING

Part 1 - General

1.01 RELATED SECTIONS

A. Drawings, Specifications and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications Section, apply to this Section.

1.02 SUMMARY

A. Section includes requirements for through-penetration fire stopping for items including piping, ductwork, wiring and conduit provided under the Contract.

B. Section also includes requirements for recessing equipment, cabinets, or devices in fire rated walls, ceilings, and floors.

C. Products shall be of a single manufacturer for each type of fire stopping required, and where several types are integrated into a single assembly. Provide putty, sealants, wraps, boards, and accessories as necessary and required for the work of this project.

1.03 REFERENCES

A. Underwriters Laboratories:
   1. UL Fire Resistance Directory.
   2. UL Component Listing Test Criteria.
   3. Warnock Hersey.

B. American Society For Testing And Materials Standards:
   1. ASTM E 814 - 88: Standard Test Method For Fire Tests of Through-Penetration Firestops.

C. International Building Code, 2009, with Oregon Amendments (Oregon Structural Specialty Code, OSSC, 2010) – Chapter 7 Fire Resistance Rated Construction.

1.04 DEFINITIONS

A. Assembly: Particular arrangement of materials specific to a given type of construction.

B. Barriers: Time rated fire walls, ceiling/floor assemblies, and structural floors.

C. Fire Stopping: Assembly of materials applied at penetrations to limit spread of heat, fire, gases and smoke.

D. Penetration: Opening through or into a barrier such that full thickness of rated materials is not obtained.

E. System: Specific products and applications, classified and numbered by Underwriters Laboratories (UL), Inc. to close specific barrier penetrations.

F. F Rating: Time period that fire stop assembly can withstand fire and hose stream test as determined in UBC Standard 7-5.

G. T Rating: As required for F Rating and to limit temperature rise above the initial temperature to 325 degrees F on protected side as determined in UBC Standard 7-5.

1.05 SHOP DRAWINGS, PRODUCT DATA, OPERATION & MAINTENANCE DATA

A. Provide manufacturer's installation drawings and instructions for each proposed assembly. Identify intended product and applicable UL System number or UL classified devices.

B. Provide manufacturer recommendations and drawings relating to non-standard applications where necessary.

1.06 QUALITY ASSURANCE

A. Installer Qualification: Acceptable to, or certified by, Fire Stopping system manufacturer.

B. Regulatory Requirement: Contractor shall verify acceptance from Authority Having Jurisdiction for proposed assemblies conforming to, or not conforming to, specific UL Fire Stop System Numbers, or UL classified devices.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver products in original, unopened packaging with legible manufacturer's identification. Store materials in accordance with manufacturer’s instructions. Store in clean, dry, ventilated location, protected from freezing.

1.08 WARRANTY

A. Submit copies of written warranty for Fire Stopping assemblies. Warranty period shall be one year minimum.

Part 2 - Products

2.01 GENERAL

A. Fire Stop products and accessories shall be asbestos-free, intumesce when exposed to temperatures of 250 degrees F, and maintain an effective barrier against flame, smoke and gases. Mortar systems must be Warnock Hersey approved.

B. Fire Stop Fire Rating: Not less than rating of barrier penetrated in which fire stopping will be installed.

2.02 FIRE STOPPING ASSEMBLIES

A. Assemblies of materials used to seal spaces around penetrations shall have a UL Fire Stop System Number appropriate for the construction type, penetration type, annular space requirements, and fire rating at each penetration.

B. Systems and devices must withstand the passage of cold smoke either as an inherent property of the system or by the use of a separate product included as a part of the UL system or device and designed to perform this function. Systems complying with the requirements for through-penetration firestopping in fire-rated construction are acceptable provided the system will provide a smoke seal.

C. Performance Requirements: Fire Stop assembly shall be able to withstand standard fire and hose stream test (F Rating) and limit temperature rise (T Rating) of penetrans on protected side as required by Authorities Having Jurisdiction. Conform to UBC Standard 7-5.

D. Manufacturers: 3M, Dow, Chase Technology Corp., Bio Fireshield Inc., ProSet, Johns Manville, Specified Technologies Inc, Metacaulk, GS Hevi-Duti/Nelson, or approved.

2.03 ACCESSORIES

A. Fill, void, or cavity materials: As classified under category XHHW in the UL Fire Resistance Directory.

B. Forming materials: As classified under category XHKU in the UL Fire Resistance Directory.

Part 3 - Execution

3.01 GENERAL

A. Provide Fire Stopping seal at piping, ductwork, wiring, or conduit penetration, installed under this Contract, through fire rated construction.

B. Provide fire rated assembly around equipment, cabinets, devices and/or appurtenances recessed in fire rated walls and ceilings.

C. Verify barrier penetrations are properly sized and in suitable condition for application of materials.

D. Provide masking and drop cloths to prevent contamination of adjacent surfaces by Fire Stopping materials. Clean spills of liquid components. Remove equipment, materials and debris, leaving area in undamaged, clean condition.

E. Clean surfaces to be in contact with penetration seal materials of dirt, grease, oil, loose materials, rust, or other substances that may affect proper fitting, adhesion, or the required fire resistance. Cut and trim materials as required to neatly match edges of penetration.

F. Comply with manufacturer's recommendations for temperature and humidity conditions before, during, and after installation of Fire Stopping.

END OF SECTION

SECTION 09 90 00

PAINTING AND COATING

Part 1 - General

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints and other coatings.

C. Scope: Reference Section 14 21 10.

D. Do Not Paint or Finish the Following Items:
   1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   3. Concealed pipes, ducts, and conduits.

1.02 REFERENCE STANDARDS

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

B. ASTM D 16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2008.

1.03 SUBMITTALS

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

B. Product Data: Before ordering, provide data on all finishing products and special coatings. Provide MSDS sheets on all materials used on the project.

C. Samples: Submit two painted draw-down samples, illustrating selected colors and textures for each color and system selected with specified coats cascaded. Submit on stiff paper, 8 x 12 inch in size.

D. Manufacturer's Instructions: Indicate special surface preparation procedures.

E. Maintenance Data: Submit data on cleaning, touch-up, and repair of painted and coated surfaces.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Extra Paint and Coatings: 1 gallon of each color; store where directed.
      a. Label each container with color in addition to the manufacturer's label.
   2. Draw downs and final list/matrix of all finish paint.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five years experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.06 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

1.07 WARRANTY

A. Provide manufacturer's standard 10 year warranty of exterior elastomeric paint systems.

Part 2 - Products

2.01 MANUFACTURERS

A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.

B. Paints:
1. Benjamin Moore & Co: www.benjaminmoore.com.
2. Miller Paint Co: millerpaint.com

C. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PAINTS AND COATINGS - GENERAL

A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
2. Supply each coating material in quantity required to complete entire project's work from a single production run.
3. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.

B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

C. Volatile Organic Compound (VOC) Content:
1. Provide coatings that comply with the most stringent requirements specified in the following:
a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

2.03 PAINT SYSTEMS - INTERIOR

A. Interior Acrylic Enamel: Factory-formulated acrylic-latex enamel for interior application.

1. 1 coat

B. Interior Acrylic Enamel: Factory-formulated semigloss acrylic-latex enamel for interior application.

1. 2 coats

2. Reference Section 14 21 10 for colors

2.04 ACCESSORY MATERIALS

A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.

Part 3 - EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Test shop-applied primer for compatibility with subsequent cover materials.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to coating application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

F. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

3.03 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Provide adequate fresh air and ventilation during application.

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance.

E. Allow manufacturer’s specified drying time and ensure correct coating adhesion for each coat before applying next color.

F. Inspect each coat before applying next coat; touch up surface imperfections with coating material, feathering and sanding of required; touch up areas to achieve flat uniform surface without surface defects visible from 5 feet.

G. Sand wood and metal surfaces lightly between coats to achieve required finish.

H. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

I. Where coating application abuts other materials or other coating color, terminate coating with a clean sharp termination line without coating overlap.

J. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 FIELD QUALITY CONTROL

A. Do not cover or paint any signs, labels, identification, etc. If covered or painted, the contractor is required to replace items.

B. Contractor must redo unsatisfactory finishes; refinish area to corners or other natural terminations.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.06 PROTECTION

A. Protect finished coatings until completion of project.

B. Touch-up damaged coatings after Substantial Completion.

END OF SECTION

SECTION 14 21 00

GEARLESS TRACTION ELEVATORS

PART 1 – General

1.01 SUMMARY

A. Elevator Contractor shall furnish, provide and install all Work required to complete the Elevator Modernization as stated in the Contract Documents for one (1) Passenger/Service elevator. Project also includes all requirements of Firefighters' Service, Seismic, and The Americans with Disability Act (ADA).

B. The elevator is designated as the #4 passenger/service car in Knight Library.

C. Scope of Work Required By Others-Refer to Related Sections.

1. All electrical work shall be in compliance with NFPA 70, Art 620 and related Articles therein.
2. Proper electric power mains, including dedicated ground conductor to the electrical main-line disconnect switch. Voltage variations to be within + or - five percent (5%) of normal electrical power. Frequency variations to be within + or – two percent (2%) Hertz.
3. Provide a main line electrical fused disconnect capable of being locked in the open position. The disconnecting means is to be in compliance with NFPA 70, Art. 620-51. Provide required conduit and conductors, including an electrical ground conductor, from main line disconnect to elevator controller. Provide fuses of correct rating based upon load generated by the elevator equipment.
4. Proper elevator machine room area lighting shall provide a minimum of nineteen 200 lx (19 fc) at all areas of the machine room floor. Provide (or relocate existing fixtures) four foot (4') fluorescent lighting fixtures. Provide guards on all light bulbs. Vertical clearance from elevator machine room floor the underside of all lighting fixtures, including guards, shall be not less than 2130 mm (84-in.). Required lighting shall not be connected to the load side terminals of the ground-fault circuit-interrupter receptacles(s). Light switch shall be located on the lock-jamb side of elevator machine room access door.
5. Provide separate branch circuit for the duplex receptacle-20A-120 VAC in elevator machine room. Provide the GFCI protection.
6. Provide lockable disconnect switch box-20A-120 VAC separate electrical circuit to elevator controller for car lighting, receptacle(s), auxiliary lighting power source, and ventilation. The disconnect switch shall be located in the elevator machine room. Install disconnect switch location as directed by Elevator Contractor. Switch shall be marked with a permanent label, stating "Car Lighting". Provide and install all wiring and conduit from disconnect switch to elevator controller (ref. NFPA 70 Art. 620-53).
7. Provide a minimum of 100 lx (10 fc) at all pit floor areas. Pit light switch shall be located adjacent to top of pit ladder. Provide a minimum of two fixtures. Light bulbs shall be guarded to prevent contact and accidental breakage. Luminaires shall be located a minimum of twenty-four inches (24") vertically from the pit floor. Required lighting shall not be connected to the load side terminals of the ground-fault circuit-interrupter receptacles(s).
8. Provide separate branch circuit duplex receptacle rated-20A-120 VAC in elevator pit; include GFCI protection. Locate receptacle a minimum of twenty-four inches (24") above the pit floor.
9. Provide Fire Alarm Initiating Devices (FAID) in elevator machine room and all enclosed elevator lobbies. Smoke Detectors shall be installed in accordance with NFPA 72. FAID's shall activate Firefighters' Emergency Recall Operation [Phase I]. Provide separate signals from the fire alarm control panel to the elevator controller as required by NFPA 72.
    a. All wiring in elevator hoistway and machine room shall be enclosed in conduit.
    b. All signals shall terminate at the elevator controller as directed by the Elevator Contractor.

10. Provide Class "ABC" (10# minimum) fire extinguisher in elevator machine room. Provide metal mounting bracket and locate adjacent to lock side of the access door on the inside of the elevator machine room.
11. Separate phone line to elevator controller. All wiring in elevator machine room shall be enclosed in electrical conduit. Terminate phone line on side of each elevator controller in a two inch by four inch (2" x 4") electrical box with cover plate. Provide a minimum of three feet (3') of phone line in box for Elevator Contractor's use. Phone line shall be provided by University of Oregon Elevator Coordinator.
12. Provide a minimum of ten (10) FTC at each elevator lobby. Measurement shall be taken at each hoistway door landing sill area with the hoistway doors in the closed position.
13. Provide elevator pit sump as required by State of Oregon.
14. Provide hoistway venting as required by the IBC.

D. Applicable Documents:
   1. Americans with Disabilities Act Accessibility Guidelines (ADAAG), and the equivalent State of Oregon Codes, whichever are more stringent.
   2. State of Oregon Regulations, including:
      a. ASME A17.1/CSA B44 (Latest Edition) Safety Code for Elevators and Escalators
      b. ASME A17.2 (Latest Edition) Guide for Inspection of Elevators, Escalators, and Moving Walks
      c. ASME A17.3 (Latest Edition) Safety Code for Existing Elevators and Escalators
      d. ASME A17.6 (Latest Edition) Standard for Elevator Suspension, Compensation, and Governor Systems
      e. ASME A17.5 (Latest Edition) Elevator & Escalator Electrical Equipment
      f. ASME A17.7/CSA B44.7 (Latest Edition) Performance-based Safety Code for Elevators and Escalators
      g. ANSI/NFPA 70-(Latest Edition) National Electrical Code
      h. ANSI/NFPA 13-(Latest Edition) Installation of Sprinkler Systems
      i. ANSI/NFPA 72 (Latest Edition) National Fire Alarm & Signaling Code
      j. International Building Code (IBC)-Current Edition.
      k. Within this section, these are referred to collectively as the Elevator Safety Code. Any reference herein to the Elevator Safety Code includes the applicable provisions of any and all of these above stated documents.

E. Permits and Codes:
   1. All equipment and Elevator Modernization Work shall comply with requirements of the Elevator Safety Code, and other applicable codes of the State of Oregon.
   2. Give necessary notices, obtain licenses and permits, and pay fees and other costs, including making arrangements for all inspections and tests required by regulating agencies.
   3. File necessary plans, prepare documents, and obtain necessary approval of governmental departments having jurisdiction and required certificates of inspection for the Work, and deliver it to the University of Oregon Elevator Coordinator before requesting acceptance and final payment for Work.
   4. Elevator Contractor is not relieved from furnishing and installing Work shown or specified which may be beyond requirements of ordinances, laws, regulations and codes.

1.02 ELEVATOR MODERNIZATION ITEMS

A. All existing elevator equipment that is not being retained shall be removed from the job-site by the Elevator Contractor at the sole cost to the Elevator Contractor. This included all existing machine room, hoistway and car elevator equipment.

B. Elevator Contractor shall verify exact distances between points shown on their Shop Drawings by actual measurements at the site.

C. Standard Products: Unless otherwise indicated, the equipment to be furnished under these Specifications shall be the standard products of manufacturers regularly engaged in the production of such equipment. Apparatus, equipment and systems furnished must be similar and equal thereto with respect to quality, functional performance, capacity and efficiency.

D. Submittals: Submit Shop Drawings for approval as stated in Section 01340 of Division 1. The Shop Drawings shall contain detailed information to determine that the equipment conforms to the requirements of this Specification and not less than the following information:
   1. Elevator diagrams showing service to each level.
   2. Show location of machinery and controls in machine rooms, layout of the hoistway in plan and elevation and all other layout information and clearance dimensions required by the Elevator Safety Code. The elevator equipment is to be arranged in a neat and professional manner so that all elevator equipment is readily accessible. Submit layout drawings as required by the Authority Having Jurisdiction (AHJ). Submittals to the AHJ shall have all information pertinent to the Elevator Modernization to determine whether the Elevator Modernization complies with all applicable Codes.
   3. Provide Shop Drawings and catalog cuts for all Elevator Contractor furnished material and equipment, including but not limited to doors, car enclosure, car and hall fixtures, controls and motors.
   4. Complete information on motor, electrical services, controls, and all other coordination information.

E. Wiring Diagrams: Provide complete "As Built and Installed" single-line wiring diagrams showing the electrical connections, functions, and sequence of operation of all apparatus connected with the elevator, in the machine room, hoistway and car. Provide two (2) sets laminated and bound into a three (3) ring binder, measuring twelve inches (12") by eighteen inches (18"). Furnish one complete draft set for University of Oregon Elevator Coordinator review not later than one (1) week before issue of the permanent State of Oregon Elevator Operating Permit.

F. Elevator Modernization Data: Provide "As Built and Installed" wireman's original pull sheets showing raceway, junction box, traveling cable wire nomenclature and origination and termination locations. Provide a legible copy of the elevator adjuster's final control settings, such as feet per minute, door open, door close, car door nudging time, door dwell times and all other adjustable features and/or timers.
   1. Operations and Maintenance Manuals:
      a. Furnish two (2) complete operation and maintenance manuals covering the stipulated mechanical/electrical systems and equipment. The manual shall comply with all requirements indicated in the Project Closeout section of the specifications. Furnish one (1) complete draft manual for Owner's Authorized Representative review not later than one (1) week before issue of the permanent State of Oregon Elevator Operating Permit.
      b. The manual shall be complete in all respects for all equipment furnished and installed, controls, accessories and appurtenances stipulated. Include as a minimum the following:
         1) Drawing or diagram showing equipment location.
         2) The original factory Adjustor's Manual used to adjust the specific Elevator Modernization including "As Built, As Installed and As Adjusted" field notes.
         3) Step-by-step procedure for elevator start-up, operation and shutdown.
         4) Maintenance instructions listing routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guides for all elevator equipment.

5) Preventive Maintenance schedule.
6) Lubrication schedule including type, grade, temperature, range and frequency.
7) Safety precautions, including diagrams and illustrations as needed for clarity.
8) All testing procedures, including Seismic and Firefighters' Service.
9) Parts lists, with manufacturers' names and catalog numbers. Lists shall be complete for the materials installed.
10) Serial number of all equipment furnished and installed.
11) Service organizations and sources of replacement parts with Company names, addresses, fax, e-mail and telephone numbers.
12) Provide all service and field technical bulletins or manuals normally supplied to the factory/field Adjustor including videotapes or other media.

1.03 MATERIAL AND EQUIPMENT

A. General: Material and equipment shall be new, of the best quality used for the purposes in good commercial practice, the best of their respective kinds, and as specified. Equipment shall be standard products of reputable manufacturers. Where two or more units of the same class of equipment are required, those units shall be products of a single manufacturer. Furnish equipment complete with all parts necessary for proper operation. Material and equipment shall be cleaned, free of corrosion, and selected to provide quiet operation.

B. Type capacity, size and rating of all equipment shall be as indicated on the Drawings, and/or herein specified.

C. Delivery and Storage: Material and equipment shall be suitably protected against corrosion, dirt, mechanical damage, weather and chemical damage before and during new installation as recommended by the manufacturer and as approved by the Elevator Consultant. Replace defective and damaged equipment and materials. Elevator Contractor shall pay for all cost of material storage, either on-site or off-site.

1.04 WELDING

A. All welding shall comply with ASME A17.1-Design for welding, repair, cutting or splicing of members upon which the support of the car, counterweight, shall be prepared by a licensed professional engineer.

B. Welding shall be by welders qualified in accordance with the requirements of Section 5 of ANSI/AWS D1.1.

C. At the option of the Elevator Contractor, the welders may be qualified by one of the following: (a) the manufacturer. (b) A professional consulting engineer. (c) A recognized testing laboratory.

D. Elevator Contractor shall furnish all required documentation to the Elevator Consultant before starting the elevator new installation.

1.05 ELECTRICAL

A. Provide electrical components of the elevator equipment and systems, including motors, motor starters, controllers, control instruments, switches, conduit, wire and relays as specified herein and as necessary for complete and operable systems. Furnish interconnecting wiring for components of equipment as an integral part of the equipment.

B. Provide NEMA 1-electrical equipment cabinets and electrical conduit and junction boxes in control room, hoistway and car.

C. Electrical equipment and wiring shall conform to applicable paragraphs of the Elevator Specifications and National Electrical Code.

D. For equipment with electrical components, provide UL label on each component for which published standards exist.

E. The frames of all motors, hoist machines, controllers, transformers and the metal enclosures for all electrical equipment in or on the car, hoistway and control room shall be grounded in accordance with NEC-Article 250. Provide "daisy chain" electrical grounding for all control room electrical cabinets.

F. Provide required and adequate electrical wiring gauge sizing and number of electrical conductors to totally eliminate any voltage/amperage drop/variation for all the control room, hoistway switches/interlocks, car operating fixtures/positions indicators/exhaust fan/car lighting/inspection station/leveling devices, hall stations/position indicators and all other elevator electrical equipment.

G. Conductors and Connections: Provide wiring in control room, hoistway and car. Copper throughout with individual wires coded and connections on identified studs or terminal blocks. Use no splices or similar connections in wiring except at terminal blocks, control cabinets, junction boxes. Provide 10% spare wires in all wiring runs. Separate and mark all spare wires. All spare wire ends shall be turned back or protected against accidental exposure to any live electrical circuit or electrical ground.

H. Conduit and Duct: Provide painted or galvanized steel conduit and duct. Conduit size, one half inch (1/2") minimum. Do not use flexible conduit exceeding thirty six inches (36") in length. Flexible heavy-duty service cord may be used between fixed car wiring and car door switches for door protection devices. Plastic wire ties shall not be allowed for conduit fastenings or support except flexible electrical cords to the car door detector control box.

I. Traveling Cables: Provide flame and moisture-resistant outer cover. Prevent traveling cables from rubbing or chafing against hoistway or elevator equipment within hoistway. Provide ten percent (10%) spare conductors in each traveling cable. Provide an extra four (4) spare pair of shielded wires with two (2) number 22 AWG Coax cables. Provide an extra two (2) pair of #14 conductors for car lighting. All spare wire ends shall be turned back or protected against accidental exposure to any live electrical circuit or electrical ground. Tag all spare conductors indicating termination points at each end. Provide all wiring for car lighting, fan and ADA emergency communication from elevator controller to car. Provide all required traveling cables for the in-car Card Readers: Terminate traveling cable ends in main car operating station and the other end in controller.

J. Fire Alarm Initiating Devices (FAID): Elevator Contractor shall furnish all labor and material to electrically connect the FAID signal wiring to the elevator controller from terminals supplied in the elevator machine room.

1.06 PAINTING

A. All exposed metal work furnished in these specifications, except as otherwise specified, shall be properly painted after Elevator Modernization.

B. Paint hoist machine, controller and other machine room equipment if during shipment any equipment was damaged. Paint to match original color.

C. Paint machine room floor with one coat of dark gray enamel.

1.07 MAINTENANCE CONTROL PROGRAM (MCP)

A. Provide an MCP for the elevator equipment. The MCP shall include, but is not limited to the following:

1. Examinations, maintenance, and tests of equipment at scheduled intervals in order to ensure that the installation conforms to the requirements of ASME A17.1/CSA B44 Section 8.6. The maintenance procedures and intervals shall be based on:
   a. equipment age, condition, and accumulated wear
   b. design and inherent quality of the equipment
   c. usage
   d. environmental conditions
   e. improved technology
   f. the manufacturer's recommendations for any SIL rated devices or circuits
2. Cleaning, lubricating, and adjusting applicable components at regular intervals and repairing or replacing all worn or defective components where necessary to maintain the installation in compliance with the requirements of ASME A17.1/CSA B44 Section 8.6.
3. The instructions for locating the Maintenance Control Program shall be provided in or on the controller along with instructions on how to report any corrective action that might be necessary to the University of Oregon Elevator Coordinator.
4. The maintenance records required shall be kept at a central location agreeable and accessible to the University of Oregon Elevator Coordinator and the Elevator Contractor's elevator personnel.
5. The Maintenance Control Program shall be accessible to the elevator personnel and shall document compliance with ASME A17.1/CSA B44 Section 8.6.
   a. Procedures for tests, periodic inspections, maintenance, replacements, adjustments, and repairs for all SIL rated E/E/PES electrical protective devices and circuits shall be incorporated into and made part of the Maintenance Control Program.
   b. Where unique or product-specific procedures or methods are required to inspect or test equipment, such procedures or methods shall be included in the Maintenance Control Program.

1.08 WARRANTY PREVENTIVE MAINTENANCE:

A. Elevator Contractor shall perform Full Service Maintenance (hereinafter referred to as the "Services" and/or the "Work") on the Elevator/s (the "equipment") specified herein which shall include preventive maintenance services. All equipment under this Warranty Period shall be maintained in first-class operating condition. Elevator Contractor shall furnish all materials and labor, and comply with all requirements of current elevator Codes. Elevator Contractor shall place into operation a continuing system of Full Preventive Maintenance to provide necessary systematic services and preventive maintenance for the Elevator equipment described herein.

B. All elevator service, repair and maintenance shall be conducted in a manner consistent with The University of Oregon' intent to provide uninterrupted service. All specified elevator/s must provide reliable and safe transportation for The University of Oregon' staff, visitors, equipment and materials on a continuous basis, 24 hours a day, 7 days a week.
   1. Elevator Contractor agrees to accept full responsibility for the equipment, as it exists on the effective date of this Warranty Period, and to leave it in a condition acceptable to The University of Oregon at the termination date.
   2. Neither The University of Oregon nor Elevator Contractor may assign this Warranty Period without the written consent of the other party.
   3. No covenant or condition of the Warranty Period may be waived, except by the written consent of the other party. Forbearance or indulgence by either party in any regard whatsoever shall not constitute a waiver of a covenant or condition to be performed by the other party.
   4. Any written notification required to be provided pursuant to the terms of this Warranty Period shall be by means of hand delivery, overnight US Mail or private carrier, or by postage

prepaid, certified mail, with a return receipt required. The notice shall be effective upon the date of transmission by the sending party.

5. Any amendment to this Warranty Period shall be in writing and signed by each duly authorized representative(s) for each respective organization executing this Warranty Period.

C. PROTOCOL COMPLIANCE

1. Elevator Contractor shall insure that any and all protocols regarding the provision of Warranty Period services established by The University of Oregon shall be specifically followed. Elevator Contractor shall work with The University of Oregon Facilities Management and any authorized firm contracted to The University of Oregon, to insure proper compliance with said protocols.

D. SERVICE QUALITY VALIDATION

1. Insofar as the services provided by the Elevator Contractor fails to comply with required standards or has not been provided as per The University of Oregon' established protocols, The University of Oregon shall not be obligated to reimburse Elevator Contractor for any such service until such deficiencies have been corrected by Elevator Contractor and successful re-inspection by The University of Oregon or Elevator Consultant is completed.

E. WARRANTY PERIOD ADMINISTRATION

1. Notwithstanding any other provisions of this Warranty Period or any document referenced herein, The University of Oregon, or other authorized representative, shall be the only individuals authorized to make changes in or redirect the work required by this Warranty Period. Where The University of Oregon' approval is required under the terms of this Warranty Period, it shall be construed to mean the approval of The University of Oregon' or other authorized representative. In the event Elevator Contractor effects any change at the direction of any other individual, the change shall be considered as having been made without authority and an adjustment shall not be made to the Warranty Period price or performance requirements as a result thereof.

F. INTENT AND ACCEPTANCE

1. Elevator Contractor acknowledges The University of Oregon has provided free access to and sufficient time for adequate examination of the equipment and review of service records. Elevator Contractor further acknowledges that the specified elevators/s listed have been inspected by Elevator Contractor and that Elevator Contractor has determined that they are in serviceable operating condition. Elevator Contractor accepts full and complete responsibility for Full Service Maintenance and Repair of the specified elevators/s listed, as is condition, in accordance with this Warranty Period.

G. DEFINITIONS

1. Preventive Maintenance: Those services required by Elevator Contractor to provide Preventive Maintenance as defined in this Warranty Period, to prevent malfunctions/shutdowns due to normal wear and tear, to provide for safe operating elevators and to prolong the life of all elevator equipment.
2. Cleanliness: The Elevator Contractor is required to maintain the entire elevator system in a clean manner at all times. This includes but is not limited to: removal of oily rags-removal of dirt, grease, lint-maintaining the exterior of all equipment free of lint, dirt, oil, grease-clean all machine/control room equipment including, floors, controller/selector, governor, hoist machine, brake, sheave, hoist motor interior, deflector sheave, machine beams, car top, hoistway door track, hanger, interlock, header, strut, hoistway side of sills, spreader beam, entire counterweight, buffer, underside of car platform, car & counterweight guide, car safety, car door operator, track, hanger, inside area of header, crosshead, guide rail/bracket, fascia, dust cover, pit, inside car station/hall station/lantern/lobby panel and all equipment.

The cleaning must be a minimum of Elevator Industry Standards of which is stated above, and shall be to the full satisfaction of The University of Oregon. If The University of Oregon decides the cleaning level is below The University of Oregon' Standards, The University of Oregon has the option of bringing in another Elevator Contractor to perform the cleaning (with notice provided per Section 1.08, P.1. of the Warranty Period). All costs of the cleaning by another Elevator Contractors plus the cost of supervision by The University of Oregon shall be paid by the Elevator Contractor that is performing the Preventive Maintenance under this Warranty Period.

3. Obsolescence: Obsolescence is defined as a replacement part not being available for purchase by the Elevator Contractor. Elevator Contractor shall provide written documentation the replacement part is not available and the Elevator Contractor has exhausted all research in obtaining such replacement parts. Such research would be the review of all firms as listed in the latest edition of Elevator World-"The Source". All local supply firms, including other Elevator Contractors must also be researched for availability of replacement parts. If the replacement part is not available, The University of Oregon shall pay the cost for such replacement part as the difference in cost of the new part as compared to the existing part at time of last purchase. Elevator Contractor shall provide all documentation of the replacement costs. All labor to install the new replacement part is included in the Warranty Period. The new replacement part, after being installed, shall be included in this Warranty Period and further replacement is included in this Warranty Period at no extra cost to The University of Oregon. If Elevator Contractor installs a replacement part different than the original equipment, the new replacement shall not be of the "proprietary" type and the Elevator Contractor shall provide, in writing, the manufacture, type and model of the proposed replacements part.

H. GENERAL CONDITIONS

1. All maintenance performed by Elevator Contractor shall be based upon the performance specifications of individual equipment as published by the equipment manufacturer or as otherwise indicated herein.
2. Elevator Contractor shall comply with approved Elevator Equipment Industry Safety Standards. Elevator Contractor shall provide a copy of their Safety Program to Elevator Consultant and The University of Oregon Elevator Coordinator within five (5) calendar days after award of Warranty Period.
3. In performance of this Warranty Period, Elevator Contractor agrees to carry out all Work in strict compliance with all laws, Codes, rules and regulations set forth with regard to the equipment by Municipal, State and Federal authorities having jurisdiction in effect on the Warranty Period commencement date over the Work or any part thereof.
4. Elevator Contractor shall provide The University of Oregon Elevator Coordinator, within five (5) calendar days the starting of this Warranty Period, with Material Safety Data Sheets for products Elevator Contractor intends to employ under this Warranty Period prior to commencement of work. It shall remain the responsibility of Elevator Contractor to inform and train Elevator Contractor's employees on the use of the MSDS requirements. All MSDS documents shall be sent to The University of Oregon. Failure to furnish any such documentation, within the time schedule, shall be construed as terms by which to immediately terminate this Warranty Period.
5. Elevator Contractor shall protect all building equipment, surfaces, etc. from damage and shall perform repairs/replacement of any damaged items to "as new" condition thereto at their own expense to the entire satisfaction of The University of Oregon. Elevator Contractor agrees to accept responsibility for all damage to equipment due to neglect of their personnel in the maintenance of equipment identified in this Warranty Period.
6. Elevator Contractor agrees that all labor furnished by Elevator Contractor shall be trained journeyman level mechanics and helpers, thoroughly skilled in elevator Preventive Maintenance and directly employed and supervised by Elevator Contractor. They will use all

reasonable care to maintain the equipment in a proper and safe operating condition at all times. Elevator Contractor shall enforce strict discipline and order among their employees while on The University of Oregon' premises, and shall be subject to the rules and regulations established by The University of Oregon. The University of Oregon Elevator Coordinator reserves the right to request Elevator Contractor to replace any or all employees assigned to its facilities if it deems they are not performing in a satisfactory manner, or who refuse to comply with The University of Oregon' policies and guidelines.

7. Elevator Contractor's field personnel shall wear clean, neat, well-maintained uniforms identifying them as employees of Elevator Contractor for ease of identification by The University of Oregon.
8. Elevator Contractor shall provide The University of Oregon with the names of Service Technicians that will be assigned to the Warranty Period within five (5) business days after award of Warranty Period. List shall be up-graded to current each time Service Technician change routes or assignments.
9. Elevator Contractor shall provide a back-up personnel list within five (5) business days after award of Warranty Period for each of their employees assigned to The University of Oregon' account in the event of their illness, disability, vacation, leave, or absence for any reason. Said back-up personnel are expected to cover all duties and responsibilities of Elevator Contractor's regular personnel with no disruption in service. The University of Oregon and Elevator Consultant shall be informed prior to back-up personnel being used.
10. Elevator Contractor shall be required to provide a member of their supervisory personnel, regularly engaged in inspection and supervision, to visit the elevator at least quarterly to observe the quality of maintenance and to make certain that the quality of maintenance meets the specified and intended standards. The Supervisor shall schedule each visit with The University of Oregon Elevator Coordinator. The University of Oregon shall provide a member of their staff to accompany the Elevator Contractor during the on-site inspection. Inspections by the Elevator Contractor shall be at no cost to The University of Oregon.
11. Contact shall be made with The University of Oregon Elevator Coordinator upon Elevator Contractor's arrival and upon completion of service or any time Elevator Contractor's personnel leaves the site. Elevator Contractor shall check out a key from the UOPD for access to facilities/buildings/machine/control rooms. This key may be removed from the premises. The key(s) shall be returned to the University of Oregon upon the expiration of the twelve (12) month Warranty Period. If the Elevator Contractor loses the keys, the Elevator Contractor shall pay for all cost of duplicate or rekeying and new locks.
12. Elevator Contractor shall be solely responsible for:
    a. All means, methods, techniques, sequences, and procedures of the Work at no extra cost to The University of Oregon.
    b. Keeping all "Work Areas" clean and using all available means to recycle or reclaim materials.
13. Elevator Contractor shall provide a written procedure of their "Lock Out-Tag Out" to The University of Oregon within five (5) calendar days of Warranty Period award and before starting work under this Warranty Period.

I. SERVICE REQUIREMENTS

1. Complete Maintenance: Elevator Contractor agrees to regularly and systematically examine, clean, lubricate, adjust and provide unlimited callback service and repair and replace all components of the elevator/s included under these specifications in accordance with industry standards in a proper Workmanlike manner to the entire satisfaction of The University of Oregon.
2. Elevator Contractor shall repair cab handrails and maintain fastening bolt tightness, repair and maintain communication equipment installed by Elevator Contractor and communication equipment cabinetry doors and door hinges.

3. Elevator Contractor shall include the following elements in the Preventive Maintenance Procedures for all elevators:
   a. Provide monthly operational checks of all elevator car door safety edges/detectors at University of Oregon. Elevator Contractor shall provide documentation of such checking in their machine/control room check charts.
   b. Provide monthly check of directional lights; call registered lights and all other elevator lighting fixtures. Furnish and replace all burned out bulbs.
   c. Maintain pit lighting, car top lighting, hoistway lighting and car interior lighting. Furnish and replace all bulbs.
4. Elevator Contractor shall notify The University of Oregon Elevator Coordinator before an elevator is removed from service. Elevator Contractor shall notify The University of Oregon Elevator Coordinator when such elevator is placed back in normal service. The schedule for provision of service by Elevator Contractor shall vary according to the frequency as stated in this Warranty Period. Elevator Contractor is expected to work closely with The University of Oregon and/or any firm authorized by The University of Oregon to arrange specific service times that are most beneficial to The University of Oregon.
5. Elevator Contractor shall maintain hoistway, pit, machinery, elevator machine/control room, and any assigned Elevator Contractor's Work space in a clean, orderly condition, free of dirt, dust, oil and grease spills, trash and debris, at all times.
6. Elevator Contractor shall be sensitive to The University of Oregon' needs during their Work activity and create no excessive noise. Work that will generate excessive noise shall be scheduled with The University of Oregon Elevator Coordinator.
7. Elevator Contractor shall maintain three (3) complete sets of wiring diagrams showing "as built" conditions with any changes or modifications to circuits resulting from control modifications, parts replacement or equipment up-grade. One set shall remain in the machine/control room, one set shall be maintained in the Elevator Contractor's office and the third set shall be maintained in The University of Oregon Elevator Coordinator offices. When any changes are made to diagrams, three copies of the modified drawings must be made. One copy shall be furnished to The University of Oregon to update their copy of the appropriate drawing. A copy shall be used to update the Elevator Contractor's office drawings and the original changes shall be maintained in the equipment machine/control room. The University of Oregon retains sole possession of these wiring diagrams. Wiring diagrams shall be kept in a neat and orderly fashion in the machine/control room. Provide University of Oregon with one (1) digital copy on a thumb drive.
8. Elevator Contractor shall be responsible for maintaining exterior of the machinery, machine/control room floor and other parts of the elevator equipment, properly painted, identified, and presentable at all times. If, in the option of the University of Oregon, there is a need to re-paint the elevator equipment/floor, the Elevator Contractor shall proceed within five (5) calendar days to provide the work. If the Elevator Contractor does not comply with the painting requirements the University of Oregon may elect to hire an outside Contractor to perform the work and back-charge the Elevator Contractor for all costs incurred.
9. Elevator Contractor shall provide one (1) lockable metal parts cabinets in each elevator machine/control room. Elevator Contractor shall coordinate installation with The University of Oregon Elevator Coordinator. Estimated size of 42" high-36" wide 18" deep with a lockable door. Provide one (1) set of key to The University of Oregon.
10. Elevator Contractor shall conduct monthly evaluations of equipment performance, including car speed, door operations, riding quality and car leveling. Following such evaluations, the Elevator Contractor shall perform adjustment, repairs and replacements required to maintain manufacturer's operating performance. A copy of evaluations will be left with The University of Oregon Elevator Coordinator and Elevator Consultant and reviewed with them on request.
11. Elevator Contractor shall, as required, but at least during the 11 month, dismantle the brake plunger assembly, examine, replace worn parts, clean, lubricate, reassemble and adjust as required for proper operation.

12. Elevator Contractor shall provide a qualified management representative to serve as Project Manager. Project Manager shall meet with The University of Oregon at such times as may be requested to discuss job details and concerns and/or any other matters concerning this Warranty Period, or the Work to be performed herein, to assure amicable and successful execution of this Warranty Period. The Project Manager shall be authorized to render any reasonable decisions to The University of Oregon without unnecessary delay.
13. Elevator Contractor shall maintain at all times the original elevator speed in feet per minute. Perform all adjustments required to maintain the proper door opening and closing time, within limits of applicable codes. Check the operating system for each unit and group of units to ensure that unit(s) keep operating continuously and make necessary tests and corrections to ensure all circuits are correct and time settings are properly adjusted.
14. Elevator Contractor shall maintain the following minimum elevator performance requirements.
    a. Speed:
        1) +/- 1% in both directions under all loading conditions for gearless/geared equipment.
    b. Door closing time:
        1) Measured from start of door closing until the hoistway doors are fully closed, will be the minimum permitted by Code.
    c. Door dwell time:
        1) As permitted by The Americans with Disability Act, as now or hereafter amended.
    d. Floor leveling accuracy:
        1) As stated in the Elevator Specifications.
15. In accomplishing the above requirements, Elevator Contractor shall maintain a comfortable elevator ride with smooth acceleration, retardation and a soft stop. Door operation shall be quiet and positive with smooth checking at the extremes of travel.
16. Any additional work required to be performed pursuant to Federal, State or Local Code amendments subsequent to the date of this Agreement, or tests required to be performed which are not currently within the scope of this Agreement, will be performed by Elevator Contractor only upon receipt of a written change order from The University of Oregon.
17. All records and documents pertaining to the elevator equipment provided to Elevator Contractor by The University of Oregon shall be kept current and in good condition and shall be returned to The University of Oregon upon demand or upon termination of this Warranty Period.

J. TESTING
1. Elevator Contractor shall conduct the following tests, and any other tests required by State of Oregon, Federal and any other Governing or Code Agency that is in effect at the date of signing this Warranty Period. Services shall include, but not be limited to:
    a. Elevator Contractor shall provide quarterly inspections and testing of the Firefighter's Service-Phase I and Phase II and standby power operation, if installed. Any additional cost to complete the above inspections and testing on overtime shall be the responsibility of Elevator Contractor. Elevator Contractor shall maintain an up-to-date log of Firefighter's Service testing in each machine/control room and submit the results to The University of Oregon Elevator Coordinator on a quarterly basis. Firefighter's Service testing shall be entered and recorded on a form supplied by Elevator Contractor and/or required by the State of Oregon, or both.
    b. Provide all testing as required by the State of Oregon Elevator Inspector and required by the ASME A17.1 Safety Code for Elevators and Escalators. Tests shall include yearly no load testing of all traction elevators.
    c. Elevator Contractor shall assist The University of Oregon during emergency generator testing. Testing shall be completed on "off" hours. Elevator Contractor shall absorb all

labor costs incurred by Elevator Contractor at no additional cost to The University of Oregon. Testing to be scheduled with University of Oregon Elevator Coordinator.

2. Elevator Contractor shall on the 11th month check the dispatching systems and make necessary tests and adjustments to insure that all circuits and time settings are properly adjusted, and all systems are performing as designed and installed. Elevator Contractor shall submit an 11th month written report of these results to The University of Oregon Elevator Coordinator.
3. Elevator Contractor shall audit the elevator equipment on the eleventh (11th) month of the Warranty Period. A written report from the 11th month audit shall be provided to The University of Oregon by the last business day of the eleventh (11th) month of the twelve (12th) month Warranty Period. The written report shall include recommendations for improvements and estimates of cost for labor and materials to complete the suggested improvements. The University of Oregon' equipment will be audited for:
   a. Code Compliance. Evaluate current Code compliance of all equipment. Monitor industry and Code developments and provide The University of Oregon with warning of anticipated Code changes to take effect during the fiscal year following the audit report. Recommend corrections, which should be made in the fiscal year following the audit report.
   b. Equipment Performance. Audit performance of all equipment against its original parameters or specifications. Recommend corrections, which should be made in the fiscal year following the audit report.
   c. Equipment Aesthetics. Audit the physical condition and appearance of the equipment visible to users and recommend upgrades, which should be considered to keep the equipment appealing to users and current with Site standards for colors and decoration schemes.
   d. Written reports of said tests shall be submitted to The University of Oregon Elevator Coordinator within five (5) calendar days of actual testing.
   e. The University of Oregon Elevator Coordinator shall receive seven (7) days prior written notification of all tests so that a Representative of The University of Oregon may witness said tests. Safety precautions are understood to be of highest priority. Care will be taken to safeguard all surrounding building property during the testing. If during the testing, the actual testing fails the prescribed testing procedures in the ASME A17.1 and re-testing is required, the Elevator Contractor shall pay all costs of The University of Oregon' Representative to witness such testing.

K. CHARTS-LOGS-INSPECTIONS
   1. Elevator Contractor shall post the Elevator Contractor's Maintenance Control Program (MCP) and a Work Log in each elevator machine/control room and designated area. The MCP/Work Log shall include all entries for routine and non-routine maintenance and repairs, including supervisor's surveys. Entries shall include date Work is complete, mechanics or supervisor's name, brief description of Work completed (including elevator number serviced) and the approximate time required for the Work. The MCP/Work Log and Preventive Maintenance Schedule/Chart shall be maintained for The University of Oregon' inspection at any time. The University of Oregon may copy the MCP/Work Log and Preventive Maintenance Schedule/Chart at any time.
   2. Elevator Contractor shall provide The University of Oregon with a schedule, in either written or electronic form, (as preferred by The University of Oregon) of when each elevator shall be taken out of service for Preventive Maintenance. The University of Oregon must approve any changes to this schedule in writing, and may reject any schedule that conflicts with The University of Oregon' efficient operations.
   3. Elevator Contractor shall offer inspections of hoistway, pit equipment, car top, machine/control room and cab interiors to The University of Oregon upon completing Preventive Maintenance scheduled at no expense to The University of Oregon.

L. DISPOSAL OF OILS/MATERIALS, ETC
1. Elevator Contractor will be fully responsible for removal and disposal of all oils, greases, solvents and soiled cleaning cloths/rags that are used in the repair, service and adjusting of all elevator equipment. All material will be disposed of in accordance with all present or future City, State and Federal Laws and Regulations, which may be applicable.
2. When work is performed, the Elevator Contractor shall insure that all areas are clean and salvaged materials or scraps are removed before leaving jobsite. If Elevator Contractor fails to do so, The University of Oregon may perform necessary clean up actions and shall invoice the Elevator Contractor for all costs.

M. EXTENT OF COVERAGE
1. Elevator Contractor shall prepare and submit to The University of Oregon a detailed preventive maintenance schedule for all elevator equipment to be serviced within five (5) calendar days after execution of the Warranty Period. As a minimum, the elevators shall be examined and maintained in accordance with the following frequency:

Minimum Service Frequency

Monthly Service

2. Extent of Coverage-Gearless: Elevator Contractor shall:
   a. Regularly and systematically examine, clean, lubricate, adjust, and, when conditions warrant, repair or replace the following items including all other items or components pertaining to the operation, maintenance, adjusting, repair, testing, cleaning of the total elevator equipment:
      - Entire Gearless hoist machine.
      - Hoist and governor ropes.
      - Governor.
      - Governor pit sheave.
      - Controllers, Selector, Starters, Dispatcher and Relay Panels.
      - All Bearings.
      - All Rotating Elements.
      - Contacts, Relays and Timers.
      - Resistors and Transformers.
      - Solid-State Devices.
      - In-Car Emergency Lighting and all in-car lighting fixtures/bulbs.
      - Traveling Cables.
      - Firefighter's Service equipment.
      - Automatic Power Door Operators, Landing and Car Door Hangers, Landing and Car Door Contacts, Door Protective Devices, Hoistway Door Interlocks, Bottom Door Guides.
      - Interlocks and Door Closures.
      - Car Buffers.
      - Car Exhaust Fan.
      - Car-Top Inspection Station.
      - Limit and Slowdown Switches.
      - Door Protective Devices and Alarm Bells.
      - Car and Corridor Operating Pushbuttons.
      - Load Weighing equipment.
      - All Hall Lanterns, Car Position and Hall Position Indicators, Lobby Control Panels, Car Operating Panels, and all other signal and Accessory Facilities furnished and installed as a part of the whole equipment.
      - Car and counterweight roller guides.
3. Furnish lubricants and all cleaning supplies.

N. EXCLUSIONS

The following items of equipment, hoistway and machine/control room enclosure are not included in this Warranty Period unless damaged by the Elevator Contractor.

1. Elevator Contractor shall not be responsible for the following items and shall receive compensation for repairing such items. Rates as specified in the Warranty Period:
   a. Door knocked off the tracks/broken gibs.
   b. Elevators left on independent, fire, attendant or emergency service.
   c. Elevator call buttons broken, burned or jammed.
   d. Car door detector out of adjustment from doors being hit.
   e. Elevator turned off inside the car and the door pulled shut, unless there is an actual elevator problem that is included in their Warranty Period.
2. Elevator Contractor shall not be responsible for repairs and replacement pertaining to the car enclosure, including removable panels, door panels, car doors, suspended ceilings, handrails, car finish and flooring coverings, hoistway enclosures, hoistway entrance frames, sills and emergency telephone instruments, signal fixture faceplates, Smoke Detectors, and cleaning of car interiors, unless any components has been damaged by the Elevator Contractor. Elevator Contractor shall be responsible to maintain all elevator handrails correctly fastened to the cab walls, at all times.
3. Elevator Contractor shall not be responsible to replace electrical mainline and auxiliary disconnect switches, fuses and feeders to control panels. All above-ground electrical conduit and wiring are included in the Warranty Period.
4. Elevator Contractor shall not be responsible for repairs required because of negligence, accident or misuse of the equipment by anyone other than Elevator Contractor, their employees, subcontractors, and agents.
5. The University of Oregon agrees to maintain the elevator pit and machine/control room free from water and from unauthorized use.
6. Elevator Contractor shall not be obligated to make other safety tests or install new attachments, whether or not recommended or directed by insurance companies, or by federal, state, municipal, or other governmental or non-governmental authorities unless requested to do so by The University of Oregon. In that event, Elevator Contractor shall proceed to perform the tests or work, and shall be reimbursed at the rates as stated in the Warranty Period. Elevator Contractor shall advise The University of Oregon, however, whenever such tests or attachments are recommended or required. Elevator Contractor shall not be required to make renewals or repairs necessitated by the negligence, misuse or obsolescence of the equipment or any other cause beyond its control except ordinary wear and tear unless such renewals or repairs are caused by Elevator Contractor's negligence or misuse in performing or failure to perform pursuant to this Warranty Period.

O. INSPECTION OF EQUIPMENT AND FEES

1. The University of Oregon reserves the right to make such inspections and tests whenever necessary, at their expense, or at the expense of the Elevator Contractor if any provisions of this Warranty Period have not been adhered to by Elevator Contractor, when deemed necessary to ascertain that the requirements of these specifications are being fulfilled. The University of Oregon will promptly notify Elevator Contractor in writing of the deficiencies identified. Elevator Contractor shall resolve all deficiencies at Elevator Contractor’s total expense within ten (10) calendar days of written notification.
2. Elevator Inspection fees shall be paid by The University of Oregon. The University of Oregon shall notify Elevator Contractor, in writing, of items required to be completed, which are the responsibility of Elevator Contractor. Elevator Contractor shall correct all deficiencies immediately. Fees for re-inspection due to failure to eliminate deficiencies included in this Warranty Period and the responsibility of Elevator Contractor shall be paid by Elevator Contractor. Elevator Contractor shall submit, in writing, a Work schedule of items to be completed by Elevator Contractor within seven (7) calendar days of notification

of The University of Oregon. Elevator Contractor shall notify The University of Oregon, in writing of all items corrected. The University of Oregon shall notify State of Oregon Elevator Inspector, in writing, of items completed with copy of report to Elevator Contractor.

P. CANCELLATION TERMS
1. If Elevator Contractor violates any of the provisions of this Warranty Period or fails to properly provide the services required by this Warranty Period, The University of Oregon shall advise, in writing, Elevator Contractor of specific deficiencies and shall allow ten (10) calendar days to correct these deficiencies to The University of Oregon' total satisfaction. The University of Oregon may after the ten (10) calendar day period proceed with the work by a Contractor of their choice to perform the work. Elevator Contractor agrees they shall reimburse The University of Oregon for any expense incurred therefore or The University of Oregon, at its election, may deduct the amount from any sum owed or to be owed Elevator Contractor under this Warranty Period. The University of Oregon may cancel this Warranty Period within thirty (30) days written notice to Elevator Contractor if any of the provisions of this Warranty Period are not completed by Elevator Contractor to the full satisfaction of The University of Oregon.
2. If The University of Oregon fails to pay current and properly payable monthly invoices within thirty (30) days of receipt of said invoice, Elevator Contractor may on thirty (30) days written notice, terminate this Warranty Period.

Q. REQUESTS FOR SERVICE
1. Elevator Contractor shall provide 24-hour/7-days a week answering service and shall provide a list of Elevator Contractor's Management Personnel home phone numbers for emergency contact in the event the answering service is ineffective. Management list shall be submitted to The University of Oregon within five (5) working days of the Warranty Period start date.
2. Elevator Contractor shall respond to all phone messages from The University of Oregon within fifteen (15) minutes of receipt.
3. Emphasis shall be placed on maintaining the elevators/s operating 24 hours a day/7 days a week. Removal of equipment from service for scheduled maintenance shall be scheduled with The University of Oregon Elevator Coordinator.
4. No repair shall be performed outside the scope of this Warranty Period without prior approval from The University of Oregon.
5. If any equipment is shut down for more than twenty four (24) continuous hours after notification of a failure (except for pre-scheduled or major equipment repairs) the monthly unit billing shall be suspended until the individual elevator equipment is restored to service.
6. In the event of an elevator failure to operate properly, The University of Oregon will notify Elevator Contractor by telephone and request immediate repair. For this purpose, Elevator Contractor shall maintain, at all times, office facilities, a twenty-four (24) hour telephone service and personnel to promptly dispatch competent mechanics to repair any reported elevator problem.
7. If a safety or potential safety problem exists, Elevator Contractor shall immediately correct the problem. Written notification of such corrective measures shall be provided to The University of Oregon, in writing, within one (1) business day.
8. In case of an elevator accident, Elevator Contractor shall be notified immediately by The University of Oregon. The elevator shall not be placed in operation until an investigation is performed by The University of Oregon' representative and State of Oregon Elevator Inspector. Elevator Contractor shall provide a written report to The University of Oregon stating the condition of the elevator before the Elevator Contractor leaves The University of Oregon' facility. The elevator will not be placed in operation until an investigation is performed by The University of Oregon' representative and/or the State of Oregon Elevator Inspector if the following conditions occur:

a. A person has been injured and requires first aid treatment.
b. The elevator is not safe to place in normal operating service because of obvious mechanical and/or electrical existing conditions.
c. There is a concern by the Elevator Contractor or The University of Oregon as to the possible future elevator malfunction if placed in service.

9. When corrective action is found to be the responsibility of the Elevator Contractor, the Elevator Contractor shall proceed immediately to make replacements, repairs, and corrections. If Elevator Contractor fails to perform the Work required by the terms of the Warranty Period in a diligent and satisfactory manner, The University of Oregon may, after five (5) calendar days written notice to Elevator Contractor, perform or cause to be performed all or part of the Work required thereunder. Elevator Contractor shall reimburse The University of Oregon for any expense incurred therefore or The University of Oregon, at its election, may deduct the amount from any sum owed or to be owed Elevator Contractor. When such Work is determined not to be the Elevator Contractor's responsibility, a written report, including a cost estimate to remedy the deficiency, signed by the Elevator Contractor, shall be delivered to The University of Oregon by 3:00 p.m. the next business day for further action by The University of Oregon. If The University of Oregon elects to have the Elevator Contractor perform these services, they will issue a separate Purchase Order Request beforehand. If a safety problem is noted, which is not within the Elevator Contractor's area of responsibility or expertise, written notice of such problem shall immediately be furnished to The University of Oregon.
10. No allowances shall be made to Elevator Contractor for extra costs as a result of difficulties encountered during any Work. All materials incorporated in the Work shall become the property of The University of Oregon upon material/parts installation.
11. Elevator Contractor will, upon request, assist The University of Oregon with written recommendations to improve service and reduce call backs Elevator Contractor shall provide the "Callback Log Form" to The University of Oregon within seven (7) calendar days after the end of the previous month. Preventive Maintenance tickets will be separated for Work completed. The intent of this summary is to minimize callbacks by keeping the Elevator Contractor and The University of Oregon aware of callback trends. Elevator Contractor shall review Preventive Maintenance duties and Callback Trends with The University of Oregon on a monthly basis. Elevator Contractor shall provide The University of Oregon, on a weekly basis, copies of all time tickets for "all" work performed during that week, if requested by The University of Oregon.
12. Downtime notification is required according to the following schedule:
    a. Emergency Shut Down. The University of Oregon is to be notified immediately by phone, cell phone, pager or radio of emergency repairs or safety issues at time of detection. At minimum, a voice-mail message is required.
    b. Short Shut Down. The University of Oregon is to be informed in writing (fax or e-mail acceptable) three (3) days in advance when an elevator will be taken down for two (2) hours to eight (8) hours for non-emergency service/repair/upgrade.
    c. Major Shut Down. The University of Oregon is to be informed in writing (fax or e-mail acceptable) one (1) week in advance when an elevator will be taken down for more than one (1) day for non-emergency service/repair/upgrade.
13. Elevator Contractor shall immediately shut down and remove the elevator equipment from service when it appears to Elevator Contractor to be unsafe or operating in a manner which might cause injury to anyone using said elevator equipment. Elevator Contractor shall provide The University of Oregon written notice of such action immediately, stating the reason the elevator was placed out of service and corrective measures required to place the elevator in service. Written notice shall be provided by Elevator Contractor before Elevator Contractor's personnel leaves The University of Oregon.
14. Request for "Emergency Service Requests" is made when an elevator is shut down or unsafe to use. "Emergency Service Requests" shall include the following and shall require

24 hours day 7 days a week on-site service at no additional cost to The University of Oregon:

a. Person(s) trapped in an elevator.
b. Any other situations relating to any or all equipment listed in "Schedule of Equipment" which, in the opinion of The University of Oregon, requires immediate response and resolution by Elevator Contractor. Examples include Seismic activity requiring reset after an earthquake.

15. "Emergency Service Requests" Response Time is counted from the end of the phone call requesting repair to when the technician arrives at University of Oregon and contacts the Elevator Coordinator or Security Office.. Elevator Contractor shall respond to all "Emergency Service Requests" in accordance with the following standards:
    a. Weekdays between 8:00 am to 5:00 pm: = 30 minutes. If the Elevator Contractor does not arrive on-site within the 30 minute period and the UOPD calls the Fire Department to extricate a trapped elevator passenger, the Elevator Contractor shall pay for all cost if the Fire Department is required to damage any elevator equipment in removing the trapped elevator passenger.
    b. All other days/hours: = 60 minutes. If the Elevator Contractor does not arrive on-site within the 30 minute period and the UOPD calls the Fire Department to extricate a trapped elevator passenger, the Elevator Contractor shall pay for all cost if the Fire Department is required to damage any elevator equipment in removing the trapped elevator passenger.
    c. "Emergency Service Requests" shall be resolved as quickly and effectively as possible and in such a manner that the disruption of equipment service and inconvenience to users is absolutely minimized.
    d. Elevator Contractor shall mobilize all necessary resources, including labor, equipment, tools, parts and materials as required to complete the work with these requirements.
16. Elevator Contractor shall provide unlimited "Routine Service Request" for all elevators/s not designated "Critical Service and High Volume" in "Schedule of Equipment" at no additional cost to University of Oregon. "Routine Service Requests" Response Time is counted from the end of the phone call requesting repair to when the technician arrives at University of Oregon and contacts Property Management. A "Routine Service Request" is any request not deemed by University of Oregon to require immediate response and resolution by Elevator Contractor. "Routine Service Requests" shall include the following:
    a. Weekdays between 8:00 am to 5:00 pm: = 30 minutes.
    b. All other days/hours: = 90 minutes.
    c. "Routine Service Requests" shall be resolved as quickly and effectively as possible and in such a manner that the disruption of equipment service and inconvenience to users is absolutely minimized.
    d. Elevator Contractor shall mobilize all necessary resources, including labor, equipment, tools, parts and materials as required to complete the work with these requirements.
17. Remote Monitoring: Any and all remote monitoring equipment shall be at the Elevator Contractor's total expense.
18. Elevator Contractor shall assign an elevator mechanic to assist with the monthly generator tests at University of Oregon, at no additional cost to University of Oregon.

R. WORK TICKETS
1. After each service/trouble call and regularly scheduled maintenance, a legible Work ticket will be completed indicating the date of work, work performed, parts replaced, total hours on the job and the Service Technician performing the Work. In the case of an elevator shutdown or repair, the Work ticket will describe the cause of the elevator failure and the action taken to correct the failure. Each week, Elevator Contractor shall provide a written callback report showing cause and correction of each week's callback(s).

2. Each week a Report shall be sent to The University of Oregon and/or their representative, a copy of all Time Tickets, Callback Logs, Extra Billing, Test Reports, Repairs Required, that includes all items as described in 1.08.R.1. Reports shall be received no later than each Tuesday of each week.
3. All Work Tickets shall be left with The University of Oregon after all visits. Preventive Maintenance tickets shall be separated for work completed. Copies of Work Tickets shall be included in any invoice other than the monthly Preventive Maintenance Warranty Period Amount Invoice.
4. Elevator Contractor shall provide, if requested by The University of Oregon and/or a company designated by The University of Oregon, quarterly, by the 10th day of the month following the quarter, copies of the three previous monthly "Check Charts". Report shall contain, but shall not be limited to, the following information:
   a. Dates and times of inspection and/or service.
   b. Names of persons performing inspection and/or service.
   c. Location and description of equipment being inspected and/or service.
   d. Condition of equipment.
   e. Inspection/service performed.

S. HOURS OF WORK
1. All Work to be performed, not included in this Warranty Period, will be authorized by The University of Oregon by written notification to Elevator Contractor prior to commencement of the Work. All vandalism work required shall not be completed/provided by the normal Elevator Contractors Service Technician on-site for performing Preventive Maintenance unless authorized by The University of Oregon. Elevator Contractor may be required to provide additional Mechanics for extra work required.
2. Maximum travel cost shall not exceed one (1.5) Mechanic hour rate.
3. All Work to be performed, not included in this Warranty Period, will be authorized by The University of Oregon by written notification to Elevator Contractor prior to commencement of the Work. The maximum hourly rates, and material markup from cost, will be as follows:

	MECHANIC	**HELPER**
Straight Time	$174.00	$151.00
Straight Time + 70%	$214.00	$185.00
Straight Time + 100%	$228.00	$196.00

MATERIAL MARKUP % 12

4. Preventive Maintenance Hours:
   a. Elevator Contractor shall provide a minimum of one (1) hour, per month/per elevator performing Preventive Maintenance.
   b. The above-stated hours shall be the minimum actual "On Site" hours performing the Preventive Maintenance duties. These minimum hours do not include Callbacks, Repairs, Travel Time, Adjustments or Testing. Documentation of Preventive Maintenance hours is required for monthly payment due Elevator Contractor. For any hours less than the stated not spent, per month, on site, on Preventive Maintenance, the dollar value (per hour) will be deducted from that month’s invoice. The hourly dollar value for the Preventive Maintenance Work is $300.00.
5. Elevator Contractor shall pay for all cost's, including travel time and mileage, of any callback, including 24 hours a day, 7 days a week.
6. Elevator Contractor shall pay for all cost's, including travel time and mileage, of any regular time callback if the following conditions occur:
   a. If the elevator is running on arrival (ROA) when Elevator Contractor arrives on-site, and it was verified by The University of Oregon that the elevator was either not in operation or in a state of not operating correctly.

T. WARRANTY PERIOD
The term of this Warranty Period shall be for a twelve (12) month period.

U. CONFIDENTIAL INFORMATION
1. Neither Elevator Contractor, nor Elevator Contractor's agents, employees, or subcontractors, shall disclose to any person or entity any of The University of Oregon' confidential information, whether written or oral, which Elevator Contractor or Elevator Contractor's agents, employees, or subcontractors may obtain from The University of Oregon, or otherwise discover in the performance of this Warranty Period. The term "Confidential Information" shall include, without limitation;
   a. The terms of this Warranty Period are confidential and, except as otherwise required by law, The University of Oregon and Elevator Contractor shall not disclose the terms or existence of this Warranty Period to any party without prior written consent.
   b. All information or data concerning or related to The University of Oregon, including the improvement, development or general business operations.
   c. Elevator Contractor shall not copy, disperse, or in any way disclose, any of The University of Oregon' information to any person(s) or company, unless such information has been given, either verbal or written to such person by The University of Oregon and The University of Oregon does not consider such information as confidential.
   d. All printed information that is the property of The University of Oregon.
   e. All The University of Oregon' property.
2. Elevator Contractor shall maintain all confidential information in strict confidence. Elevator Contractor shall take all reasonable steps to ensure that no unauthorized person or entity has access to confidential information, and that all authorized persons having access to confidential information refrain from any unauthorized disclosure. Without limiting or otherwise affecting the relationship of the Parties to this Warranty Period, The University of Oregon may require each of Elevator Contractor's employees performing Work to sign a Nondisclosure Agreement.
3. The provision of this shall not apply to any information that:
   a. Is rightfully known to Elevator Contractor prior to disclosure by The University of Oregon.
   b. Is rightfully obtained by Elevator Contractor from any third party.
   c. Is made available by The University of Oregon to the public without restriction.
   d. Is disclosed by Elevator Contractor with the prior written permission of The University of Oregon.
   e. Is independently developed by Elevator Contractor without the use or benefit of the confidential information provided by The University of Oregon.

V. EXAMINATION OF RECORDS
1. The University of Oregon shall have the right to examine or audit any directly pertinent books, documents, papers and records of Elevator Contractor involving transactions related to this Warranty Period Warranty Period for one year after expiration of this Warranty Period.

W. INSURANCE
1. Elevator Contractor shall take out and maintain, during the life of this Warranty Period, Workmen's Compensation Insurance with statutory limits set by the State of Oregon laws for the protection of their employees.
2. Elevator Contractor shall carry a Comprehensive General Liability policy including completed operations, blanket contractual, broad form property damage and protective liability in a casualty or liability insurance company acceptable to The University of Oregon, which insurance shall fully protect Elevator Contractor any Subcontractor performing the work covered by this Warranty Period, The University of Oregon and Elevator Consultant from all loss and liability.

3. Elevator Contractor shall not commence work under this Warranty Period until it has obtained all insurance required hereunder. Elevator Contractor shall provide and maintain, until the work covered in this Warranty Period is completed and accepted by The University of Oregon and Elevator Consultant, the minimum insurance coverage as follows:

	TYPE OF COVERAGE	LIMITS OF LIABILITY
a)	WORKMEN'S COMPENSATION	STATUTORY
b)	EMPLOYER'S LIABILITY	$2,000,000
c)	COMPREHENSIVE COMMERCIAL LIABILITY INCLUDING BLANKET CONTRACTUAL COMPLETED OPERATIONS, PRODUCTS INJURY AND INDEPENDENT SERVICE PROVIDER, COMBINED BODILY INJURY AND PROPERTY DAMAGE	
	Per Occurrence:	$2,000,000
	Aggregate	$5,000,000
d)	COMPREHENSIVE AUTOMOBILE LIABILITY	
	(1) BODILY INJURY	$1,000.000 EACH PERSON $2,000,000 EACH OCCURRENCE
	(2) PROPERTY DAMAGE	$2,000,000 EACH OCCURRENCE.
	(3) UMBRELLA LIABILITY COVERAGE	$5,000,000

4. Elevator Contractor shall file with The University of Oregon and Elevator Consultant, a Certificate of Insurance from their insurance company, stating that such insurance is being carried and that The University of Oregon and Elevator Consultant will be notified at least thirty (30) days prior to any cancellation.
5. The Insurance Certificate shall state, "Such policies are primary and any insurance carried by, The University of Oregon and its agent(s), is secondary and non-contributing with such policies."
6. Elevator Contractor shall carry the above indicated insurance at its own expense.
7. All insurance shall be provided by responsible insurance companies qualified to do business in the State of Oregon.

X. INDEMNIFICATION

1. Elevator Contractor hereby agrees to defend, indemnify, and hold harmless The University of Oregon and The University of Oregon' employees ("Indemnified Parties") from and against all claims, liabilities, damages, expenses, causes of action, judgments, as well as cost (including reasonable attorney's fees incurred on such claims and in proving the right to indemnification) arising directly or indirectly out of any negligent act, error, or omission of Elevator Contractor or Elevator Contractor's subcontractors, employees, or agents ("Indemnitor"). Elevator Contractor will fully indemnify the Indemnified Parties for the sole negligence of the Indemnitor. Elevator Contractor will indemnify the Indemnified Parties for the concurrent negligence of the Indemnitor to the extent of the Indemnitor's negligence. The University of Oregon shall provide Elevator Contractor prompt notice of any claim or liability hereby indemnified against Elevator contractor and thereupon, Elevator Contractor shall be responsible to control and assume full liability for the defense of such matter. The indemnity contained herein shall not be deemed to be a waiver of, or in limitation or, and other rights of The University of Oregon may have. To the extent a court or arbitrator strikes any portion of this indemnification provision for any reason, all remaining provisions shall retain their vitality and effect.

Y. COSTS AND ATTORNEYS FEES

1. In the event either party fails to perform its duties or obligations under this Warranty Period, or if either party breaches the terms and conditions of this Warranty Period, the prevailing party of any Warranty Period dispute shall be awarded its reasonable costs and attorney fees associated therewith.

Z. DISPUTE RESOLUTION AND APPLICABLE LAW
1. Except in the case of an emergency, if the Elevator Contractor believes it is entitled to additional compensation for any work, it shall provide The University of Oregon with written notice of such claim prior to proceeding with the work. The written notice shall include the reason that the Elevator Contractor considers to work to be an additional cost and an estimate of such costs. Failure to provide such timely, written notice shall constitute a conclusive waiver of the right to seek compensation for such claim. If the claim is rejected, the Elevator Contractor may bring no litigation against The University of Oregon unless the claim is first subject to non-binding mediation under the Construction Mediation Rules of the American Arbitration Association ("AAA"). The Elevator Contractor is responsible for initiating the mediation process. This requirement cannot be waived except by an explicit written waiver signed by The University of Oregon and the Elevator Contractor. If the parties are unable to agree to a mediator within thirty (30) days after The University of Oregon' receipt of the written request for mediation, either party may submit a request for mediation to the AAA. Each party must attend the mediation session with a person having full authority to settle the claim. All claims that are not resolved through such mediation shall be subject to litigation in Lane County Superior Court.
2. The Warranty Period shall be construed, interpreted, and governed by the laws and regulation of the State of Oregon, without regard to its choice of law provisions.

AA. ELEVATOR CONTRACTORS EMPLOYEES' SAFETY AND ACCIDENT PREVENTION PROGRAM
1. Elevator Contractor shall submit, for review, to The University of Oregon, the Elevator Contractors Employees' Safety and Accident Prevention Program. Document shall be up-dated when any changes in the Program are adopted by Elevator Contractor.
2. Elevator Contractor shall verify, in writing, that all Elevator Contractors personnel that perform any work under this Warranty Period have completed the Elevator Contractors required training under this Safety and Accident Prevention Program and that the Employee shall receive additional on-going and future training under the Elevator Contractor's Safety and Accident Prevention Program.

BB. NO DISCRIMINATION
1. Elevator Contractor will not discriminate against any employee or applicant for employment by Elevator Contractor because of race, creed, color, age, sex, marital status or national origin. Elevator Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, sex, marital status or national origin. Elevator Contractor agrees to post in conspicuous places notices setting forth the provisions of this Section.

CC. MATERIALS
1. Elevator Contractor shall maintain an inventory level of spare/replacement elevator parts on-site which will permit prompt repair or replacement of components that fail or become worn. The elevator shall not be left shut down more than four (4) hours because of spare (replacement) parts not on-site.
2. Elevator Contractor shall mark and identify all lubricating oils and cleaning solvents that are stored on-site. All storage cans shall be Code approved. All unmarked cans shall be removed from The University of Oregon' premises. Elevator machine/control room shall not be used for storage of materials or items that do not pertain to the elevator maintenance of The University of Oregon' elevators.

3. In performing the Work indicated in these specifications, Elevator Contractor agrees to provide only manufacturer approved replacement parts used by the manufacturers of the equipment for replacement or repair, and to use only those lubricants obtained from and/or recommended by the manufacturer of the equipment. If Elevator Contractor wishes to provide replacement parts or lubricants other than recommended by the Elevator Manufacturer, Elevator Contractor shall, in writing, state the type proposed and the lubrication specifications to The University of Oregon for review and written approval. These replacement parts shall not be considered an upgrade of elevator equipment and shall be provided by Elevator Contractor at no additional cost to The University of Oregon.
4. Contractor shall procure replacements parts in the most expeditious manner available.
5. Parts requiring repair shall be rebuilt to an "as new" condition.
6. Elevator Contractor shall maintain on site or at their local office, at all times, a sufficient amount of replacement parts, by the original manufacturer, to maintain the equipment in first-class and safe operating condition, at all times. The minimum inventory shall include, but not be limited to, the following minimum replacement parts of each type of elevator:

ELEVATORS

1	Door Operator-each type/model, complete.
1	Car Door Detector, complete.
4	Car Door Rollers-each type.
6	Hoistway Door Hanger Rollers-each type.
4	Hoistway Door Closures-each type.
2	Car and Counterweight Roller Guides-each type.
4	Electrical Mechanical Hoistway Door Interlocks-each type.
4	Hoistway and Car Door Gibs-each type.
2	Hall and Car Push-Button Replacement Parts-each type.
1	Hoistway Limit Switches Parts-each type.
1	Hoistway Slowdown Switches Parts-each type.
2	Each of Electrical Relays.
1	Each of all Solid State Circuit Boards-for each type.
	Ample Supply of Lubricants and Cleaning Material.

DD. MICROPROCESSORS:

1. Elevator Contractor shall maintain, in stock, available for immediate usage, an inventory of replacement parts for any microprocessor/solid state equipment used for each elevator system. This includes all solid-state boards located in the machine/control room, fixture stations, car tops or any other location.
2. Elevator Contractor's service technicians shall carry diagnostic equipment designed to analyze programming and microprocessor functions and malfunctions on all elevator equipment.
3. Elevator Contractor shall pay for all costs if the original elevator manufacture must be brought on-site to re-program the elevator system or be required to place the elevator in service.

1.09 QUALITY ASSURANCE

1. Elevator Contractor shall furnish Owner with all special tools, meters, diagnostic tools/devices, troubleshooting special hand-held tools/devices, printed information, adjusting information and all other special tools/devices to perform maintenance, troubleshooting, repairing and adjusting at conclusion of elevator new installation. If any special tool, meter, diagnostic tools/device requires readjusting or re-programming Elevator Contractor shall pay for all costs including freight for a period of five (5) years from date of elevator final acceptance by Architect and Elevator Consulting Services, Inc. Cost, if any to Owner, for the above stated items shall be included in Base Bid. After the

initial five (5) year period all upgrades, readjustments or reprogramming of any or all diagnostic tools or devices will be provided as needed or required on a purchase order basis with the original Elevator Contractor that installed/manufactured the elevator equipment.

2. Elevator Contractor shall provide and install all software improvement up-grades for a period of five (5) years from date of elevator final acceptance by Architect, State of Oregon Elevator Inspector and Elevator Consulting Services, Inc. The up-grades are defined as improvements for the elevator operation. If any elevator safety software up-grades are designed or discovered by the elevator manufacturer, the up-grades shall be installed immediately. Elevator Contractor shall pay all costs of the software up-grades.

3. Elevator Contractor shall provide Owner the ability to purchase and receive all elevator replacement parts within twenty four (24) hours from date of parts order by Owner. Replacement and spare parts are defined as any and all items required to maintain, service, repair, adjust and operate the elevator as designed and installed, in a safe and trouble-free manner. Elevator Contractor shall sell any and all spare parts including proprietary parts to Owner during the entire life cycle of the elevator equipment.
   a. Elevator Contractor shall provide, in writing, a list of all proprietary equipment that shall be provided, together with a guarantee of availability. This guarantee shall specify that all proprietary parts will be available within a twenty four (24) hour period of order placed. Owner may return the worn or defective part to Elevator Contractor after the replaced part is delivered to Owner and the elevator has been placed in normal operation. Elevator Contractor shall submit a list of all proprietary equipment that is required in the elevator drive and control system. The list shall include individual item cost and part numbers or coding. Parts ordering information shall be provided.

1.10 ACCEPTABLE ELEVATOR EQUIPMENT MANUFACTURERS

A. Controls/hoist machine/counterweight/rails/car safeties/etc:
   1. Otis Elevator Company-Gen2
   2. Kone Elevator – MonoSpace
   3. ThyssenKrupp Elevator-Synergy
   4. Motion Control Engineering, Inc.-MRL

B. Car & Counterweight Roller Guides:
   1. Otis Elevator Company-Gen2
   2. Kone Elevator – MonoSpace
   3. ThyssenKrupp Elevator-Synergy
   4. Motion Control Engineering, Inc.-MRL
   5. ELSCO

C. Operating Fixtures-Vandal Resistant:
   1. Otis Elevator Company-Gen2
   2. Kone Elevator - MonoSpace
   3. ThyssenKrupp Elevator-Synergy
   4. Motion Control Engineering, Inc.-MRL
   5. Innovation Industries Inc. The Bruiser-Vandal Resistant

D. Hall Lanterns-Vandal Resistant:
   1. Otis Elevator Company-Gen2
   2. Kone Elevator-MonoSpace
   3. ThyssenKrupp Elevator-Synergy
   4. Motion Control Engineering, Inc.-MRL

5. Innovation Industries Inc. The Bruiser-Vandal Resistant

E. Car Door Protective Device:
   1. Janus Panachrome 3D

F. Car Door Operator:
   1. Otis Elevator Company-Gen2 – Glide P
   2. ThyssenKrupp Elevator-Synergy – HD 98
   3. Kone Elevator-MonoSpace – AMD 2.0
   4. Motion Control Engineering, Inc.-MRL
   5. G.A.L.-Manufacturing Company-VVVF-High Speed-Model MOVFR-1/2 hp-Closed Loop

G. Hoistway Door Tracks, Hangers, Interlocks:
   1. Otis Elevator Company-Gen2
   2. Kone Elevator - MonoSpace
   3. ThyssenKrupp Elevator-Synergy
   4. Motion Control Engineering, Inc.-MRL
   5. G.A.L. Manufacturing Company

H. Car Door Tracks, Hangers, Gate Switch:
   1. Otis Elevator Company-Gen2
   2. Kone Elevator - MonoSpace
   3. ThyssenKrupp Elevator-Synergy.
   4. Motion Control Engineering, Inc.-MRL
   5. G.A.L. Manufacturing Company

I. Cab:
   1. Hauenstein and Burmeister
   2. Custom Cabs, Inc.
   3. Winter and Bain

J. Hoistway and Car Door Gibs
   1. Southern Elevator & Electric Supply (SEES-The Enforcer)

K. Hoistway Door Escutcheons:
   1. Tri-Lok Mfg. & Maintenance Corp. 625 Fifth Avenue-Pelham, New York, 10803

L. Car/Hall Position Indicators/Signals-Vandal Resistant:
   1. Otis Elevator Company-Gen2.
   2. Kone Elevator-MonoSpace
   3. ThyssenKrupp Elevator-Synergy.
   4. Motion Control Engineering, Inc.-MRL
   5. C. E. Electronics, Inc.

M. Alarm Bell:
   1. Nylube Products Model ELB-6

N. In Car ADA Emergency Communication:
   1. Ramtel Corp. Model RR733-924M.

O. In Car Emergency Lighting:
   1. Otis Elevator Company-Gen2.
   2. Kone Elevator-MonoSpace
   3. ThyssenKrupp Elevator-Synergy.
   4. Motion Control Engineering, Inc.-MRL
   5. Nylube Products Model EL-SS

P. In-Car Exhaust Fan:
   1. Otis Elevator Company-Gen2.
   2. Kone Elevator-MonoSpace
   3. ThyssenKrupp Elevator-Synergy.
   4. Motion Control Engineering, Inc.-MRL
   5. Nylube X12F9

Q. Intercom:
   1. Otis Elevator Company-Gen2.
   2. Kone Elevator-MonoSpace
   3. ThyssenKrupp Elevator-Synergy.
   4. Motion Control Engineering, Inc.-MRL
   5. JFillips LLC

PART 2 - Products

2.01 GENERAL:

A. The completed elevator installation shall conform to the Elevator Safety Code except where explicitly indicated or specified otherwise. The new installation, including equipment, material, workmanship, design, and tests shall be in accordance with the standards, rules and Specifications referenced. All material and equipment shall be new. Electrical materials shall meet and bear evidence of meeting the requirements of Underwriter's Laboratories. The equipment shall be the product of a manufacturer regularly engaged in the manufacture of new installation of this type of equipment. Working parts shall be accessible for inspection, servicing and repair. Adequate means shall be provided for the lubrication of all wearing parts that require lubrication.

   1. Type of Equipment: One (1) Overhead Gearless Traction Elevator-Elevator Contractor to field verify all following information:
      a. Elevator Number: #4
      b. Rated Capacity: 3500 LBS.
      c. Rated Speed: 350 F.P.M. Avg.
      d. Floor Height: Elevator Contractor to verify.
      e. Floors Served: 1-2-3-4
      f. Number of Landings: Four (4)
      g. Number of Openings: Front Four (4)-opening at 1, 2, 3, & 4
      h. Floor to Floor Heights: 1-2 = 10'-3" 2-3 = 10'-3" 3-4 = 10'-5"
      i. Total Travel: 30'-11"
      j. Pit Depth: 5'-6"
      k. Clear Overhead: 23'-0"
      l. Size of Door Opening: 3'-6" wide x 7'-0" high
      m. Type of Door Opening: Single Speed/Center Opening
      n. Cab Height: 8'-0"

2.02 MATERIALS

A. Steel:
   1. Sheet Steel Furniture Steel for Exposed Work: Stretcher-leveled, cold-rolled, commercial-quality carbon steel, complying with ASTM A366, matte finish.
   2. Sheet Steel for Unexposed Work: Hot-rolled, commercial-quality carbon steel, pickled and oiled, complying with ASTM A569.
   3. Structural Steel Shapes and Plates: ASTM A6, ASTM A36, and ASTM A108.

B. Stainless Steel:
   1. ASTM A 167, Type 302 or 304 with #4 satin finish. Apply mechanical finish on fabricated work in the locations shown or specified. Protect with adhesive-paper covering. Graining direction as shown, or if not shown, in vertical dimension.

C. Aluminum:
   1. Extrusions per ASTM B221; sheet and plate per ASTM B209.

D. Plastic Laminate:
   1. ASTM E84 Class A and NEMA LD3, Fire-Rated Grade (FR-50), Type 7, 0.050" +/- .005" thick; color and texture as follows:
      a. Exposed Surfaces: Color and texture selected by University of Oregon Elevator Coordinator.
      b. Concealed Surfaces: Manufacturer's standard color and finish.

E. Fire Retardant-Treated Plywood Panels:
   1. Minimum 25 mm (1 in.) thick backup for natural finished wood, and plastic laminate veneered panels, edged and faced. Provide with suitable anti-warp backing. Comply with ASTM E84 Class "I" rating with a flame-spread rating of 25 or less.

F. Baked Enamel:
   1. Apply factory applied baked enamel in the selected solid color.

2.03 PERFORMANCE

A. Speed:
   1. +/- 1% of contract speed in both directions under any load conditions.

B. Stopping Accuracy:
   1. +/- 6 mm (0.25 in.) under all loading condition or direction of travel.

C. Door Opening Time: Seconds from start of opening to full open:
   1. 2.5 seconds.

2.04 OPERATION

A. Simplex Selective Collective Automatic Operation:
   1. Automatic operation by means of one button in the car for each landing served, one button at each terminal landing and double buttons at each intermediate landing. When elevator is idle, automatically start car and dispatch it to floor corresponding to registered car or hall call. Slow down and stop car automatically at floor corresponding to registered call. As slowdown is initiated for a hall call, automatically cancel the call and render the hall button for that direction of travel ineffective until the car leaves the floor. Cancel car calls in same manner. Hold car at arrival floor an adjustable time interval to allow passenger transfer. Illuminate appropriate button to indicate call registration. Extinguish light when call is answered.

B. Independent Service:
   1. Independent service operation shall be provided through the actuation of a key switch in the car operating service panel. This service will cancel any existing car calls, and hold the doors open at the landing. The car will only respond to car calls. While on independent service the hall arrival lanterns shall be inoperative.

A. The maximum RMS Total Harmonic Distortion (THD) contribution to the building power distribution network, from the elevator drive and hoist system, shall be restricted for voltage (THDV) and current (ampere) (THDI). The RMS total harmonic distortion is defined as the amount of harmonic distortion as a percentage of the RMS value of waveforms at all

frequencies (fundamental and harmonic). The following THD criteria are to be understood as RMS unless otherwise noted.

1. THD will be measured and compared to the building THD. The building THD will be measured with the new elevator systems disconnected from the building power distribution system.
2. The building THDV and THDI; with the elevator disconnected, will be measured at the elevator's feeder disconnecting means.
3. The elevator THDV and THDI; will be measured at the elevator's feeder disconnecting means located in the elevator equipment room. Individual measurements will be taken with the elevator operating at full rated load at contract speed in the up direction.
4. The maximum allowable THDV and THDI will be the calculated difference between the building THDV and THDI measurements and the elevator THDV and THDI measurements respectively.
5. Maximum allowable THDV from the elevator motor drive is three percent (3%) or the value of the building THDV measured in part b above, whichever is greater.
6. Maximum allowable THDI from the elevator motor drive is fifteen percent (15%). No individual current harmonic shall exceed ten percent (10%) relative to the fundamental (THDI-F). THDI-F defines the amount of harmonic distortion as a percentage of the fundamental frequency current.
7. Measurements shall be taken upon substantial completion as coordinated by the Elevator Contractor.
8. Harmonic distortion control may be accomplished by integral design techniques of the elevator control system, adding internal equipment/devices, or adding external equipment/devices.
9. Solid State Power Control: Provide a solid state power controller to operate the hoist motor, brake, and other electromechanical devices. The controller shall include interfacing pilot electromechanical devices as required for accepting the necessary elevator hoistway switches and operating switches. These include, as a minimum, terminal slowdown devices, overtravel limit switches, solid state magnetic leveling switches, inspection operating pushbuttons, emergency stop switches and governor over-speed switches.
10. Microprocessor Elevator Logic Control: The operation shall be accomplished utilizing microprocessor computer logic control. The elevator control program shall be contained in nonvolatile, programmable, read-only memory. The control shall be constructed such that future alterations in elevator operation including changes of operating parameters including but not limited to speed, acceleration, jerk, pre-opening, door speed, door dwell, floor counts for leveling, and car zoning may readily be made as part of normal maintenance and service. If a separate, detachable device is required, it shall be furnished. Safety circuits shall be monitored and controlled by the programmable logic control with redundant protection. The microprocessor elevator logic control shall be contained in a NEMA 1 cabinet.
11. Fault Diagnosis: Capability shall be provided to diagnose faults to the level of individual circuit boards and individual discreet major components for both the Solid State Power Controller and the Elevator Logic Controller. (Capability to diagnose faults within an individual circuit board is not required.) If fault diagnosis requires a separate, detachable device, it shall be furnished.
12. Reports: As a minimum, the following reports shall be provided:
    a. Job Configuration: This report shall provide a brief description of the system, including the job number, programmable job name, number of cars, number of landings, openings per landing for the car, programmable car designation, programmable landing designation, Firefighter's Service, Seismic operation, serial communication port definitions and other system options.
    b. System Performance Graph: This report shall provide elevator system performance data based on hall call waiting times. At the end of each hour, the number of up and down hall calls and up and down waiting time averages shall be calculated and saved in the controller's non-volatile RAM. This information shall be stored for a minimum of seven (7) days.

c. Graph Display of Elevator Status: This report shall provide a graphic display of the elevator hoistway that gives the user a comprehensive picture of car locations, door status, direction of travel, car calls registered, hall calls registered, hall call assignments, estimated time of arrival of a car for a registered hall call, wait time of a registered hall call, floor labels, system status and a car status window. A per car status window shall be provided that shows the status of the car, such as, automatic operation, inspection, firefighters' service, time out of service, top floor demand and bottom floor demand.

13. Entering Hall And Car Calls:
    a. Provide a means for entering hall and car calls.
14. Printouts:
    a. Provide permanent copy of reports The printouts can be used for records or for ease of reference.

C. Firefighters' Service:
1. Provide elevator control functions, car operating devices, and hall operating devices necessary for "Firefighters' Service-Automatic Elevators" as required by the Elevator Safety Code. Provide a key box, at the Designated Level and at any other location as required by Code. Provide Firefighters' Service Phase I & II and the elevator machine room key and any other key required to open doors to gain access to the elevator machine room in the key box.

D. Automatic Leveling Device:
1. The elevator shall be provided with a two-way automatic maintaining leveling device.

E. Un-Cancelled Car Bypass:
1. A timer shall be provided to limit the amount of time a car is held at a floor due to a defective hall call or car call, including stuck pushbuttons. Call demand at another floor shall cause the car, after a predetermined time, to ignore the defective call and continue to provide normal operation.

F. Hoist Machine Brake Electrical Device:
1. Provide electrical controls that will "sense" when the hoist machine brake is "picked" during the startup of the elevator to operate. If the brake electrical circuit is "not made", and is sending a signal to the elevator controller that the brake is not "picked" the elevator shall not leave the landing. After a predetermined time the car shall attempt to start again. This operation shall attempt the start up at least three (3) times. If, after three (3) times the system and brake is not "picked" the elevator shall shut down. In order to start the elevator after this cycle the main line disconnect or a manual switch in the controller must be turned to the off position and then to the on position for normal elevator service. This operation shall also be in effect during car top inspection mode.

G. Load Weigher:
1. Provide crosshead deflection device. The load weigher shall consist of load sensors, amplifier and buffer board. The buffer output shall be connected to the machine room via two conventional wires. The output circuit shall be virtually impervious to damage from transients or accidental connection to voltages up to 120 vac. Adjusted devices shall be provided to allow hall call by-pass from thirty percent (30%) to eighty percent (80%) of rated capacity.

H. Ascending Car Overspeed and Unintended Car Movement
1. Provide car overspeed protection to prevent the car from striking the hoistway overhead structure as required by ASME A17.1/CSA B44-Section 2.19.
2. Provide a means to detect and arrest car movement if unintended movement of the car is detected while stopped at a landing with the doors open.

I. Door Operation:

1. Open doors automatically when the car arrives at a floor to permit transfer of passengers. Automatically close doors after a timed interval.

J. Automatic Stopping Accuracy:
   1. Two-way automatic with re-leveling feature stop car within ±6 mm (0.25 in.) regardless of load or direction of travel. Landing level will be maintained within the leveling zone irrespective of the hoistway doors being open or closed.

K. Emergency Car Lighting and Alarm:
   1. Car-mounted, battery unit with solid-state charger to operate alarm bell and lighting, per Code. Battery to be rechargeable with 5-year minimum life expectancy. Provide test button in service cabinet of car station, which causes illumination of standby lighting bulbs.
   2. Emergency lighting fixture shall be part of and built into the car operating station.

2.05 MACHINE ROOM EQUIPMENT

A. Hoist Machine and Deflector Sheave:
   1. Provide overhead micro-gearless traction hoist machine. Include the following: PM/AC Motor & Brake-Brake Drum-Brake Electrical Switch.
   2. Deflector sheave shall be mounted to the hoist machine support beams and shall be located in the elevator machine room.
   3. Provide Seismic and hoist rope guards on all sheaves.
   4. Provide bevel washers for any bolt/nut that is installed in a plane of five (5) degrees or greater.
   5. Provide all required support beams, brackets and bearing plates.
   6. Provide all required Engineering and Design for the new hoist machine and support beams.
   7. Unless factory finished, paint hoist machine with machinery gray enamel.

B. Governor & Governor Pit Sheave:
   1. Provide overspeed governor to operate a governor tripping mechanism should the cart speed or rate of change of speed exceed the governor settings. The action of the governor on the governor rope shall cause safety application. The governor shall be connected to the car safety by a governor rope that passes over the governor sheave. Governor tripping speed switches shall be provided that will cause appropriate action of motion control system. Sheave diameter shall comply with ASME A17.1/CSA B44 requirements.
   2. A sheave of proper size shall be provided in the pit to contain the return side of the governor rope. The sheave and weight assembly shall be of adequate weight to maintain the governor rope in a correct travel profile. The sheave shall be mounted to allow for automatic up or down movement to maintain the weight tension on the governor rope.
   3. Test governor and safeties as required by ASME A17.1/CSA B44. Install date tags as required by ASME A17.1/CSA B44.

C. Governor Rope
   1. Provide governor rope of correct size and construction. Provide tag as required by ASME A17.1/CSA B44.

D. Noise and Vibration Control:
   1. To minimize noise and vibration, mechanically isolate elevator equipment from the structure; electrically isolate controller and motor. Limit noise level relating to elevator equipment and its operation to no more than 60 dBA in elevator car under any condition including door operation and exhaust fan on highest speed.

E. Keys:
   1. All elevator keys shall be Elevator Products Company (EPCO) #2, as manufactured by Chicago Lock Company, for Fire Fighters' Service, Phase I and Phase II and Elevator Products Co. #1 for all other keys. In car locked service cabinet shall have Elevator Products Company (EPCO) #1 key. Provide three (3) keys of each type on a three inch

(3") steel disk with engraved function of keys. Engrave with each key set the number and/or function of the key.

F. Signs:
   1. Provide sign on outside of the control room door stating "Authorized Personnel Only-Storage or Installation of Equipment Not Pertaining to the Elevator is Prohibited". Letters shall be not less than 3/8" high. Sign shall be plastic or metal and securely fastened so as not to be readily removed without the use of special tools.

G. Key Box:
   1. Provide a key box adjacent to control room access door. Provide all elevator keys inside box including control room access key as required by ASME A17.1. Box size and color to be directed by State of Oregon Elevator Inspector.
   2. Provide key box(s) at other locations as required by the State of Oregon Elevator Inspector. Provide all required keys in box.
   3. Provide, in the elevator control room, all required sets of keys with marking tags as required by the State of Oregon Elevator Inspector.

2.06 HOISTWAY EQUIPMENT

A. Car & Counterweight Guide Rails & Brackets:
   1. Retain existing. Tram all guide rails to ±0.8 mm (0.03125 in.) DBG. Maintain guide rails not more than 5 mm (0.1875 in.) out of vertical plumb. File all joints-area to file shall be at least 405 mm (16 in.) above and 405 mm (16 in.) below each joint. Power disk sander shall not be allowed to file joints. Flat file that is enclosed in a Rail File Holder shall be the method of filing rail joints.
   2. Provide bevel washers for any bolt/nut that is installed in a plane of five (5) degrees or greater.
   3. Clean and paint guide rails, fishplates and brackets with one coat of black enamel.
   4. Provide vertical spacing of guide rail brackets as required by ASME A17.1/CSA B44. Provide any and all required guide rails backing supports for the car and counterweight guide rails.

B. Limit Switches:
   1. Provide upper and lower final and terminal limit switches with rollers having rubber or other approved composition to provide silent operation when activated.
   2. Normal terminal stopping devices shall be provided and arranged to stop the car automatically from any speed obtained under normal operation within the top and bottom overtravels, independent of the operating devices, final terminal stopping device and the buffers.
   3. Final terminal stopping devices shall be provided and arranged to stop the car automatically from the speed specified within the top clearance and bottom overtravel independent of the operation of the normal terminal stopping device but with the buffers operative.

C. Roller Guides
   1. Provide roller guides on car and counterweight. Provide Seismic rated position restraint plates.

D. Counterweight:
   1. Provide new frame. Provide necessary weights to attain required elevator performance levels.
   2. Provide roller guides, including position restraint plates as required by ASME A17.1/CSA B44/CSA B44. Plates shall maintain a running clearance of not more than 5 mm (0.1875 in.) on the guide rails and the depth of engagement with the guide rail shall be not less than the dimension of the side running face of the rail.
   3. Paint entire counterweight, including weights with one coat of black enamel.
   4. Provide bevel washers for any bolt/nut that is installed in a plane of five (5) degrees or greater.

E. Counterweight Guard:
   1. Provide guard to a height of not more than 2440 mm (96 in.)) above the pit floor.
   2. Guard shall be the full width of the area being guarded.
   3. Guard shall be fastened to a metal frame reinforced and braced to be at least equal in strength and stiffness to 2 mm (0.078 in.)thick sheet steel.
   4. Guard shall not prevent determination of the counterweight runby.

F. Suspension Means:
   5. Provide new suspension means. The suspension means shall comply with ASME A17.6
   6. Provide all required engineering design and manufacturing for the support beams, brackets, channels, nuts, bolts, for the hoist rope 2:1 dead end hitch plates.
   7. Provide shackles appropriate to the type of suspension means used. Shackles shall be in conformance with ASME A17.6 and ASME A17.1-2010/CSA B44-10.
   8. Provide suspension means data tag in conformance with ASME A17.1-2010/CSA B44-10/ 2.20.2.2.

G. Car/Counterweight Guide Rail Fishplates:
   1. Provide new. Provide guide rail fishplates and bolts as required ASME A17.1/CSA B44/CSA B44.
   2. The section modules and the movement inertia of the fishplate shall not be less than that of the guide rail.
   3. The diameter of bolts holes shall not exceed the diameter of the bolts by more than 3 mm (0.125 in.) for fishplates.
   4. The threaded portion of the fishplate bolts shall not occur in the shear plane of the guide rail fishplate assembly.

H. Buffers:
   1. Provide new oil buffers with blocking and supports. Provide marking plates. Paint with one coat of light gray enamel, except plunger.

I. Terminal Stopping Devices:
   1. Provide new. Provide upper and lower normal terminal stopping devices. Provide switches that will not cause high noise level when activated with car cam.

J. Pit Stop Switch:
   1. Provide new. An emergency type stop switch shall be located in the pit as to be accessible from the hoistway access door, per ASME A17.1/CSA B44. Locate stop switch adjacent to the pit ladder. Provide the number of pit stop switches as required by ASME A17.1/CSA B44.

K. Pit Access Ladder:
   1. Provide new. Fixed vertical pit ladder extending 600 mm (48 in.) above the hoistway sill of lowest level. Ladder rungs require 180 mm (7 in.) distance from rungs to nearest permanent object. Vertical rung to rung distance to be 300 mm (12 in.). Provide rungs entire height of ladder. Provide hand hold at top of ladder. Width of ladder to be 405 mm (16 in.).

L. Floor Numbers:
   1. Provide new. Paint 100 mm (4 in.) high floor numbers within the hoistway as required by ASME A17.1/CSA B44.

2.07 HOISTWAY ENTRANCES

A. Frames:
   1. Retain existing. Permanently attach handicapped floor designations 50 mm (2 in.) high, raised 0.8 mm (0.030 in.), 1525 mm (60 in.) above the floor. Stick-on plates are unacceptable.

B. Door Hangers:

1. Provide new. Two sheaves per door rotating on precision ball bearings, including upthrust adjustment. Provide door rollers so that no metal-to-metal contact exists. Hangers shall be bolted to top of hoistway doors.

C. Door Tracks:
1. Provide new. Bar or formed, cold drawn steel with smooth hanger contact surface. Provide removable tracks or track surface for replacement.

D. Interlocks:
1. Provide new. An approved positive interlock shall be provided for each hoistway entrance. The interlock shall prevent operation of the elevator unless all doors are in the closed and locked position. Provide "Fire Rated" wires from interlock to elevator hoistway electrical riser. Interlock wires shall be flame retardant and suitable for a temperature of not less than 392 degrees F. Conductors shall be Type SF or equivalent. Provide “daisy chain” electrical ground wire to each interlock. Electrical ground wire shall terminate at elevator controller at an electrical ground stud or connection as defined by NFPA 70.

E. Emergency Access:
1. Provide new. Access to all hoistway doors shall be provided by mechanical lunar key. Provide door lunar key holes with Safety Plug Locks at all floors.

F. Closures:
1. Provide new. Heavy duty spirator.

G. Door Panels:
1. Provide new. No. 16 gauge steel, 32 mm (1.25 in.) thick fabricated with vertical internal channel reinforcements. Provide a minimum of two (2) gibs per door panel, one at leading and one at trailing edge with gibs in the sill groove their entire length of travel. Provide luner key access at all floors, including Safety Plug Locks.
2. Provide a steel plate gib that shall span the total distance between the two door gibs.
3. Finish to be 5-SM Vandal Resistant Stainless Steel.

H. Sight Guards:
1. Provide new. Sight guards shall be furnished on the leading edge of the doors to conceal the hoistway beyond the doors.
2. Finish to be 5-SM Vandal Resistant Stainless Steel.

I. Sills:
1. Retain existing.

J. Fascia, and Hanger Covers:
1. Retain existing.

K. Toe Guard:
1. Retain existing.

L. Dust Cover:
1. Retain existing.

M. Struts:
1. Retain existing.

N. Headers:
1. Retain existing.

2.08 CAR EQUIPMENT

A. Car Sling:

1. Retain existing.
2. Provide new 2:1 hoist ropes sheaves if required.
3. Provide bevel washers for any bolt/nut that is installed in a plane of five (5) degrees or greater.
4. Provide roller guides, including position restraint plates as required by ASME A17.1/CSA B44. Plates shall maintain a running clearance of not more than 5 mm (0.1875 in.) on the guide rails and the depth of engagement with the guide rail shall be not less than the dimension of the side running face of the rail.

B. Car Safety:
1. Provide new Flex-Clamp car safety.
2. Provide electrical switch attached to safety to cut off electrical power to hoist motor and set brake when safeties are set.
3. Provide bevel washers for any bolt/nut that is installed in a plane of five (5) degrees or greater.

C. Buffer Striking Plates:
1. Provide new. The plates mounted on the underside of the carframe platform assembly must fully compress the oil buffers mounted in the pit before the plunger reaches its down maximum limit of travel with rated load.

D. Platform:
1. Provide new. A platform for specified capacity shall be provided. The platform shall consist of a steel frame with an APA exterior plywood as the subfloor. The underside of the platform shall be properly fireproofed.

E. Roller Guides:
1. Provide new. Provide rubber tired roller guide assemblies shall be mounted on the top and bottom of the car frame to engage the guide shoes. Each roller guide assembly shall be fully adjustable and allow for individual roller guide replacement.

F. Toe Guard:
1. Provide new toe guard. Paint front with one coat of light gray enamel.

G. Hangers and Tracks:
1. Provide new. Provide removable type hangers and tracks.

H. Header:
1. Provide new. Construct of steel; shape to provide stiffening flanges.

I. Car Door Electrical Contact:
1. Provide new. Arrange so that elevator cannot operate unless doors are closed within tolerance allowed by ASME A17.1/CSA B44.

J. Car Door Clutch:
1. Provide new. Heavy-duty clutch, linkage arm, drive blocks and pickup rollers or cams to provide positive, smooth quiet door operation. Provide the door anti-egress device.

K. Door Operator:
1. Provide new. Provide heavy-duty, DC master door operator. Car door operator shall mechanically drive the car doors. Open doors automatically when car arrives at a floor to permit egress of passengers. Close doors automatically after a timed interval.

L. Door Control Device:
1. Car Door Protective Device: Provide new. A proximity-type car door protective device shall be provided. The detection zone moves with the car door so that if a person or object enters the zone after the doors have started to close, the doors shall stop, then reverse to re-open. The doors shall re-close after a scheduled time.

2. Nudging Action: If the safety device is obstructed for a predetermined adjustable time (10-30 seconds), sound buzzer and attempt to close doors with a maximum of 3.4 J (2.5 ft lb) kinetic energy. Stop and hold doors during closing if detector zone is entered. Allow door to close after obstruction is removed.

M. Elevator Car Station:
1. Provide new. One elevator control station with faceplate, consisting of a metal box containing the operating fixtures, mounted behind the car enclosure fixed front return panel.
2. Car Call buttons shall be manufactured with the standard University push button symbol [Beaver].
3. Provide a "Door Open Hold" key switch that when placed to the Hold position will allow the doors to remain open for an extended period of time. Engrave in 6 mm (0.25 in.) letters under key switch "Door Open Hold". Engrave above key switch "OFF" to the left and "ON" to the right. Key shall be removable in the "OFF" position only. Firefighters' Service Phase I shall override this switch.
4. Provide car position indicator as part of the upper area of the car station. Provide 50 mm (2 in.) high digital-type indications representing the floor served. Provide a floor passing audible signal. Signal shall be no less than 20 decibels with a frequency no higher than 1500 Hz.
5. Suitably identify floor buttons, alarm button, door open and door close buttons and emergency stop switch by engraved and painted letters or symbols per Local Handicapped Standards and ADA requirements. Engrave in 6 mm (0.25 in.) letters "DOOR OPEN" and "DOOR CLOSE" below each of the assigned buttons. Provide flush inset, back fastened handicapped markings. Locate vertical height from car floor to operating controls as per ADA requirements.
6. Provide in-car LED type Emergency Lighting device at upper area and an interregnal part of the car operating station.
7. An emergency power unit shall be provided to illuminate the elevator car and provide current to the alarm bell in the event of power failure. Provide Vandal Resistant plastic clear lens over device.
8. Device shall provide lighting of 2 lx (0.2 fc) at a distance of 600 mm (48 in.) above the car floor and 300 mm (12 in.) in front of the car operating station. The emergency lighting shall maintain the light intensity for a period of a minimum of 4 hours.
9. Provide 3 mm (0.125 in.) raised floor pushbuttons, which illuminate to indicate LED call registration. Provide floor designation to the left of each button.
10. Provide illuminated alarm button at bottom of station to ring bell located on elevator, and sound distress signal. Engrave in 6 mm (0.25 in.) letters "ALARM" below button.
11. Provide keyed stop switch in panel faceplate with engraved in 6 mm (0.25 in.) letters to indicate the "Run" and "Stop" positions.
12. Provide door open button to stop and reopen closing doors. Make button operable while car is stopped at landing, regardless of special operational features, except Firefighters' Service.
13. Provide Phase II Firefighters' Service key switch with engraved instructions, light jewel, buzzer, firefighters' hat and call cancel button in car station.
14. Provide lockable service panel in car station with recessed, flush cover plate matching return panel. Include the following controls, with purpose and operating positions identified by engraved letters painted black:
    a. Car light switch and emergency light test switch. Emergency light test switch will disconnect the electrical power supply to the car lighting electrical circuit.
    b. Three position fan switch-off-low speed-high speed.
    c. Independent service switch to permit selection of independent or automatic operation.
    d. Duplex 120 VAC electrical convenience outlet. Provide GFCI protection.
15. Provide black paint filled engraving in 13 mm (0.5 in.) letters:
    a. Elevator number on car station.
    b. Elevator capacity in pounds on car station.
16. Faceplate Material and Finish: #4 Brushed Stainless Steel. Provide vandal resistant fastening screws.

N. Car Top Control Station:
   1. Provide new. Operating fixture shall be provided containing continuous pressure Up, Down and Safe buttons, emergency stop switch, inspection and run switch, work light with guard and 110 VAC duplex outlet with GFCI protection.
   2. Toggle switches shall not be provided for the Stop, Run and Inspection switches unless the switches are guarded against accidental activation. Fasten car top station to car crosshead.
   3. Work light shall be encased in a total glass enclosure including a wire guard cover. Rating of light to be a minimum of 60 W.
   4. Provide additional light fixture on a flexible cord. Length of cord to be 2440 mm (96 in.). Cord to be hard wired into car top fixed work light. Provide fixed metal bracket to store cord when not in use. Locate bracket to avoid stepping on cord when attached to bracket. ON-OFF car top light switch shall control both fixtures. Provide guard on light. Rating of light to be a minimum of 60 W.

O. Car Top Emergency Exit:
   1. Provide new. Provide per ASME A17.1/CSA B44.

P. Communication Systems:
   1. Provide new. Provide hands free emergency communication fixture that complies with The Americans with Disabilities Act (ADA). Provide all necessary wiring between the elevator car and elevator machine room. Operating fixture call button and other features, including engraved instructions shall be part of and built into the car operating station cover plate. Program phone to comply with all Code and ADA requirements.
   2. Provide intercom system between recall floor hall station and elevator car. On-Off activation is required only at the recall floor station and elevator machine room. Lobby intercom including the On, OFF switch shall be part of the main recall floor hall push button station. In-car to-lobby and machine room communication is voice activated.
   3. Provide intercom system between car and elevator machine room.
   4. Provide all necessary wiring between the elevator car, hall station and elevator machine room.

2.09 CAR ENCLOSURES

A. Car Enclosure:
   1. The car enclosure shall be steel and shall comply with the Elevator Safety Code. Exterior of cab enclosure shall receive a sound deadening material coating.
   2. Car Top: The car top shall not be thinner than fourteen (14) gauge cold-rolled steel suitably reinforced.
   3. Interior Car Lighting: Provided integrated LED car lighting fixtures.
   4. Provide aluminum car sill. Provide Stainless Steel through bolts for sill fastening to car platform.
   5. Car Handrails: One and one-half inch (1-1/2") diameter round stainless steel handrails shall be provided all walls. Handrail shall be spaced one and one-half inch (1-1/2") off walls and at a height of thirty two inches (32") from cab floor to the handrail top. Steel backing plates, four inches (4") square x one quarter inch (1/4") thick, shall be provided on the hoistway side of the cab walls to fasten the handrails. No fastening device, set screw-etc, shall be allowed inside the cab. Handrail, standoff section and mountings stud shall all be as one unit.
   6. Wall Finish: Plastic laminate wall panels with Formica, Natural Maple #756-58 with 1 inch wide 5SM or 5WL vandal resistant stainless steel reveals.
   7. Side Wall Base: Six inches high #4 satin finish stainless steel base with screened vent slots.
   8. Car Doors: Provide 5SM or 5WL vandal resistant stainless steel finish. Provide doors with two gibs-one at the leading edge and one at the trailing edge. Provide a steel plate gib the total between each of the two gibs.
   9. Car Front Panel and Transom: Provide 5SM or 5WL vandal resistant stainless steel finish.

10. Floor Finish: To accommodate 1/8 inch thick flooring furnished and installed under Section 09 65 00.
11. Ceiling: Provide flat ceiling or a ceiling similar to the Otis FC-4 flush ceiling. No suspended/drop ceiling allowed.
12. Protective Pad and Pad Hooks: Provide stainless steel pad hooks for all walls and front panels including car station. Pad hooks shall be through bolted to cab walls. Pad hook and mounting stud shall be one piece. Provide one (1), fire retardant pad with metal grommet holes for the pad hooks fastening. Mark on back side of pad the exact location of each pad.
13. Exhaust Fan: Provide a two-speed exhaust fan to be mounted on the car top.
14. Car Top Exit: Provide lock and electrical switch to comply with ASME A17.1-Seismic Requirements.
15. Provide a 4 inch x 3/8 inch solid #4 satin finish stainless steel flat stock bar at 8 inches above the car floor on 1-1/2 inches deep round standoff spaces at no more than 18 inches on center. Steel backing plates, four inches (4") square x one quarter inch (1/4") thick, shall be provided on the hoistway side of the cab walls to fasten the rail. No fastening device, set screw-etc shall be allowed inside the cab. Rail, standoff section and mounting stud shall all be as one unit. Mounting studs shall be a minimum of 3/8 inch diameter.

2.10 LANDING CONTROL STATIONS

A. Pushbuttons:
1. Provide new. Provide "Flush Mounted" fixtures at each landing. Include pushbuttons for direction of travel, which illuminate LEDs to indicate call registration. Engrave safety message, "In Case of Fire..." (per ASME A17.1/CSA B44 Appendix H) in pushbutton faceplate and fill black. Center of buttons to be 1100 mm (43 in.) from finish floor. Provide UP or DOWN markings to the left of each button together with Braille markings. Marking plates shall be built into the cover plates.
2. Provide in-car intercom speaker and switch as part of recall floor hall station.
3. Provide Firefighters' Service Phase I key switch with engraved instructions at main recall floor hall station.
4. Buttons shall be manufactured with the standard University push button symbol [Duck].

B. Faceplate Material and Finish:
1. Hall Pushbutton Station: #4 Brushed Stainless Steel. Provide vandal resistant fastening screws.

2.11 SIGNALS

A. Car Traveling Lanterns:
1. Provide new. Provide Vandal Resistant type in both car entrance columns. Provide #4 Brushed Stainless Steel cover plate with vandal resistant stainless steel screws. Illuminate appropriate direction light and sound electronic tone as hall call is answered to indicate intended car travel. Tone shall sound once for UP direction, twice for DOWN direction.

B. Car Position Indicator:
1. Provide new. Include as part of car station. Provide 50 mm (2 in.) high digital-type indications representing the floor served. Provide a floor passing audible signal. Signal shall be no less than 20 decibels with a frequency no higher than 1500 Hz.

PART 3- EXECUTION

3.01 MODERNIZATION OF ELEVATOR SYSTEMS

A. General: Comply with manufacturer's instructions and the Elevator Safety Code for work required during modernization.

B. Scheduling

1. Before commencing any Work, submit for review and approval by Elevator Consultant, a schedule showing the material ship dates, time of material on-site, commencement of work, the order and the completion dates for the various parts of the elevator modernization. Provide a weekly updated schedule to Elevator Consultant. Provide a list of names of adjustors, mechanics and helpers on-site. Update list of different mechanic and/or helper are changed.
2. Elevator Contractor is required to submit a three (3)-week look-ahead schedule to Elevator Consultant every week, and a full project schedule with each pay request.

C. Before beginning the modernization, the Elevator Contractor shall examine the hoistway and control room to verify conditions and provide written notice to the Architect and Elevator Consultant of any conditions that would substantially hinder or prevent proper execution of the work. The Elevator Contractor shall not proceed with the modernization until the cited conditions are corrected.

D. Pre-Modernization Meeting: Prior to modernization of any elevator equipment, a meeting of Architect, Elevator Contractor and Elevator Consultant shall be held to review new installation approach and identify any special circumstances pertaining to this new installation.

E. Welded Construction: Provide welded connections for modernization of elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance and replacement of worn parts. Comply with standards of AWS D1.1 for workmanship and for qualifications of welding operators.

F. Electrical Work: All work shall conform to the requirements of NEC standards. Requirements specific to Elevators include:
1. Mark each component, including but not limited to relays, switches, timers, fuses and overload devices, with permanent identification that corresponds with the nomenclature of the wiring diagrams and the operations and maintenance manuals.
2. Terminate all field wiring at the control cabinet on terminal strips suitable for the use. Field wiring shall not terminate on the studs of relays or other devices and equipment.

G. Coordination: Coordinate elevator work with work of other trades for proper time and sequence to avoid new installation delays.

H. Sound Isolation: Mount rotating and vibrating elevator equipment and components on vibration-absorption mounts, designed to effectively prevent transmission of vibrations to structure, and thereby eliminate sources of structure-borne noise from elevator system.

I. Lubrication: Lubricate operating parts of systems, including hoist ropes as recommended by manufacturers.

3.02 FIELD QUALITY CONTROL

A. Compliance Testing: Upon nominal completion of elevator modernization, and before permitting use of elevator (either temporary or permanent), perform acceptance tests as required and recommended by Code and governing regulations or agencies. Advise Architect, Elevator Consultant and inspection departments of governing agencies, seven (7) days in advance, of dates and times tests are to be performed on elevator.

B. Elevator Contractors shall pre-test all components before the AHJ arrives on-site for their Inspection.

C. Acceptance Tests: Conduct operational test of car before turning elevator over to Owner. Schedule Elevator Consultant with not less than one (1) weeks' notice.

3.03 PERFORMANCE

A. Car Speed:
1. +/- one percent (1%) of contract speed under any loading condition or direction of travel.

B. Floor Stopping Accuracy:

1. +/- Level to one eighth inch (1/8") under any loading conditions or direction of travel.

C. Floor-to-Floor Performance Time:
   1. Seconds from start of doors closing until doors are three quarters (¾) open and car level and stopped at next successive floor under any loading condition or travel direction.
      a. 10.5 seconds
   2. Provide a smooth start, high-speed operation and stop in both directions.

D. Door Open and Close Times:
   1. Door Open:
      a. 2.5 seconds
   2. Door Close: As allowed by ADA requirements.

E. Noise Level:
   1. The measured noise level in the elevator cab of elevator equipment shall not exceed sixty (60) dBA during car operating conditions and a maximum increase of seven (7) dBA during door operation
   2. Maximum of eighty (80) dBA in control room.

F. Ride Quality:
   1. Horizontal vibration, side-to-side and front to back with car during normal operation shall not exceed twenty five (25) mg in the 1-10 Hz range.
   2. Vertical vibration not more than twenty (20) mg. Provide smooth and constant acceleration and deceleration of not more than 2.8 feet/second/second with an initial ramp between 0.5 and 0.75 second.
   3. Provide smooth and constant acceleration and deceleration of not more than 2.8 feet/second/second with an initial ramp between 0.5 and 0.75 second.
   4. Provide no more than 12 ft/sec3 of maximum jerk.

G. Running Test:
   1. Load elevator to its rated capacity, empty car and balanced load and operate continuously for one (1) hour over its full travel distance, stopping at each landing, providing a complete door open and close cycle. Record temperature rise of motor during 60-minute test period. Record speed up and down and leveling relative to landing sills at the end of the period. Requirements are as follows:
      a. Motor temperature rise within manufacturer's tolerances.
      b. Speed within 1% of specified speed.
      c. Leveling within +/- 1/8 inch. Record failures of elevator to perform as required.

H. Protection:
   1. At time of final completion of elevator work (or portion thereof), provide suitable protective coverings, barriers, devices, signs or such other methods or procedures to protect elevator work from damage or deterioration. Maintain protective measures throughout remainder of modernization period. Elevator Contractor is responsible for damage and wear during the modernization period, and shall repair or replace, to the Architect's and Elevator Consultant's satisfaction, any components worn significantly or damaged before the Architect and Elevator Consultant approves elevator modernization.

3.04 CONDITIONS PRECEDENT TO FINAL ACCEPTANCE

A. Instructions To Operators:
   1. The Elevator Contractor shall have completed instruction of the designated employees of Owner in the operation and care of the elevator equipment.

B. Code Compliance:
   1. All code compliance tests shall have been performed and acceptance certified by the authorities having jurisdiction (AHJ) and permanent elevator operating permit issued.

C. Acceptance Tests:

1. All acceptance tests shall have been completed and compliance certified by the Elevator Consultant.

D. Submittal Of Maintenance Manuals:
   1. All manuals shall have been submitted to Elevator Consultant for review and approval. Elevator Consultant shall forward to Architect all Manuals after reviewing for total and complete Manuals submitted by Elevator Contractor.

E. Submittal Of Modernization Record Drawings:
   1. Modernization drawings of the work shall have been marked to show changes and actual modernization conditions, sufficient to form a complete record for Architect's purposes. Give particular attention to work which will be concealed and difficult to measure and record at a later date, particularly items which may require servicing or replacement during the life of the project.

F. Final Check:
   1. Make a final check of elevator operation, with Owner's personnel and Elevator Consultant present and just prior to date of completion to determine that control systems and operating devices are functioning properly. Any and all damage and/or significant wear shall have been repaired.

G. Cleaning:
   1. The work site shall be clean at all times. Elevator Contractor shall clear away all debris, surplus materials, etc., resulting from their work or operations, leaving the job and equipment furnished in a clean, first-class condition.

H. Punchlist:
   1. All items on the punchlist shall be completed to the satisfaction of the Architect and Elevator Consultant.

I. Safety Test Report:
   1. Submit copy of Safety Test Report, within one week after testing, to Architect and Elevator Consultant.

END OF SECTION

SECTION 20 10 00

GENERAL MECHANICAL PROVISIONS

Part 1 - General

1.01 CONTRACT CONDITIONS

A. Work of this Division is bound by the Provisions of Division 1 bound herewith, in addition to these Specifications and accompanying Drawings.

1.02 SECTION INCLUDES

A. General requirements specifically applicable to Division 20, 22, and 23 sections, which apply in addition to Division 1 - General Requirements.

1.03 DRAWINGS AND SPECIFICATIONS

A. The Drawings and Specifications are complimentary, and what is called for by one shall be as binding as if called for by both.

B. Use of the word "Provide" shall be equivalent to "Furnish and Install."

C. Use of singular or plural in article, paragraph, and subparagraph headings does not indicate numbers of products required. Example: The heading "Chiller" does not necessarily mean there is only one chiller required.

D. Abbreviations:
   1. ADA: Americans with Disabilities Act
   2. AASHTO: American Association of State Highway and Transportation Officials
   3. ASTM: American Society for Testing and Materials
   4. AWWA: American Water Works Association
   5. ANSI: American National Standards Institute
   6. NEMA: National Electrical Manufacturers' Association
   7. ASME: American Society of Mechanical Engineers
   8. UL: Underwriters' Laboratories
   9. IAPMO: International Association of Plumbing and Mechanical Officials
   10. Fed. Spec.: Federal Specifications
   11. MSS: Manufacturers' Standardization Society of the Valve and Fitting Industry
   12. WOG: Non-shock Water-Oil-Gas maximum working pressure rating
   13. NFPA: National Fire Prevention Association
   14. FM: Factory Mutual
   15. SMACNA: Sheet Metal and Air Conditioning Contractors' National Association
   16. ARI: Air Conditioning and Refrigeration Institute
   17. AMCA: Air Movement and Control Association
   18. TIMA: Thermal Insulation Manufacturers' Association
   19. ASHRAE: American Society of Heating, Refrigerating, and Air Conditioning Engineers
   20. AABC: Associated Air Balance Council
   21. NEBB: National Environmental Balancing Bureau

E. For products specified by listing one or more manufacturers, followed by "Similar to" and one manufacturer's model number, the following requirements apply:
   1. Approval of each listed manufacturer is contingent upon that manufacturer having a product which meets the specification, fits the available space, and is comparable to the listed model.
   2. Electrical requirements, duct connections, pipe connections, and space requirements indicated on Drawings are based on the listed model. Provide revisions required to accommodate the model actually furnished.

F. For products specified by listing one or more manufacturers, followed by a model number for each manufacturer, the following requirements apply:

1. Provide one of the listed model numbers or an approved substitution.
2. Electrical requirements, duct connections, pipe connections, and space requirements indicated on Drawings are based on one of the listed models, and may not be suitable for all models listed. Provide revisions required to accommodate the model actually furnished.

1.04 PERMITS, FEES, AND GOVERNING AGENCIES

A. Obtain permits and pay fees required by governing agencies.

B. Minimum requirements not otherwise stated herein shall meet governing codes and standards.

C. Arrange and pay for inspections and tests required by applicable codes and ordinances.

1.05 SITE VISITATION AND FIELD MEASUREMENTS

A. Examine site of proposed Work to verify conditions. Beginning of Work means acceptance of conditions.

B. If conditions differ substantially from conditions indicated on Drawings, notify Engineer before commencing Work.

1.06 SUBSTITUTIONS

A. Substitution requests will not be considered unless they are submitted in writing, in accordance with Division 0 and Division 1.

B. Substitution requests will not be considered unless they include the following:
1. Model numbers of proposed substitutions.
2. Options that are required to make the proposed substitution comply with Specifications.
3. Summary of modifications of the Work that are required to accommodate the proposed substitution.

1.07 OWNER FURNISHED ITEMS

A. Refer to Division 1.

1.08 ALTERNATES

A. Refer to Division 1.

1.09 PROJECT MANAGEMENT AND COORDINATION

A. Provide coordination for the Work of Divisions 20, 22, and 23 in accordance with Division 1.

B. Locations shown on Drawings are approximate and are not intended to fully coordinate the Work of all Sections. Plan exact locations based on field measurements of field conditions and the Work of other Sections.

C. Drawings do not show all required duct and pipe offsets and fittings. Provide offsets and fittings as required to coordinate with the Work of other Sections and with field conditions.

D. Locate equipment, piping, valves, dampers, etc. to provide adequate space for normal operating and maintenance activities.

1.10 CUTTING AND PATCHING

A. Provide cutting and patching for the Work of Divisions 20, 22, and 23 in accordance with Division 1.

1.11 SHOP DRAWINGS AND PRODUCT DATA

A. Provide shop drawings and product data for the Work of Divisions 20, 22, and 23 in accordance with Division 1. Refer to each Section for required shop drawings and product data submittals.

B. Acceptable Submittal Formats: Hard-Copy, or Electronic. If Electronic format is selected, at least one Hard-Copy of the information must be submitted with the Electronic copies to the Engineer (the Hard-Copy will not be returned).

C. Submittal formats shall conform with the following requirements:
   1. Each hard-copy Submittal package shall be formatted as follows:
      a. Use three-ring loose leaf binders.
      b. Provide index referencing specification section and page.
      c. Tab individual sections.
   2. Each Electronic Submittal package shall be formatted as follows:
      a. The full extent of the submitted data shall be presented in a single electronic file on a CD-ROM.
      b. File Format Type: Adobe pdf, or universally readable equivalent.
      c. Scanned information: Minimum 400 dpi.
      d. Provide index referencing specification section and page.
      e. Bookmark individual sections.
      f. One file per CD-ROM.
         1) Format CD-ROM for use in PC compatible hardware
         2) Format CD-ROM so that additional files may be written to it (read-write).

D. Contractor may provide one (1) early submittal for items with long lead times as determined by the Contractor. The submittal shall be clearly identified as “Long Lead Time Item Submittal”.

E. The remainder of the shop drawings and product data shall be submitted as a single Project Submittal, except:
   1. Control system shop drawings and product data may be provided as a single, separate submittal package prior to beginning of control work on site.
   2. Fire Sprinkler Shop Drawings and Product Data may be provided as a single, separate submittal package before or after the project submittal.
   3. Seismic Restraint Shop Drawings, and Product Data may be provided as a single, separate submittal package before or after the Project Submittal.

F. The Project Submittal must be submitted no more than three (3) weeks after the Long Lead Time Item Submittal. If the Project Submittal is found to be incomplete, it will be rejected and returned. The Project Submittal shall then be completed by the Contractor and resubmitted in its entirety.

G. Definitions of comments used in submittal review:
   1. "No Exception Taken" The meaning and intent of this statement is that the Engineer finds no objection (except those noted thereon or in correspondence) to inclusion of items or Work indicated in construction provided that it:
      a. Complies with Contract Drawings and Specifications as to quantities, space requirements, and dimensions.
      b. Does not interfere with other trades.
      c. Is not the cause of union tradesmen disputes.
      d. Does not infringe on patent rights.
      e. Is not the cause of injury or damage to persons or property.
      f. Complies with OSHA regulations.
   2. "Rejected" The meaning and intent of this statement is that the submitted material does not conform to plans and specifications. Resubmittal of a different product or shop drawing is required.
   3. "Revise and Resubmit" This statement is used when the general product line is acceptable, but the submitted material varies in dimension, accessories, etc. from what is required. Resubmittal is required.
   4. "Make Corrections Noted" This statement is used as an alternative to "Revise and Resubmit" when resubmittal is not required.
   5. Said review does not relieve Contractor of any Contractual responsibilities.

1.12 TEMPORARY FACILITIES AND CONTROLS

A. Refer to Division 1.

1.13 SCHEDULING

A. Schedule the Work of Divisions 20, 22, and 23 in accordance with Division 1.

B. Schedule Work at such a time, and in such a manner, to minimize interference and inconvenience to the Owner.

C. Work that causes disruptions of existing services shall be coordinated with the Owner. Provide a minimum of 24 hour notice prior to any shutdown of existing services.

1.14 OPERATION AND MAINTENANCE MANUALS

A. Provide operation and maintenance manuals for the Work of this Division in accordance with Division 1 and Section 20 20 00.

1.15 VALVE AND NAMEPLATE DIRECTORIES

A. Provide valve and nameplate directories as required herein, and in accordance with Sections 20 20 00 and 20 60 00.

B. Framed Copies:
   1. Number Required: One.
   2. Location: As directed by Owner's representative.
   3. Type: Wood with glass cover.

C. Service Copies:
   1. Number Required: Two.
   2. Type: Laminated plastic cover with chain loop.

1.16 MATERIAL AND EQUIPMENT

A. Comply with Division 1.

B. Similar products shall be of the same manufacturer.

C. Comply with manufacturer's printed instructions, in addition to requirements of the Contract Documents, regarding storage, handling, installation, operation, and adjustment of materials and equipment.

D. Protect ductwork, piping, outlets/inlets, equipment, and mechanical appurtenances from damage. Provide temporary covers as necessary to prevent accumulation of dust and debris.

E. Notify the Engineer (or authorized representative) immediately of conflicts between manufacturer's instructions and Contract Documents. Resolve such conflicts before proceeding with the work.

1.17 CONTRACT CLOSEOUT

A. Comply with Division 1.

1.18 FINAL CLEANING

A. Provide cleaning for the Work of Divisions 20, 22, and 23 in accordance with Division 1.

1.19 RECORD DOCUMENTS

A. Provide Record Documents for the Work of this Division in accordance with Division 1.

B. Record Drawings shall include:
   1. Contract Drawings
   2. Seismic Restraint Shop Drawings

1.20 INSTRUCTION OF OPERATING PERSONNEL

A. Provide instruction of Owner's operating personnel associated with the Work of Divisions 20, 22, and 23 in accordance with Division 1.

B. Instruct Owner's designated operating personnel in the operation and maintenance of all systems.

C. Submit written certificate from Owner that Instruction of Operating Personnel has been performed.

1.21 WARRANTIES

A. Provide and document warranties applicable to the Work of Divisions 20, 22, and 23 in accordance with Division 1 and Section 20 20 00.

1.22 SELECTIVE STRUCTURE DEMOLITION

A. Provide demolition for the Work of this Division in accordance with Division 2.

B. Where items are to be salvaged for relocation or retained by the Owner, removal shall cause no damage to these items. Move in accordance with manufacturer's instructions.

1.23 PAINTING

A. Provide painting for the Work of Divisions 20, 22, and 23 in accordance with Division 9.

B. Provide cleaning and surface preparation for products specified in Divisions 20, 22, and 23 that have finishes specified in Division 9.

C. Paint the following items with one coat of primer and two coats of oil-based enamel:
   1. Uninsulated black steel pipe which is not concealed within walls or above ceilings.
   2. Steel supports, stands, and brackets which are not galvanized or factory painted.
   3. Pipe rollers, hangers, and hanger rods which are not galvanized.
   4. Additional items noted on Drawings or in Divisions 20, 22 and 23.

D. Colors shall be approved by Owner.

Part 2 - Products (Not Used)

Part 3 - Execution (Not Used)

END OF SECTION

SECTION 20 20 00

MECHANICAL OPERATION AND MAINTENANCE MANUALS

Part 1 - General

1.01 SECTION INCLUDES

A. General and specific requirements for Operation and Maintenance Manuals applicable to Division 20, 22 and 23 sections. Requirements apply in addition to Division 1 requirements. Contractor shall provide Operation and Maintenance Manual for the Work of this Division.

1.02 SHOP DRAWINGS AND PRODUCT DATA

A. Submittals required for the following, in accordance with Section 20 10 00:
   1. Table of Contents (TOC) for the Operation and Maintenance Manual. Provide one complete TOC with Project Submittal.

1.03 CONTRACT CLOSEOUT

A. Submittals required for the following, in accordance with Section 20 10 00:
   1. Operation and Maintenance Manual. Provide 3 complete sets.

Part 2 - Products

2.01 GENERAL

A. The requirements listed herein apply to one full set of the Operation and Maintenance Manual. Provide multiple copies of the set in accordance with requirements listed under Part 1 of this Section.

B. Information provided in the Operation and Maintenance Manuals shall be customized for the specific equipment provided for, and as applied to, this Project.

2.02 PRESENTATION

A. Format:
   1. Manufacturer's literature shall be pre-printed.
   2. Documents generated specifically for this project shall be machine printed on white paper, or typed.
   3. Hand written material is not acceptable unless specifically noted herein.
   4. Internally subdivide binder contents with permanent page dividers in accordance with the organizational format described herein. Tab titles shall, as a minimum, be legibly printed and inserted into reinforced laminated plastic tabs.

B. Binding:
   1. In three-ring (D-side ring style) loose leaf plastic or cloth side binders. Paper report binders, or bend-tab thesis covers are not acceptable.
   2. 8-1/2 inch x 11 inch format.
   3. Ring size as necessary to contain the information for this project. Minimum ring size: 1 inch. Maximum ring size: 4 inch.
   4. Provide sheet lifters, front and back, in each notebook.
   5. Provide multiple binders where required to accommodate the data. Each binder maximum 80% full.
   6. Label each binder with typed, permanently adhered, labels on the front cover and the spine. Minimum Label information:
      a. Project Name
      b. Project Location
      c. Project Owner
      d. Project Engineer

e. Volume (notebook no.) of (number of notebooks in one set of O&M Manuals)

C. Provide a plastic page cover for each occurrence of the following pages:
1. Cover Sheet
2. Table of Contents
3. Nameplate Directory
4. Valve Directory
5. Service and Dealer Directory

2.03 ORGANIZATION AND CONTENT OF MANUAL

A. Include in the front of EACH Notebook of the Operation and Maintenance Manual:
1. Cover Sheet
2. Table of Contents:
a. List the contents of the full manual.
b. List full extent of major and minor divisions (tabs).

B. Include the following information in the Project Operation and Maintenance Manual:
1. Directories, including:
a. Equipment and Nameplate Directory
b. Itemized Service and Maintenance Directory
c. Service and Dealer Directory
d. Warranties Directory
e. Valve Directory
2. Material and Equipment Information (with Individual Tabs by Divisions 20, 21, 22 and 23 Section Number and Name), including:
a. Shop Drawings and Product Data
b. Manufacturer's Printed Operation and Maintenance Manuals
c. Service Contracts and Field Start-up Reports
3. Cleaning, Certification, and Test Reports:
a. Air and Water Balance Report (Obtain from Owner provided Balancing Agent)
4. System Information (with Individual Tabs by Divisions 20, 22 and 23 Section Number and Name), including:
a. Operation instructions
b. Record drawings (reduced size set)
c. Controls operation and maintenance Information

2.04 DESCRIPTION OF MANUAL CONTENT

A. Cover Sheet, listing:
1. Project name and location
2. Engineer
3. General Contractor
4. Mechanical Contractor
5. Electrical Contractor

B. Table of Contents, listing:
1. Volume number.
2. Section title
3. Items included under each section (e.g., equipment name and number, parts list, service instructions, etc.)

C. Directories (with Individual Directory Specific Tab):
1. “Equipment Nameplate Directory”. This is a summary of the equipment included in the Project with a nameplate designation (code), such as “AHU-1", including:
a. Mechanical equipment type
b. Nameplate designation
c. Manufacturer's nameplate data
1) Data as read from the nameplate for the actual equipment provided
d. Installed location
1) List room name and number

e. Area served
f. Control switch normal position

2. “Itemized Service and Maintenance Directory”. Obtain information from the manufacturer. This is an itemized summary listing of service and inspection requirements. Itemize by Nameplate Designation (i.e.; AHU-1, CH-1, etc.). include:
   a. Service and lubrication schedule:
      1) Filter, size, number of, performance, clean pressure drop, and recommended change-out.
      2) Bearing type, recommended lubricant, and frequency.
   b. Inspection Requirements:
      1) Inspection type (e.g., belt wear, refrigerant charge, etc.), frequency, recommended actions.
3. “Service and Dealer Directory”. This is a summary of the equipment and material suppliers for the Project, including:
   a. Company name for authorized service and parts
   b. Physical address
   c. Phone number, fax number, e-mail, and web site address (if available)
   d. Summary listing of applicable equipment and materials
4. “Warranties”. In addition to the warranty statement, include:
   a. Project name as shown on the Project Manual
   b. The equipment (nameplate designation and description) and/or system to which the warranty applies
   c. Effective date of the warranty
   d. Expiration date of the warranty
   e. Extent of the warranty
   f. Company name, address, telephone number, and contact person for the issuer of the warranty
5. “Valve Directory”. This is a sequential, ascending, summary of the numbered valves in the Project, separated by system, including:
   a. Valve number
   b. Valve Type
   c. Valve Size
   d. Installed location
   e. Valve function
   f. Valve normal position

D. Material and Equipment Information (under individual material or equipment specification specific tabs):
   1. Shop Drawings and Product Data for items reviewed, approved, and provided for this Project
   2. Manufacturer's Printed Operation and Maintenance Manuals, including:
      a. Manufacturer's parts list
      b. Information for starting, adjusting, and maintaining each item in continuous operation for long periods of time
      c. Dismantling and reassembling of the complete units and sub-assembly components with illustrations including “exploded” views showing and identifying each separate item
      d. Identification of special tools and instrument requirements
      e. Detailed explanation of function and control of each piece of equipment, component, or accessory
      f. Precautions for operation of equipment and reason for each precaution
      g. Troubleshooting guide
   3. Service Contracts and Field Start-up Reports:
      a. Provide for fan coils, etc.
      b. Include list of inspection requirements to be completed prior to end of warranty.

E. Cleaning, Certification, and Test Reports:
   1. Air and Water Balance Report. Obtain report from Owner furnished Balancing Agent.
      a. When an Air and Water Balance Report is provided in a separate notebook (three-ring binder), reference the notebook as a volume of the Project Operation and Maintenance Manual set. Label the notebook accordingly.

2. Seismic restraint system installation report certifying that seismic restraints are installed in conformance with approved shop drawings and no additional restraints are necessary based on field conditions. Include the written authorization, from seismic restraint system Engineer, of the designated representative.

F. System Information:
   1. Operation Instructions. Under individual system specific tab. Provide complete, detailed guidance for the operation of each system (e.g., Hydronic System, etc.)
      a. Information shall include:
         1) Start-up
         2) Routine and normal operation
         3) Adjustment and regulation
         4) Chemical treatment
         5) Testing
         6) Detection of malfunction
         7) Shut-down
         8) Cleaning
         9) Summer and winter operations
         10) Emergency operation
   2. Record Drawings. Provide an 11 inch by 17 inch set (print-to-fit) bound in a separate pressboard report cover with reinforced top hinges. Label front of report cover in accordance with previously listed notebook labeling requirements.
   3. Controls Operation and Maintenance Information. Coordinate with controls requirements listed in Division 23.
      a. Where controls information is provided in separate notebook(s) (three-ring binder), reference the notebook(s) as volume(s) of the Project Operation and Maintenance Manual set. Label the notebook(s) accordingly.

Part 3 - Execution

3.01 GENERAL

A. Information provided in the Operation and Maintenance Manuals shall be specific to actual equipment, materials, and systems provided under the Work of this project.

B. Pre-printed Parts lists, service instructions, equipment data manuals, etc., shall be marked to indicate the model number of the corresponding item provided under the Work of this project.
   1. Use an arrow stamp to designate the pre-printed model numbers for Products applicable to this Project. Arrow shall be of a reproducible color (i.e.; red or black).
   2. Where the corresponding model number is not shown on a pre-printed sheet, hand write the model number, and associated data, in ink using legible block style lettering.

END OF SECTION

SECTION 20 30 00

MECHANICAL SYSTEMS FIRE STOPPING

Part 1 - General

1.01 RELATED SECTIONS

A. Section 20 10 00 - General Mechanical Provisions

B. Section 20 20 00 - Mechanical Operation and Maintenance Manuals

1.02 SUMMARY

A. Section includes requirements for through-penetration fire stopping for items including piping, ductwork, wiring, conduit, and equipment provided under divisions 20, 22 and 23, and requirements for recessing equipment, cabinets, devices and/or appurtenances in fire rated walls, ceilings, or floors.

B. Products shall be of a single manufacturer for each type of fire stopping required, and where several types are integrated into a single assembly. Provide putty, sealants, wraps, boards, and accessories as necessary and required for the work of this project.

1.03 REFERENCES

A. Underwriters Laboratories:
   1. UL Fire Resistance Directory
   2. UL Component Listing Test Criteria
   3. Warnock Hersey

B. American Society For Testing And Materials Standards:
   1. ASTM E 814 - 88: Standard Test Method For Fire Tests of Through-Penetration Firestops

C. International Building Code, 2003, with Oregon Amendments (Oregon Structural Specialty Code, OSSC, 2004) – Chapter 7 Fire Resistance Rated Construction

1.04 DEFINITIONS

A. Assembly: Particular arrangement of materials specific to a given type of construction.

B. Barriers: Time rated fire walls, ceiling/floor assemblies, and structural floors.

C. Fire Stopping: Assembly of materials applied at penetrations to limit spread of heat, fire, gases and smoke.

D. Penetration: Opening through or into a barrier such that full thickness of rated materials is not obtained.

E. System: Specific products and applications, classified and numbered by Underwriters Laboratories (UL), Inc. to close specific barrier penetrations.

F. F Rating: Time period that fire stop assembly can withstand fire and hose stream test as determined in accordance with ASTM E 814.

G. T Rating: As required for F Rating and to limit temperature rise above the initial temperature to 325 degrees F on protected side as determined in accordance with ASTM E 814.

1.05 SHOP DRAWINGS, PRODUCT DATA, OPERATION & MAINTENANCE DATA

A. Submittals required for the products listed in the Product Table, in accordance with Section 20 10 00. Operation & Maintenance Information required as indicated in the Product Table in accordance with Section 20 20 00.

B. Operation & Maintenance Information requirements indicated by number designation as follows. Refer to Section 20 20 00 for a description of each type of information.
   1. Shop Drawings (submittal data)
   2. Product Data (submittal data), including documentation of ORS 453.005 (7) (e) compliance.
   3. Manufacturer's Operation Manuals
   4. Manufacturer's Service and Lubrication Requirements
   5. Service Contracts and Field Start-up Reports
   6. Cleaning, Certification, and Test Reports
   7. System Information
   8. Warranties

	Operation & Maintenance Information							
PRODUCT TABLE	1	2	3	4	5	6	7	8
Manufacturer's installation drawings and instructions for each proposed assembly. Identify intended product and applicable UL System number or UL classified devices.	X	X				X		X
Manufacturer recommendations and drawings relating to non-standard applications where necessary.	X	X						X
Modifications, component connections, anchorage methods, and required hardware.	X	X						X

1.06 QUALITY ASSURANCE

A. Installer Qualification: Acceptable to, or certified by, Fire Stopping system manufacturer.

B. Regulatory Requirement: Contractor shall verify acceptance from Authority Having Jurisdiction for proposed assemblies conforming to, or not conforming to, specific UL Fire Stop System Numbers, or UL classified devices.

C. Products shall comply with the requirements of Oregon Revised Statute (ORS) 453.005 (7) (e), effective January 1, 2011. The referenced statute limits the use of three types of brominated fire retardant chemicals, which are defined as hazardous substances.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver products in original, unopened packaging with legible manufacturer's identification. Store materials in accordance with manufacturer's instructions. Store in clean, dry, ventilated location, protected from freezing.

1.08 WARRANTY

A. Submit copies of written warranty for Fire Stopping assemblies. Warranty period shall be one year minimum.

Part 2 - Products

2.01 GENERAL

A. Fire Stop products and accessories shall be asbestos-free, intumesce when exposed to temperatures of 250 degrees F, and maintain an effective barrier against flame, smoke and gases. Mortar systems must be Warnock Hersey approved.

B. Fire Stop Fire Rating: Not less than rating of barrier penetrated in which fire stopping will be installed.

2.02 FIRE STOPPING ASSEMBLIES

A. Assemblies of materials used to seal spaces around penetrations shall have a UL Fire Stop System Number appropriate for the construction type, penetration type, annular space requirements, and fire rating at each penetration.

B. Systems and devices must withstand the passage of cold smoke either as an inherent property of the system or by the use of a separate product included as a part of the UL system or device and designed to perform this function. Systems complying with the requirements for through-penetration firestopping in fire-rated construction are acceptable provided the system will provide a smoke seal.

C. Performance Requirements: Fire Stop assembly shall be able to withstand standard fire and hose stream test (F Rating) and limit temperature rise (T Rating) of penetrations on protected side as required by Authorities Having Jurisdiction. Conform to ASTM E 814.

D. Manufacturers: 3M, Dow, Chase Technology Corp., Bio Fireshield Inc., ProSet, Johns Manville, Specified Technologies Inc, Metacaulk, GS Hevi-Duti/Nelson, Hilti, NUCO Inc., or approved.

2.03 ACCESSORIES

A. Fill, void, or cavity materials: As classified under category XHHW in the UL Fire Resistance Directory.

B. Forming materials: As classified under category XHKU in the UL Fire Resistance Directory.

Part 3 - Execution

3.01 GENERAL

A. Provide Fire Stopping seal at pipe, duct, wiring, or conduit penetration, installed under divisions 20, 22 and 23, through fire rated construction.

B. Provide fire rated assembly around equipment, cabinets, devices and/or appurtenances, installed under divisions 20, 22 and 23, in fire rated walls, ceilings, or floors.

C. Verify barrier penetrations are properly sized and in suitable condition for application of materials.

D. Provide masking and drop cloths to prevent contamination of adjacent surfaces by Fire Stopping materials. Clean spills of liquid components. Remove equipment, materials and debris, leaving area in undamaged, clean condition.

E. Clean surfaces to be in contact with penetration seal materials of dirt, grease, oil, loose materials, rust, or other substances that may affect proper fitting, adhesion, or the required fire resistance. Cut and trim materials as required to neatly match edges of penetration.

F. Comply with manufacturer’s recommendations for temperature and humidity conditions before, during, and after installation of Fire Stopping.

END OF SECTION

SECTION 20 41 00

VIBRATION ISOLATION

Part 1 - General

1.01 RELATED SECTIONS

A. Section 20 10 00 - General Mechanical Provisions

B. Section 20 20 00 - Mechanical Operation and Maintenance Manuals

C. Section 20 42 00 - Seismic Restraints

1.02 SCOPE OF WORK

A. Provide vibration isolation for piping and ductwork as specified herein.

B. Provide vibration isolation for equipment as specified herein.

C. Vibration Isolator Selection:
   1. Determine vibration isolator sizes and locations including anchor bolt design.
   2. Verify that the type of isolators and deflections shown in the vibration isolation schedule are correct for the application.

D. Provide shop drawings and installation instructions for vibration isolators.

E. At completion of installation, perform final inspection of project and provide report certifying vibration isolators are installed as shown in shop drawings and in accordance with manufacturer's recommendations.

1.03 SHOP DRAWINGS, PRODUCT DATA, OPERATION & MAINTENANCE DATA

A. Submit the following in accordance with Section 20 10 00 (reference isolated equipment as numbered in Contract Documents). Operation & Maintenance information required as indicated in Section 20 20 00:
   1. Isolator type as numbered in Contract Documents.
   2. Manufacturer's isolator model numbers.
   3. Drawings of individual isolators selected for each support point, details of mounting brackets for isolators, location for all equipment mounting bolts, and size and locations of concrete piers supporting the isolators.
   4. Detailed calculations showing the weight distribution for each equipment support point (as calculated, not averaged), calculations showing the loads at each isolator, anticipated expansion, calculations showing the loads at restraints, spring deflections, initial and final loads on the building structure. Calculations are to be included for all connections to the structure, considering localized effects on the structural elements.

B. At project completion, submit three (3) copies of report certifying that vibration isolators are installed as shown on shop drawings and in accordance with manufacturer's recommendations.

1.04 DEFINITIONS AND ABBREVIATIONS

A. Equipment: Includes (but not limited to) pumps, fans, air handling units, water heaters, boilers, chillers, heat exchangers, tanks, air separators, terminal units, duct coils, etc. Equipment referred to by type is typical. Equipment not specifically listed here is still subject to the requirements listed in this specification.

B. Equipment Weight: Installed operating weight of equipment as reported by equipment manufacturer.

C. Piping Component Weight: Calculated installed (operating) weight of component.

D. Roof-Mounted Equipment: Equipment located above and attached to roof.

1.05 PROJECT DESIGN CRITERIA

A. Systems and components shall be designed and installed in accordance with the vibration Isolator manufacturer's instructions.

B. Isolators for a single piece of equipment shall have equal deflections when loaded with the equipment.

C. A minimum of four isolators shall be used to support each piece of equipment.

D. See Seismic Design Criteria of Section 20 42 00 for application of seismically restrained isolators.

Part 2 - Products

2.01 NON-SEISMIC VIBRATION ISOLATORS

A. Type SH-1 (Spring Hanger):
   1. Steel frame containing a steel spring in a neoprene cup.
   2. Neoprene cup to be molded with an integral rod isolation bushing that passes through the hanger box.
   3. Spring diameters and hanger box lower hole sizes to be large enough to permit the hanger rod to swing through a 30 degree arc before contacting the hole and short circuiting the spring.
   4. Springs to have a minimum additional travel to solid equal to 50 percent of the rated deflection.
   5. Manufacturers: Mason Industries, Kinetics, Korfund, Amber Booth, or approved. Similar to Mason Industries type 30/HS.

Part 3 - Execution

3.01 GENERAL

A. Vibration isolators shall be installed in strict accordance with the manufacturer's written instructions and certified submittal data.

B. Coordinate selection of supports with equipment support points to provide isolation without creating excessive stresses at equipment connections or in piping.

C. Review equipment manufacturer's literature to ensure that procedures for setting and adjusting all isolation devices are in accordance with the recommendations.

D. Conflicts with other trades that result in rigid contact with the equipment or piping due to inadequate space or other conditions shall be corrected.

E. Provide supplementary support steel for equipment, piping, and ductwork required for the work of this Section.

Part 4 - Application to Systems

4.01 EQUIPMENT

A. Fan Coil Units, No Integral Isolation, Suspended:
   1. Supporting Structure: Overhead structure.
   2. Isolator Type: SH-1.
   3. Isolator Deflection (ins.): 2".

4. Seismic Restraint Type: SH-1.
5. Anchorage: Anchor isolators and restraints to existing supporting roof structure.

END OF SECTION

SECTION 20 42 00

SEISMIC RESTRAINTS

Part 1 - General

1.01 RELATED SECTIONS

A. Section 20 10 00 - General Mechanical Provisions

B. Section 20 20 00 - Mechanical Operation and Maintenance Manuals

C. Section 20 41 00 - Vibration Isolation

1.02 SCOPE OF WORK

A. Provide seismic restraints in accordance with ASCE Standard 7 requirements for piping, ductwork, and mechanical equipment.

B. Provide engineering for seismic restraint system, assemblies, and components.

C. Provide shop drawings and installation instructions for seismic restraint system.

D. Provide final inspection and report for installed restraint system acceptance.

1.03 DEFINITIONS AND STANDARDS

A. Referenced Standards:
   1. ASCE Standard 7: American Society of Civil Engineers / Structural Engineering Institute, *Standard 7, Minimum Design Loads for Buildings and Other Structures*

B. Design Criteria:
   1. Occupancy Category: ASCE 7 Occupancy Category designation, Table 1.5-1
   2. Site Classification: ASCE 7 Site Classification designation, Table 20.3-1
   3. Peak Spectral Response Acceleration (S_S): ASCE 7 Figure 22-1 - Maximum Considered Earthquake Ground Motion of 0.2s spectral response acceleration, Site Class B
   4. Design Spectral Response Acceleration (S_{DS}): ASCE 7, Eqs. 11.4-3 and 11.4-4
   5. Seismic Design Category: ASCE 7 Seismic Design Category designation, Tables 11.6-1 and 11.6-2.
   6. Component Importance Factor (I_P): ASCE 7, Section 13.1.3

C. Custom Engineered Assembly: Anchorage and seismic restraint assembly, comprised of standard or proprietary components, designed and applied to system by the Seismic Engineer.

D. Pre-Engineered Assembly: Previously designed anchorage and seismic restraint assembly selected and applied to system by the Seismic Restraint System Engineer.

E. Seismic Restraint System Engineer: Registered Professional Engineer currently licensed in Oregon as a structural, civil, or mechanical engineer. Responsible for designing, applying, and inspecting pre-engineered seismic restraint assemblies and components in accordance with applicable codes and component manufacturer's published recommendations.

F. Seismic Engineer: Professional engineer currently licensed in Oregon as a structural, civil, or mechanical engineer. Responsible for designing, applying, and inspecting custom seismic restraint components in accordance with applicable codes.

G. Equipment:
   1. Includes (but not limited to) pumps, fan coils, etc. Equipment referred to by type is typical. Equipment not specifically listed here is still subject to the requirements listed herein.
   2. Weight: Installed operating weight of equipment as reported by equipment manufacturer.
   3. Integral Isolation: Isolators which are furnished as an integral part of the equipment.

H. Ductwork and Piping:
   1. Duct Run: A length of duct without change in direction.
   2. Piping Run: A length of pipe without change in direction.
   3. Component Weight: Calculated installed (operating) weight of component.
   4. Longitudinal Bracing: Restraints applied to limit motion parallel to the centerline of the pipe or duct.
   5. Transverse Bracing: Restraints applied to limit motion perpendicular to the centerline of the pipe or duct.

1.04 PROJECT DESIGN CRITERIA

A. Restraint system, assemblies, and components shall be designed and installed to resist lateral loads in accordance with the current adopted State of Oregon Structural Specialty Code.

B. Seismic Design Criteria:
   1. Occupancy Category: III.
   2. Site Classification: D.
   3. Peak Spectral Response Acceleration (S_S): 0.665.
   4. Design Spectral Response Acceleration (S_{DS}): 0.562.
   5. Seismic Design Category: D.
   6. Maximum Allowable Lateral Loads and Anchorage Requirements: As determined by Engineer, per 1.05.E below.
   7. Component Importance Factors (I_P): 1.0.:

1.05 SYSTEM ENGINEERING AND QUALITY ASSURANCE

A. Seismic restraint system shall be engineered to comply with criteria stated and referenced herein.

B. Seismic restraints and related engineering for HVAC, plumbing, and piping systems to be provided by a single vendor.

C. Application of Pre-engineered Assemblies by Seismic Restraint System Engineer:
   1. Application of Custom Engineered and/or Pre-Engineered Assemblies, as applicable to this project, and as follows:
      a. Application of seismic restraint assemblies for vibration isolated and suspended equipment.
      b. Application of seismic restraint assemblies for piping and ductwork.
   2. Submittal packages shall bear the stamp of only the responsible Seismic Restraint System Engineer.
   3. Approved Pre-engineered Assembly and Application Services: Mason Industries, Kinetics, or an independent professional engineer meeting qualifications listed herein as Seismic Restraint System Engineer.

D. Custom Engineered Assemblies:
   1. System engineering shall include design and Application of Custom Engineered Assemblies, as applicable to this project, and as follows:
      a. Design and Application of seismic restraint assemblies for vibration isolated and suspended equipment.
      b. Design and Application of seismic restraint assemblies for piping and ductwork.
   2. Engineering shall be performed by, or under the direct supervision of, a Seismic Engineer meeting the qualifications listed herein. Submittal packages shall bear the signed seal of only the Seismic Engineer.

E. For anchorage requirements and allowable lateral loads at attachment to building structural system, provide structural analysis and report from an independent Registered Structural Engineer currently licensed in the State of Oregon.

1.06 SHOP DRAWINGS, PRODUCT DATA, OPERATION & MAINTENANCE DATA

A. Pre-submittal:

1. Included within project Mechanical Submittals, submit attached letter outlining how the seismic requirements for this project will be met (i.e., Pre-engineered Assemblies, Custom Assemblies). In the letter state what companies will be providing the services and the qualifications of the responsible individuals.

B. Shop drawings shall be submitted as one complete package inclusive of all mechanical systems and equipment.

C. Submit the following in accordance with Section 20 10 00 (Reference isolated equipment as numbered in Contract Documents):
   1. Seismic Restraint Location Plan: Full or half size copies of ductwork and piping plans from the Contract Documents, showing locations and type of seismic restraint assemblies to be used.
      a. Drawings shall consist of mechanically reproduced copies of the Contract Documents, or custom drafted specifically for the Work of this Project and bear only the seal of the Seismic Restraint System Engineer or Seismic Engineer. All other seals shall be eradicated from drawings prior to submittal.
      b. Provide separate drawings for ductwork and piping systems.
      c. Each drawing shall be printed on a single sheet. Drawings pieced together from multiple copies are not acceptable.
   2. Seismic Restraint Assembly Installation Details: Pre-Engineered or Custom Engineered assembly details showing required components, dimensions, and method of connection to supporting structure.
   3. Calculations For System Application: Calculations shall indicate maximum forces anticipated at each restraint assembly, method of determining forces, and selection of restraint assemblies.
      a. For Pre-Engineered Assemblies, include documentation of design conditions, maximum load capacity of assembly, and maximum forces at anchorage points.
      b. For Custom Engineered Assemblies, submit calculations identifying maximum load capacity of assembly, maximum forces on each component, sizing/selection of each component, and maximum forces at anchorage points.

D. The entire submittal package comprised of drawings, details, and calculations for mechanical ductwork, piping, and equipment shall be stamped and signed in accordance with the requirements listed under 1.05 SYSTEM ENGINEERING AND QUALITY ASSURANCE in this specification section.

E. At seismic restraint system installation completion, submit three (3) copies of report from seismic restraint system Engineer, or the Engineer's representative, certifying that seismic restraints are installed in conformance with approved shop drawings and no additional restraints are necessary based on field conditions. Include written authorization, from Seismic Restraint System Engineer, of the designated representative.

F. Prior to Contract Closeout submit Operation and Maintenance information required as indicated in Section 20 20 00.

Part 2 - Products

2.01 PRE-ENGINEERED ASSEMBLIES

A. Anchorage and seismic restraint assemblies, comprised of standard or proprietary components, capable of application to restraint system and supporting structure.

B. Acceptable Proprietary Manufacturers: Mason Industries, Kinetics, Tolco, B-Line, or approved.

Part 3 - Execution

3.01 GENERAL

A. Seismic restraint system shall be installed in strict accordance with the manufacturer's written instructions and certified submittal data.

B. Conflicts with other trades that result in rigid contact with the equipment or piping due to inadequate space or other conditions shall be coordinated with the Seismic Restraint Engineer and corrected.

C. Attach restraints and anchors to a common structural element plane and within a common structural system.

D. For vibration isolated suspended equipment, piping, and ducts, install flexible cable restraints slightly slack to avoid vibration short circuiting.

E. For non-isolated suspended equipment, piping, and ducts, install solid braces or taut flexible cable restraints.

F. Provide supplementary support steel for equipment, piping, and ductwork required for the work of this Section.

3.02 DUCTWORK AND PIPING SEISMIC RESTRAINT

A. Provide minimum of two transverse supports and one longitudinal support on each pipe or duct run. Transverse bracing shall be installed at each turn and at each end of a run with a minimum of one brace at each end. Where a pipe or duct run is shorter than the minimum interval between braces, provide braces at each end.

B. Where restraints are attached to clevis style pipe hangers, the cross bolt must be reinforced.

3.03 EQUIPMENT WITH VIBRATION ISOLATION SUPPORTS

A. Anchor isolator to structural system in accordance with details on Drawings and isolator manufacturer's instructions.

END OF SECTION

SECTION 20 42 00 - SEISMIC RESTRAINT SYSTEM ENGINEERING PRE-SUBMITTAL

PROJECT:_____
(Project Title)

The Undersigned states the following:

- Seismic restraints for the work of Divisions 22 and 23 for this project will be provided as required in Section 20 42 00.
- Application of Pre-Engineered Restraint Assemblies will be provided by Seismic Restraint System Engineer meeting qualifications of Section 20 42 00.

  Seismic Restraint System Engineer: _____

  Firm Name: _____

  Authorized Representative: _____
  (Name of representative authorized to act on Engineer's behalf)

- Design for Custom Engineered Restraint Assemblies will be provided by Seismic Engineer meeting qualifications of Section 20 42 00.

  Seismic Engineer: _____

  Firm Name: _____

  Authorized Representative: _____
  (Name of representative authorized to act on Engineer's behalf)

- Upon completion of seismic restraint system installation the Engineers listed above, or the designated representative listed, will inspect and certify that seismic restraints are installed in conformance with approved shop drawings and, based on actual field conditions, no additional restraints are necessary to comply with applicable codes.

Submitted by: _____ Signature: _____

Firm: _____

Address: _____

Telephone: _____ E-mail:_____

Date: _____

SECTION 20 60 00

MECHANICAL IDENTIFICATION

Part 1 - General

1.01 RELATED SECTIONS

A. Section 20 10 00 - General Mechanical Provisions

1.02 SHOP DRAWINGS, PRODUCT DATA, OPERATION & MAINTENANCE DATA

A. Submittals required for the products listed in the Product Table, in accordance with Section 20 10 00. Operation & Maintenance Information required as indicated in the Product Table in accordance with Section 20 20 00.

B. Operation & Maintenance Information requirements indicated by number designation as follows. Refer to Section 20 20 00 for a description of each type of information.
   1. Shop Drawings (submittal data)
   2. Product Data (submittal data)
   3. Manufacturer's Operation Manuals
   4. Manufacturer's Service and Lubrication Requirements
   5. Service Contracts and Field Start-up Reports
   6. Cleaning, Certification, and Test Reports
   7. System Information
   8. Warranties

	Operation & Maintenance Information							
PRODUCT TABLE	1	2	3	4	5	6	7	8
Pipe Labels		X						
Valve Tags		X						
Control and Equipment Nameplates		X						
Damper Locator Labels	X	X						
Pipe Union Labels	X	X						

1.03 REFERENCES

A. ANSI A13.1 (American National Standards Institute) - Scheme for the Identification of Piping Systems, latest edition.

Part 2 - Products

2.01 PIPE LABELS

A. Pipe Labels:
   1. Type: Preformed plastic or adhesive-backed vinyl, with factory printed legend on colored background.
   2. Letter Size: Conform to ANSI A13.1 1981.
   3. Background Color: Conform to ANSI A13.1 1981.
   4. Flow Direction Arrow: At each pipe label.
   5. Legend Wording: Match the pipe description shown in Symbols List on Drawings.
   6. Manufacturer: Seton, Brady, MSI, or approved.

2.02 VALVE TAGS

A. Valve Tags:
   1. Type: Brass or aluminum disc, 1-1/2 inch diameter, with stamped legend.

2. Letter Size:
    a. System Type: 1/4 inch.
    b. Valve Number: 1/2 inch.
3. Legend Wording:
    a. System Type: Match pipe abbreviation shown in Symbols List on Drawings.
    b. Valve Number: Sequential numbers by system designation. Coordinate with Owner to determine the starting number for each system type.
4. Manufacturer: Seton, Hanson, MSI, or approved.

2.03 CONTROL AND EQUIPMENT NAMEPLATES

A. Nameplates:
1. Type: Laminated plastic, with engraved white letters on black background.
2. Letter Size: 1/2 inch tall.

2.04 MISCELLANEOUS LABELS

A. Damper Locator Labels:
1. Material: White vinyl, self-adhesive, permanent.
2. Red lettering, minimum 1/2 inch tall.
3. Labels at fire dampers read “FIRE DAMPER ACCESS”.
4. Manufacturer: Seton, Brady, MSI, or approved.

B. Pipe Union Labels
1. Material: White vinyl, self-adhesive, permanent.
2. Red lettering, minimum 1/2 inch tall.
3. Labels at unions and die-electric unions read “UNION”.
4. Manufacturer: Seton, Brady, MSI, or approved.

Part 3 - Execution

3.01 PIPE LABELS

A. Provide labels for piping.

B. Labels shall be oriented to be visible from the normal access side of the pipe.

C. Locate pipe labels as follows:
1. Within 3 feet of each valve.
2. Within 3 feet of each equipment connection.
3. Within 3 feet of each wall, floor, or ceiling penetration.
4. Within 3 feet of each branch.

D. Prior to label installation, clean pipe or insulation surfaces according to label manufacturer's recommendations.

3.02 VALVE TAGS

A. Provide tags for valves, except as follows:
1. Tags not required for:
    a. Stop valves at plumbing fixtures
    b. Relief valves
    c. Check valves
    d. Pressure reducing valves
    e. Balancing valves
    f. Automatic flow control valves
    g. Equipment isolation valves within 5 feet of equipment served

B. Secure tag to valve with corrosion-resistant metal chain, S-hook, or meter seal.

3.03 CONTROL AND EQUIPMENT NAMEPLATES

A. Provide nameplates for mechanical equipment -- including air handling units, fans, pumps, terminal units, reheat coils, furnaces, unit heaters, chillers, boilers, heat exchangers, storage tanks, expansion tanks, radiant piping manifolds, etc. Wording to match equipment designations on Drawings

B. Provide nameplates for variable frequency drives. Wording to indicate equipment served, followed by the letters “VFD”. For instance, label for a VFD serving an air handling unit supply fan would read: AHU-XX SF VFD

C. Provide nameplates for control panels and major control components.

D. Attach nameplates with rivets or screws; adhesive only fastening not permitted. Provide weather-proof sealant for outdoor applications where screws penetrate casing.

E. At room thermostats and temperature sensors, write the name of the unit served on the inside of cover in permanent ink.

3.04 DAMPER LOCATOR LABELS

A. Provide label for each fire damper and each combination fire/smoke damper. Coordination final locations for labels with Architect and Owner’s Representative.

B. Provide locator label at access from occupied space to each fire damper and combination fire/smoke damper. Mount label on ceiling grid for dampers located above lay-in ceilings. Mount labels on the wall access door and the duct access door for dampers located behind walls.

C. Prior to label installation, clean surfaces in accordance with label manufacturer’s instructions.

3.05 PIPE UNION LABELS

A. Provide label for each union and die-electric union concealed inside pipe insulation. Orient label parallel with pipe run and position to be visible from the normal access side of the pipe.

B. Prior to label installation, clean surfaces in accordance with label manufacturer’s instructions.

END OF SECTION

SECTION 20 91 00

TESTING, ADJUSTING AND BALANCING

(WORK UNDER THIS SECTION TO BE PROVIDED BY OWNER UNDER SEPARATE CONTRACT.)

Part 1 - General

1.01 QUALIFICATIONS

A. Work of this section shall be accomplished under the on-site supervision of a NEBB Certified supervisor assigned full time to an office in the State of Oregon. The NEBB certified person designated in writing to NEBB (for the purpose of NEBB Certification of the firm) shall be the supervisor who will represent the firm. The NEBB certified supervisor shall be responsible for the supervision of on-site TAB work and the setup/review of the balancing report.

B. Approved Firms: Air Introduction and Regulation, Inc.

C. Construction contractor to coordinate the Work with the Owner's balancing efforts.

Part 2 - Products (Not Used)

Part 3 - Execution (Not Used)

END OF SECTION

SECTION 22 11 00

PIPING

Part 1 - General

1.01 RELATED SECTIONS

A. Section 20 10 00 - General Mechanical Provisions

B. Section 20 20 00 - Mechanical Operation and Maintenance Manuals

C. Section 20 30 00 – Mechanical Systems Fire Stopping

1.02 SHOP DRAWINGS, PRODUCT DATA, OPERATION & MAINTENANCE DATA

A. Submittals required for the products listed in the Product Table, in accordance with Section 20 10 00. Operation & Maintenance Information required as indicated in the Product Table in accordance with Section 20 20 00.

B. Operation & Maintenance Information requirements indicated by number designation as follows. Refer to Section 20 20 00 for a description of each type of information.
   1. Shop Drawings (submittal data)
   2. Product Data (submittal data)
   3. Manufacturer's Operation Manuals
   4. Manufacturer's Service and Lubrication Requirements
   5. Service Contracts and Field Start-up Reports
   6. Cleaning, Certification, and Test Reports
   7. System Information
   8. Warranties

	Operation & Maintenance Information							
PRODUCT TABLE	1	2	3	4	5	6	7	8
Piping Specialties		X						
Pipe Supports		X						

1.03 DEFINITIONS

A. Indoors: Inside building insulation envelope.

B. Accessible Locations: Installed where exposed or installed above accessible ceiling systems.

C. Inaccessible Locations: Installed in concealed spaces such as walls, shafts, chases, or above inaccessible ceilings.

Part 2 - Products

2.01 PLUMBING PIPING

A. Pumped Sanitary Waste (PSW):
   1. Pipe: Schedule 40 galvanized steel, ASTM A-53, Grade B.
   2. Fittings: Cast iron drainage pattern, ANSI B-16.12.
   3. Joints: Screwed.

B. Cooling Coil Condensate Drain (CD) within building:
   1. Pipe: Type M copper, hard drawn, ASTM B-88.
   2. Fittings: Wrought copper, ANSI B-16.22.
   3. Joints: Lead-free 95-5 tin-antimony solder, or approved.

2.02 HYDRONIC PIPING

A. Chilled Water (CHS, CHR), 2-1/2 inch diameter and smaller:
   1. Pipe: Type L copper, hard drawn, ASTM B-88.
   2. Fittings: Wrought copper, ANSI B-16.22.
   3. Joints: Lead free 95-5 tin-antimony solder or approved.

2.03 PIPING SPECIALTIES

A. Unions for copper pipe:
   1. Body: Bronze.
   2. Seat: Brass.
   3. Rated Working Pressure:
      a. Hydronic: 250 psi minimum at 210 degrees F.
   4. Connection: Screwed, brazed, or flanged to match pipe.

B. Strainers:
   1. Body:
      a. At steel pipe, iron or steel.
      b. At copper pipe, bronze or brass.
   2. Rated Working Pressure:
      a. High pressure steam: 250 psig minimum.
      b. All others: 125 psig minimum.
   3. Pattern: Self-cleaning Y with blow-off connection.
   4. Basket:
      a. 2 inch and smaller: 20 mesh monel.
      b. 2-1/2 inch and larger: 0.045 inch perforated, type 304 stainless steel.
   5. Manufacturer: Fabrotech, Sarco, Hoffman, Keckley, Meuller, Armstrong, Hayward, Wheatley, Streamflow, Victaulic, or approved.

C. Unions for steel pipe:
   1. Body: Iron
   2. Seat: Brass.
   3. Rated Working Pressure:
      a. Domestic Water: 125 psi minimum.
      b. Hydronic: 250 psi minimum at 210 degrees F.
   4. Connection: Screwed or flanged to match pipe.

D. Unions for copper pipe:
   1. Body: Bronze.
   2. Seat: Brass.
   3. Rated Working Pressure:
      a. Domestic Water: 125 psi minimum.
      b. Hydronic: 250 psi minimum at 210 degrees F.
   4. Connection: Screwed, brazed, or flanged to match pipe.

2.04 PIPE STRAPS

A. Pipe Straps for uninsulated pipe 1 inch or smaller running atop and perpendicular to wood framing:
   1. Description: Commercially manufactured single-type flat mounting double ear heavy-duty pipe straps, preformed to fit pipe.
   2. Minimum width 1/2 inch, minimum thickness 0.032 inch.
   3. Minimum mounting hole diameter: 7/32 inch.
   4. Material: Brass or copper for copper pipe, galvanized or chrome plated steel for iron or steel pipe.
   5. Fasteners: Screws, minimum 5/8 inch long. Heads must exceed hole diameter by at least 1/8 inch.

2.05 PIPE SUPPORTS

A. Ring Hangers for Pipe Sizes 3 inch and smaller:
   1. Type: Carbon steel band, adjustable, with knurled swivel nut.
   2. Finish: Zinc plated.
   3. Approvals: UL and FM.
   4. For uninsulated copper piping: Equivalent to model specified, with addition of copper plating, neoprene coating, or PVC coating.
   5. Manufacturer:
      a. Anvil Fig. 70
      b. B-Line Fig. B 3170
      c. Super Strut C-727
      d. PHD Model 151
      e. Erico/Michigan Model 100

B. Hanger Rods:
   1. Material: Carbon steel.
   2. Finish: Zinc plated.

C. Insulated Pipe Shields for Use at Pipe Supports:
   1. Type: Preformed pipe insulation with an insulation shield.
   2. Insulation (Pipe sizes 1-1/4 inch through 3 inch):
      a. Type: Rigid, polyisocyanurate foam, preformed to fit pipe size.
      b. Conductivity ("k"): Not to exceed 0.19 at 75 degrees F mean temperature.
      c. Thickness: To match adjacent pipe insulation. See Section 22 14 10.
      d. Length: To match insulation shield.
      e. Manufacturer: Dow “Trymer 2000".
   3. Insulation (Pipe sizes 4 inch and larger):
      a. Type: Rigid, hydrous calcium silicate, premolded to fit pipe size.
      b. Density: 14 pounds per cubic foot.
      c. Conductivity ("k"): Not to exceed 0.36 at 75 degrees F mean temperature.
      d. Temperature Rating: 1200 degrees F.
      e. Manufacturer:
         1) Manville "Thermo-12"
         2) Owens Corning "Kaylo 10"
   4. Insulation Jacket:
      a. Type: .016 inch thick aluminum, preformed to fit pipe.
      b. Finish: Stucco embossed pattern.
      c. Moisture Barrier: Kraft or polyethylene.
   5. Insulation Shield:
      a. Type: Galvanized steel, 2 overlapping pieces, full 360 degree.
      b. Minimum Thickness:
         1) Pipe Sizes 1-1/4 to 2 inch: 24 gauge
         2) Pipe Sizes 2-1/2 to 3 inch: 20 gauge
      c. Minimum Length: 12 inch.
   6. Manufacturer: E.J. Bartells, ISSI Product Inc., Pipe Shields Inc., Erico/Michigan, or field fabricated with components specified herein.

D. Riser Clamps:
   1. Type: 2 bolt.
   2. Material: Carbon steel.
   3. Finish: Zinc plated.
   4. For uninsulated copper piping: Equivalent to model specified, with addition of copper plating, neoprene coating, or PVC coating.
   5. Manufacturer:
      a. Anvil Fig. 261
      b. B-Line Fig. B 3373
      c. Super Strut C-720
      d. PHD 550
      e. Erico/Michigan Model 510

E. Wall Supports & Trapeze Assemblies:
   1. Description: Field fabricate of manufactured channel components.
   2. Pipe Supports: U-bolt, U-strap, or roller type components in accordance with those specified herein and compatible with manufactured channel system.
   3. Trapeze Size: As published by manufacturer for span and total weight supported. Provide sizing criteria with product data submittal.
   4. Manufacturer: Unistrut, Super-Strut, B-Line, Erico/Michigan, or approved.

Part 3 - Execution

3.01 GENERAL

A. Install products in accordance with manufacturer's recommendations.

B. Install piping plumb and parallel true to building structural system.

C. Where possible, use full 20 foot lengths.

D. Install branch piping to allow for expansion with offsets and swing joints as necessary to prevent undue strain.

E. Do not use bushings and close nipples.

F. Do not penetrate structural members.

G. Screwed joints shall have less than two percent of threads showing.

H. Ream pipes to full inside diameter prior to making up joints.

I. Comply with applicable IAPMO Installation Standard for each particular piping material.

J. Make branches and elbows with fittings specified herein. "Pulled tees", saddle taps, and field fabricated fittings are not acceptable.

K. Testing of Piping Systems:
   1. Advise Owner's authorized representative when testing will be performed.
   2. Test before concealing pipe joints and welds.
   3. Before testing, isolate all equipment or components which are not rated for test pressures.
   4. Record temperature at start and finish of test. Pressure readings at finish of test shall be adjusted to account for temperature change of medium during the test.
   5. Test pressures shall be as specified herein for each type of piping system.
   6. Comply with testing requirements of authorities having jurisdiction, in addition to requirements specified herein.
   7. Piping systems shall hold test pressure for a minimum of one hour with no leakage.

3.02 PLUMBING PIPING

A. Drain and Waste Piping:
   1. Slope 1/4 inch per foot, minimum, unless otherwise noted on Drawings.
   2. Test Pressure: Fill system with water to highest point.
   3. At pipes crossing building seismic joints, install four 6-inch long sections of pipe with no-hub couplings.

3.03 HYDRONIC PIPING

A. Conform to applicable portions of ANSI/ASME B31.9 Building Services Piping.

B. Make connections between steel and copper pipe in accessible locations, using red brass unions or isolation flanged connections, as determined by pipe size.

C. Install piping level, using eccentric reducers as required to have and even plane on top for venting air.

D. Provide manual air vents at system high points and where shown on Drawings.

E. At low points of systems, provide ball valves with caps for drainage.

F. Test Pressure: Fill system with water and pressurize to 100 psig.

3.04 PIPING SPECIALTIES

A. Escutcheons:
   1. Install on exposed pipe through walls, floors, or ceilings.
   2. Secure escutcheon to pipe and wall with caulk.
   3. Escutcheons not required in mechanical rooms.

B. Unions for steel pipe:
   1. Provide unions as follows:
      a. Where indicated on Drawings.
      b. At each automatic control valve.
      c. As required for removal of pumps, and equipment with piping connections.

C. Unions for copper pipe:
   1. Provide unions as follows:
      a. Where indicated on Drawings.
      b. At each automatic control valve.
      c. As required for removal of pumps, and equipment with piping connections.

3.05 PIPE SUPPORTS

A. General:
   1. Refer to Section 22 14 10 to determine pipe insulation requirements.
   2. Supports for the following shall bear directly on the pipe:
      a. Uninsulated pipe.
   3. Size hangers to fit outside of pipe insulation, except where hangers shall bear directly on the pipe.
   4. Comply with applicable IAPMO Installation Standard for particular piping material.

B. Insulated Pipe Shields:
   1. Provide insulated pipe shield at each support, except as follows:
      a. Pipe sizes 1 inch and smaller.
      b. Where supports are permitted to bear directly on the pipe.
   2. Secure insulation with 16 gauge stainless steel wire, stainless steel bands, or nylon tape as recommended by insulation manufacturer.
   3. Cover pipe insulation with aluminum jacket and preformed fitting covers.
   4. For cold pipe installations, seal seams and joints in jacket with vapor barrier mastic or tape, to provide a continuous positive vapor barrier.

C. Steel Pipe, Horizontal:
   1. Support within 2 feet of each direction change.
   2. Maximum spacing of supports:

Pipe Size	Rod Diameter	Maximum Spacing
1 inch and smaller	3/8 inch	7 feet 0 inches
1-1/4 inch - 2 inch	3/8 inch	10 feet 0 inches

D. Copper Pipe, Horizontal:
   1. Support within 2 feet of each direction change.
   2. Maximum spacing of supports:

Pipe Size	Rod Diameter	Maximum Spacing
1-1/2 inch and smaller	3/8 inch	6 feet 0 inches

E. Vertical Pipe Supports:
   1. Provide riser clamp at each floor.
   2. Provide wall supports, in addition to riser clamps, as follows:
      a. For copper pipe where spacing between riser clamps is greater than 10 feet.
      b. For cast iron and steel pipe where spacing between riser clamps is greater than 12 feet.

END OF SECTION

SECTION 22 13 00

VALVES

Part 1 - General

1.01 RELATED SECTIONS

A. Section 20 10 00 - General Mechanical Provisions

B. Section 20 20 00 - Mechanical Operation and Maintenance Manuals

1.02 SHOP DRAWINGS, PRODUCT DATA, OPERATION & MAINTENANCE DATA

A. Submittals required for the products listed in the Product Table, in accordance with Section 20 10 00. Operation & Maintenance Information required as indicated in the Product Table in accordance with Section 20 20 00.

B. Operation & Maintenance Information requirements indicated by number designation as follows. Refer to Section 20 20 00 for a description of each type of information.
   1. Shop Drawings (submittal data)
   2. Product Data (submittal data)
   3. Manufacturer's Operation Manuals
   4. Manufacturer's Service and Lubrication Requirements
   5. Service Contracts and Field Start-up Reports
   6. Cleaning, Certification, and Test Reports
   7. System Information
   8. Warranties

	Operation & Maintenance Information							
PRODUCT TABLE	1	2	3	4	5	6	7	8
Ball Valves		X						
Check Valves		X						

Part 2 - Products

2.01 BALL VALVES

A. Ball Valves, Chilled Water Size 2 Inch and Smaller:
   1. Type: Full port, 2-piece body with stainless steel trim.
   2. Body: Bronze.
   3. Rated Working Pressure: Minimum of 150 psig steam; 600 psig WOG.
   4. Handle:
      a. Uninsulated Pipe: Standard lever handle.
      b. Insulated Pipe: Extended lever handle.
   5. Ends: Threaded.
   6. Stem and Ball: 316 stainless steel.
   7. Seat and Seals: PTFE, TFE, or Buna-N.
   8. Standard: MSS SP-110.
   9. Manufacturer: Apollo, or approved. Similar to Apollo 70-140 (threaded)

2.02 DRAIN VALVES

A. Drain Valves:
   1. Type: 3/4 inch bronze ball valve, as previously specified, with 3/4 inch male hose thread adapter screwed into valve body, brass cap screwed onto hose thread adapter, and cap retainer chain.

2.03 CHECK VALVES

A. Check Valve, Size 2-1/2 Inch and Smaller:
   1. Type: Y-pattern, swing, renewable seat and disc.
   2. Body: Bronze.
   3. Disc: Bronze.
   4. Class: 150.
   5. Rated Working Pressure: Minimum of 150 psig steam; 200 psig WOG.
   6. Ends: Threaded or soldered to match piping.
   7. Comply with: MSS SP-80.
   8. Manufacturer: Crane, , Powell, Milwaukie, Kennedy, Grinnell, Walworth, Fairbanks, Jenkins, Lunkenheimer, Stockham, Hammond, or approved. Similar to Hammond IB 940 (threaded) or Hammond IB 945 (solder).

Part 3 - Execution

3.01 GENERAL

A. Valves shall be full line size, except where noted otherwise.

B. Install valves in locations which are accessible without damage to finished walls and ceilings.

C. Where possible, position valve operator towards access opening.

END OF SECTION

SECTION 22 14 10

PIPING INSULATION

Part 1 - General

1.01 RELATED SECTIONS

A. Section 20 10 00 - General Mechanical Provisions

B. Section 20 20 00 - Mechanical Operation and Maintenance Manuals

C. Section 22 11 00 - Piping

1.02 QUALITY ASSURANCE

A. Products shall have flame spread and smoke developed ratings based on test procedures in accordance with NFPA-255 and UL-723. Ratings shall be indicated on the product or on the shipping cartons.

B. Unless otherwise specified herein, products shall have flame spread ratings not to exceed 25 and smoke developed ratings not to exceed 50.

C. Products shall comply with the requirements of Oregon Revised Statute (ORS) 453.005 (7) (e), effective January 1, 2011. The referenced statute limits the use of three types of brominated fire retardant chemicals, which are defined as hazardous substances.

1.03 SHOP DRAWINGS, PRODUCT DATA, OPERATION & MAINTENANCE DATA

A. Submittals required for the products listed in the Product Table, in accordance with Section 20 10 00. Operation & Maintenance Information required as indicated in the Product Table in accordance with Section 20 20 00.

B. Operation & Maintenance Information required for the products listed in the Product Table, indicated by number designation as follows. Refer to Section 20 20 00 for a description of each type of information.
   1. Shop Drawings (submittal data)
   2. Product Data (submittal data), including documentation of ORS 453.005 (7) (e) compliance.
   3. Manufacturer's Operation Manuals
   4. Manufacturer’s Service and Lubrication Requirements
   5. Service Contracts and Field Start-up Reports
   6. Cleaning, Certification, and Test Reports
   7. System Information
   8. Warranties

	Operation & Maintenance Information							
PRODUCT TABLE	1	2	3	4	5	6	7	8
Pipe Insulation		X						
Jackets and Fitting Covers		X						
Accessories		X						

Part 2 - Products

2.01 PIPE INSULATION

A. Preformed Fiberglass (FG):
   1. General: Preformed to fit pipe size, with factory applied vapor barrier facing.

2. Conductivity ("k"): Not to exceed 0.24 at 75 degrees F mean temperature.
3. Vapor Barrier Facing:
   a. General: Factory applied, glass fiber reinforced kraft and aluminum foil laminate.
   b. Permeability: Not to exceed 0.02 perms.
   c. Closure System: Self-sealing pressure sensitive lap.
4. Manufacturer and Model: Owens Corning "Evolution Paper-free ASJ", or approved.

B. Fiberglass Fitting Inserts:
1. Type: Precut fiberglass blanket for use with fitting covers.
2. Conductivity ("k"): Not to exceed 0.28 at 75 degrees F mean temp.
3. Manufacturer: Same as fiberglass pipe insulation.

2.02 JACKETS AND FITTING COVERS

A. Polyvinyl Chloride Jackets and Fitting Covers (PVC):
1. Type: White PVC, preformed to fit pipe and fittings, UV-resistant.
2. Shapes: Elbows, tees, valves, reducers, flanges, and end caps; in various sizes including Zest-on Flanged Gate Valve Fitting Covers or similar style cover sized to provide complete coverage of balancing valves and flow control valves.
3. Thickness: Minimum 20 mils (.020 inches, 0.75 mm).
4. Manufacturer:
   a. Johns Manville "Zeston 2000"
   b. Certain-Teed "Snap Form"
   c. Ceel-Co "Ceel-Tite 300"
   d. Knauf "PVC Fitting Covers

2.03 ACCESSORIES

A. Insulating Cement: Comply with ANSI/ASTM C195.

B. Finishing Cement: Comply with ASTM C449.

C. Mastic, Coatings, Tapes, and Adhesives: Comply with Manufacturer's installation instructions for each type of insulation.

Part 3 - Execution

3.01 DEFINITIONS

A. Cold Pipe: Piping, fittings, equipment, or accessories handling rain water, potable cold water, and media at design temperature of 60 degrees F or below.

3.02 GENERAL

A. Install products in accordance with Manufacturer's instructions.

B. Install products in accordance with MICA (Midwest Insulation Contractors Association) - National Commercial & Industrial Insulation Standards.

C. Insulate new pipe, fittings, valves, and specialties for each piping system included under APPLICATION TO PIPING SYSTEMS.

D. Insulate pipe, fittings, valves, and specialties where existing insulation is removed to facilitate the remodel work.

E. Verify piping has been tested and approved before installing insulation.

F. Clean and dry piping before installing insulation.

G. On exposed piping, locate insulation seams in least visible location.

H. Label insulation that covers unions. Refer to Section 20 60 00 for labeling requirements.

I. Fill joints, cracks, seams, and depressions with canvas and finishing cement to form smooth surfaces.

3.03 TEMPERATURE-SPECIFIC REQUIREMENTS

A. Cold Pipe Installation Requirements:
   1. Seal seams and joints in vapor barrier facings, fitting covers, and insulation jackets with vapor barrier mastic or tape, to provide a continuous positive vapor barrier.
   2. At interruptions in insulation, seal ends of insulation to provide a continuous vapor barrier. For insulation with vapor barrier, seal with canvas or fiberglass cloth sealed with vapor barrier mastic.
   3. For Cold Pipe do not insulate the following:
      a. Strainer access covers
      b. Control valve actuators
      c. Test plugs
      d. Air vents

3.04 INSULATION AT PIPE SUPPORTS

A. Refer to Section 22 11 00 for insulated pipe shields at pipe supports. At insulated pipe shields, lap insulation vapor barrier over cover of pipe shield and seal with factory approved vapor barrier tape. Seal longitudinal seams of pipe shield cover with vapor barrier tape or mastic.

3.05 FIBERGLASS PIPE INSULATION (FG)

A. General:
   1. Secure longitudinal laps in insulation vapor barrier with factory applied pressure sensitive tape system and outward clenching staples.
   2. Secure butt joints in insulation vapor barrier with pressure sensitive tape to match vapor barrier.
   3. Insulate fittings and valves (unless noted otherwise) with fiberglass fitting inserts and PVC Fitting Covers.

3.06 JACKETS AND FITTING COVERS

A. General:
   1. Provide Fitting covers as follows:
      a. On piping where type FG insulation is required provide fitting covers at pipe fittings, valves, and piping accessories.
      b. Insulated piping located outside building above ground.
      c. Balancing Valves and Flow Control Valves, where adjacent piping has jackets.
   2. Where jackets and fitting covers are required, use the following types:
      a. For Type FG insulation indoors: PVC (except where noted otherwise).
      b. Fitting covers shall be same material as jackets.

B. Installation:
   1. General:
      a. Overlap seams 2 inches minimum and as indicated herein.
      b. Seal per manufacturer's recommendations.
   2. Polyvinyl Chloride Jackets and Fitting Covers (PVC):
      a. Fitting Covers:
         1) Lap PVC fitting covers over adjacent vapor barrier facing with end of overlap pointed downward.
         2) On indoor installations secure PVC fitting covers with fitting cover manufacturer's pressure sensitive tape and secure ends of tapes using outward-clenching staples.

3.07 APPLICATION TO PIPING SYSTEMS

A. Chilled Water (CHS, CHR):

1. Above Ground, Inside Building:
    a. Type: FG. Insulate valves with Insulation Pads, installed to be removable.
    b. Thickness: One and one half inches. At Contractor's option, 1/2 inch thickness for branch lines up to 4 feet long for serving a cooling coil.

B. Cooling Coil Condensate Traps (CD):
1. Type: PF.
2. Thickness: Three quarter inches.

END OF SECTION

SECTION 22 21 00

PUMPS

Part 1 - General

1.01 RELATED SECTIONS

A. Section 20 10 00 - General Mechanical Provisions

B. Section 20 20 00 - Mechanical Operation and Maintenance Manuals

1.02 SHOP DRAWINGS, PRODUCT DATA, OPERATION & MAINTENANCE DATA

A. Submittals required for the products listed in the Product Table, in accordance with Section 20 10 00. Operation & Maintenance Information required as indicated in the Product Table in accordance with Section 20 20 00.

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   5. Service Contracts and Field Start-up Reports
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   7. System Information
   8. Warranties

	Operation & Maintenance Information							
PRODUCT TABLE	1	2	3	4	5	6	7	8
Dewatering Sump Pumps		X	X	X				X

Part 2 - Products

2.01 DEWATERING SUMP PUMPS

A. Sump Pump (SP-1):
   1. Type: Submersible.
   2. Motor: Air or oil- filled, hermetically sealed. Built-in automatic reset overloads.
   3. Bearings: Permanently lubricated ball bearings.
   4. Impeller: Cast iron, non-clog.
   5. Seal: Mechanical.
   6. Control Panel:
      a. Type: UL listed, simplex pump control panel, single point connection.
      b. Enclosure: NEMA 1, Recessed in wall, with keyed lock.
      c. Magnetic Contactor: With overload protection.
      d. Motor Disconnects: Separate lockable disconnect feature on overload protector.
      e. TEST-OFF-AUTO Switches: With spring return from test.
      f. Control Transformer: With fused primary and fused secondary.
      g. Run Lights:
         1) Green light indicates power to pump motor.
         2) Amber light indicates control power is on.
         3) Red light indicates motor overload condition and pump off.
      h. Hour Meters: Indicate total run time.
      i. High Water Alarm:
         a) TEST-AUTO-SILENCE switch, with spring return from test and silence

position.
b) Red flashing light and 95 dB horn mounted on enclosure.
c) Isolated contacts for connection to Fire Alarm or BAS.

7. Capacity: See schedule on Drawings.
8. Manufacturer: Hydro-Matic, Paco, Federal, Goulds, Little Giant, Aurora, Zoeller, or approved.

Part 3 - Execution

3.01 GENERAL

A. Install in accordance with manufacturer's recommendations.

B. Support pipes adjacent to pumps, so that no weight is carried on pump casings.

3.02 SUMP PUMPS

A. Control panel furnished and installed by Division 22. Float and power wiring between pump and control panel by Division 26.

END OF SECTION

SECTION 22 51 00

HYDRONIC SPECIALTIES

Part 1 - General

1.01 RELATED SECTIONS

A. Section 20 10 00 - General Mechanical Provisions

B. Section 20 20 00 - Mechanical Operation and Maintenance Manuals

1.02 SHOP DRAWINGS, PRODUCT DATA, OPERATION & MAINTENANCE DATA

A. Submittals required for the products listed in the Product Table, in accordance with Section 20 10 00. Operation & Maintenance Information required as indicated in the Product Table in accordance with Section 20 20 00.

B. Operation & Maintenance Information requirements indicated by number designation as follows. Refer to Section 20 20 00 for a description of each type of information.
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   2. Product Data (submittal data), including documentation of ORS 453.005 (7) (e) compliance.
   3. Manufacturer's Operation Manuals
   4. Manufacturer's Service and Lubrication Requirements
   5. Service Contracts and Field Start-up Reports
   6. Cleaning, Certification, and Test Reports
   7. System Information
   8. Warranties

	Operation & Maintenance Information							
PRODUCT TABLE	1	2	3	4	5	6	7	8
Air Control Devices		X		X				
Testing and Balancing Devices		X	X	X	X			

Part 2 - Products

2.01 AIR CONTROL DEVICES

A. Manual Air Vents:
   1. Description: Full line size tee with 6 inch high nipple, up to a 1/4 inch standard port ball valve, with 1/4 inch soft copper tube down to accessible location, terminating with 1/4 inch threaded bronze plug.
   2. Refer to detail on Drawings for additional requirements.

2.02 TESTING AND BALANCING DEVICES

A. Flow Control Valve Assembly (FCV)
   1. Type: Automatic, pressure compensating, flow limiting valves.
   2. Sizing: Line size body with cartridge sized to provide flow rates indicated on Drawings.
   3. Control Range: 2-32 psig differential pressure.
   4. Cartridge: Removable, spring-loaded stainless steel cup.
   5. Body: Brass, with threaded connections to unions.
   6. Pipe Connections: Threaded or sweat connections to unions.
   7. Unions: Two, O-ring or bronze seat, to permit removal of body without disassembly of inlet or outlet piping.
   8. Accuracy: Plus or minus 5 percent, at differential pressure within control range.
   9. Pressure Test Valves: Two 1/4 inch extended pressure / temperature test plugs, as specified in this Section.

10. Tag: Metal body tag plus hanging metal or plastic tag and chain indicating model, gpm flow rate, psid control range, and associated unit or zone.
11. Manufacturer's Warranty: 5 years.
12. Manufacturer: Griswold, Bell and Gossett, Nexus, or approved.

B. Pressure / Temperature Test Plugs:
1. Type: Automatic-sealing port to receive a 1/8 inch o.d. pressure or temperature probe.
2. Body and Cap: Brass.
3. Size: 1/2 inch N.P.T.
4. Core: Dual seal, elastomeric, rated for 275 deg. F maximum operating temperatures.
5. Extension: For up to 2 inch insulation thickness.
6. Manufacturer: Sisco, Peterson Equipment Co., Hydro Temp, Flow Design Inc., or approved. Similar to Sisco P/T Plug Model BNO-500.

Part 3 - Execution

3.01 GENERAL

A. Install products in accordance with manufacturer's recommendations.

3.02 AIR CONTROL DEVICES

A. Manual Air Vents:
1. Provide at system high points and where shown on Drawings.

3.03 TESTING AND BALANCING DEVICES

A. Inspect flow control valves to determine if they have temporary start-up strainers. Remove start-up strainers after piping has been flushed.

END OF SECTION

SECTION 23 07 00

DUCTWORK INSULATION

Part 1 - General

1.01 RELATED SECTIONS

A. Section 20 10 00 - General Mechanical Provisions

B. Section 20 20 00 - Mechanical Operation and Maintenance Manuals

1.02 QUALITY ASSURANCE

A. Products shall have flame spread and smoke developed ratings based on test procedures in accordance with NFPA-255 and UL-723. Ratings shall be indicated on the product or on the shipping cartons.

B. Unless otherwise specified herein, products shall have flame spread ratings not to exceed 25 and smoke developed ratings not to exceed 50.

C. Products shall comply with the requirements of Oregon Revised Statute (ORS) 453.005 (7) (e), effective January 1, 2011. The referenced statute limits the use of three types of brominated fire retardant chemicals, which are defined as hazardous substances.

1.03 SHOP DRAWINGS, PRODUCT DATA, OPERATION & MAINTENANCE DATA

A. Submittals required for the products listed in the Product Table, in accordance with Section 20 10 00. Operation & Maintenance Information required as indicated in the Product Table in accordance with Section 20 20 00.

B. Operation & Maintenance Information requirements indicated by number designation as follows. Refer to Section 20 20 00 for a description of each type of information.
   1. Shop Drawings (submittal data)
   2. Product Data (submittal data), including documentation of ORS 453.005 (7) (e) compliance.
   3. Manufacturer's Operation Manuals
   4. Manufacturer’s Service and Lubrication Requirements
   5. Service Contracts and Field Start-up Reports
   6. Cleaning, Certification, and Test Reports
   7. System Information
   8. Warranties

	Operation & Maintenance Information							
PRODUCT TABLE	1	2	3	4	5	6	7	8
Duct Insulation		X				X		
Accessories		X						

Part 2 - Products

2.01 DUCT INSULATION

A. Fiberglass Blanket with Vapor Barrier:
   1. Type: Flexible blanket with factory applied vapor barrier facing.
   2. Conductivity ("k"): Not to exceed 0.30 at 100 degrees F mean temperature.
   3. Facing: Laminated aluminum foil, glass scrim, and kraft paper vapor barrier; with 2 inch sealing flap.

4. Facing Permeability: Not to exceed 0.04 perms.
5. Manufacturer and Model: Johns Manville, Certain Teed, Knauf, Owens Corning, or approved, equal to Manville “Microlite XG Type 75".

2.02 ACCESSORIES

A. Mastic, Coatings, Tapes, and Adhesives: Comply with manufacturer's installation instructions for each type of insulation.

Part 3 - Execution

3.01 GENERAL

A. Prior to installation of insulation, verify that:
   1. Ductwork has been tested and approved.
   2. Duct seams have been sealed.
   3. Duct surfaces are clean and dry.

B. Do not insulate the following:
   1. Pre-insulated underground ducts.
   2. Ducts constructed of fiberglass duct board, unless otherwise noted.
   3. Duct access doors. Tape insulation to duct around duct access door

C. Install products in accordance with manufacturer’s recommendations.

D. Install products in accordance with MICA (Midwest Insulation Contractors Association) - National Commercial & Industrial Insulation Standards.

3.02 FIBERGLASS BLANKET INSULATION WITH VAPOR BARRIER

A. Fully wrap duct, with facing to the outside.

B. Overlap vapor barrier facing 2 inches minimum at seams and joints.

C. Seal all seams, joints, and penetrations with foil-faced pressure sensitive tape of same material as insulation facing, to provide a continuous vapor barrier.

3.03 APPLICATION TO DUCT SYSTEMS

A. Supply Air Ducts, Except Ducts with Duct Liner:
   1. Insulation Type: Fiberglass Blanket with Vapor Barrier.
   2. Insulation Thickness: 1.5 inches.

END OF SECTION

SECTION 23 09 00

CONTROLS

Part 1 - General

1.01 RELATED SECTIONS

A. Section 20 10 00 - General Mechanical Provisions

B. Section 20 20 00 - Mechanical Operation and Maintenance Manuals

C. Section 20 60 00 - Mechanical Identification

D. Section 20 91 00 - Testing, Adjusting, and Balancing

E. Section 23 10 00 - Controls Sequence of Operations

1.02 WORK INCLUDED

A. Provide DDC control for new fan coil unit installed under this project.

B. Connect new controller provided under this project to existing building Siemens BAS.

C. Design, provide, and install equipment panels, data communication network wiring needed, and associated hardware.

D. Electronic controls for items indicated on Drawings and described hereinafter including sensors, switches, relays, transformers, thermostats, temperature sensors, control panels and central processing hardware and software.

E. Graphics programming for systems and functions indicated and required. Include integration of new system and updating building floor plans with Owner's existing system and graphics standards.

F. Install interconnecting cables between supplied cabinets, application controllers, and input/output devices.

1.03 QUALITY ASSURANCE

A. BAS system shall be designed, installed, commissioned and serviced by factory trained employees of BAS system manufacturer.

B. Materials and equipment shall be catalogued products of manufacturers regularly engaged in production and installation of automatic temperature control systems. Materials and equipment used shall be standard components, regularly manufactured for this and/or other systems and not custom designed specifically for this project. Systems and components shall have been thoroughly tested, proven in actual use for at least two years, and shall be manufacturer's latest standard design that complies with specification requirements.

C. BAS shall comply with UL 864 UUKL, UL 916 PAZX and 864 UDTZ, and other subsystem listings as applicable, and herein specified, and be so listed at time of bid.

D. Electronic equipment shall conform to requirements of FCC Regulation, Part 15, Section 15, Governing Radio Frequency Electromagnetic Interference and be so labeled.

1.04 SHOP DRAWINGS, PRODUCT DATA, OPERATION & MAINTENANCE DATA

A. Submittals required for the products listed in the Product Table, in accordance with Section 20 10 00. Operation & Maintenance Information required as indicated in the Product Table in accordance with Section 20 20 00.

B. Operation & Maintenance Information requirements indicated by number designation as follows. Refer to Section 20 20 00 for a description of each type of information.
   1. Shop Drawings (submittal data)

2. Product Data (submittal data)
3. Manufacturer's Operation Manuals
4. Manufacturer's Service and Lubrication Requirements
5. Service Contracts and Field Start-up Reports
6. Cleaning, Certification, and Test Reports
7. System Information
8. Warranties

PRODUCT TABLE	Operation & Maintenance Information							
	1	2	3	4	5	6	7	8
Valve schedule		X	X					
Equipment data cut sheets for equipment to be furnished as part of this project		X	X	X				
Point List	X							
System Schematics, including: Sequence of operations, point names and addresses, Wiring diagrams, Panel layouts, and Floor plan layouts of installed components	X						X	
Logic flow diagrams for digital control sequences	X							
Acceptance test procedure list					X		X	
Index sheet, listing contents in alphabetical order							X	
Manufacturer's equipment parts list of functional components of system, and data sheets for equipment furnished.							X	
AutoCAD disk and hard copy of system schematics, including wiring diagrams.							X	
Description of sequence of operations							X	
Auto-CAD compatible as-installed drawings.							X	
As-installed logic flow diagrams for digital control sequences.							X	
As-installed interconnection wiring diagrams							X	
Operator's Manual							X	
Trunk cable schematic showing remote electronic panel locations, and trunk data.							X	
List of connected data points, including panels to which they are connected and input device (detector, thermostat, etc.)							X	

1.05 WARRANTY

A. BAS devices and installation shall be warranted to be free from defects in workmanship and material for a period of one year from date of job acceptance by Owner. Any equipment, software, or installation found to be defective during this period shall be repaired or replaced without additional expense to Owner. Factory authorized warranty service shall be available on site within 4 hours of a call for service.

Part 2 - Products

2.01 APPROVED CONTROL SYSTEMS AND VENDORS

A. Direct Digital Control system components and shall be as manufactured, designed, and installed by Siemens, installed by local or regional factory branch.

B. The above list is alphabetical and does not indicate preference. Inclusion on this list does not guarantee acceptance of products or installation. Control systems shall comply with the terms of this specification.

1. The Contractor shall use only operator workstation software, controller software, custom application programming language, and controllers from the corresponding manufacturer and product line unless Owner approves use of multiple manufacturers.
2. Other products specified herein (such as sensors, valves, dampers, and actuators) need not be manufactured by the above manufacturers.

2.02 NETWORKING COMMUNICATIONS

A. Design of BAS shall network operator work stations and stand alone DDC Controllers. Network architecture shall consist of three levels, building wide Ethernet network based on TCP/IP protocol, high performance peer to peer network, and DDC Controller floor level local area networks. Access across networks shall be transparent to user when accessing data or developing control programs.

B. Design of BAS shall allow co-existence of new DDC Controllers with existing DDC Controllers in same network without use of gateways or protocol converters.

C. Peer-to-Peer Network Level:
1. Operator devices either network resident or connected via dial up modems shall have ability to access any point status and application report data or execute control functions for any device via peer to peer network. No hardware or software limits shall be imposed on number of devices with global access to network data at any time.
2. Network shall support a minimum of 100 DDC controllers and PC work stations.
3. Each PC workstation shall support a minimum of 4 peer to peer networks hardwired or dial up.

2.03 EXISTING OPERATORS INTERFACE

A. Dynamic Color Graphic Creation:
1. BAS contractor shall provide graphic floor plan representation of building second floor, and provide links from existing building graphic representation on campus main system.

2.04 DDC CONTROLLER FLOOR LEVEL NETWORK (FLN)

A. This level communication shall support a family of application specific controllers and shall communicate with peer to peer network through DDC Controllers for transmission of global data.

2.05 DDC CONTROLLER

A. DDC Controllers shall be 32 -bit (minimum) stand-alone, multi tasking, multi user, real time 133 mHz digital control processors consisting of modular hardware with plug in or Din mounted enclosed processors, communication controllers, power supplies and input/output point modules. Controller size shall be sufficient to requirements of this specification and the attached point list. Each controller shall support a minimum of three (3) LAN Device Networks.

B. Each DDC Controller shall have sufficient memory to support its own operating system and databases, including:
1. Control processes
2. Energy management applications
3. Alarm management applications including custom alarm messages for each level alarm for each point in system.
4. Historical/trend data for points specified
5. Maintenance support applications
6. Custom processes
7. Operator I/O
8. Manual override monitoring

C. Each DDC Controller shall support firmware upgrades without need to replace hardware.

D. Provide processors, power supplies and communication controllers complete so that implementation of point only requires addition of appropriate point input/output termination module and wiring.

E. DDC Controllers shall provide local LED or LCD status indication for each digital input and output for constant, up to date verification of point conditions without need for an operator I/O device.

F. Each DDC Controller shall continuously perform self diagnostics, communication diagnosis and diagnosis of panel components. DDC Controller shall provide both local and remote annunciation of any detected component failures, low battery conditions or repeated failure to establish communication.

G. Isolation shall be provided at peer to peer network terminations, as well as field point terminations to suppress induced voltage transients consistent with IEEE Standards 587 1980.

H. Loss of normal power: There shall be an orderly shutdown of DDC Controllers to prevent loss of database or operating system software. Non volatile memory shall be incorporated for critical controller configuration data and battery backup shall be provided to support real time clock and volatile memory for a minimum of 30 days.
   1. Upon restoration of normal power, DDC Controller shall automatically resume full operation without manual intervention.

2.06 PRIMARY CONTROL DEVICES

A. General:
   1. Major components shall conform to following requirements. Provide additional components as required for complete system.

2.07 CONTROL VALVES AND ACTUATORS

A. General:
   1. The BAS contractor shall furnish all specified motorized control valves and actuators, and shall furnish control wiring to actuators.
   2. Automatic control valves shall be fully proportioning for equal percentage flow characteristics.
   3. Valves shall be sized by Control Manufacturer and be provided with actuators of sufficient power for duty intended.
   4. Valve body and actuator selections shall be sufficient to handle system pressure and ambient temperature and shall close against differential pressures encountered.
   5. Valve Selection Criteria:
      a. Sizing:
         1) Modulating Chilled Water: Five psig drop maximum.
      b. Normal Position:
         1) Chilled Water: Normally closed.
      c. Fail Position:
         1) Chilled Water: Last position.
      d. Capacity: As shown on Drawings.

B. Quality Assurance for Actuators and Valves:
   1. UL Listed Standard 873 and C.S.A. Class 4813 02 certified.
   2. NEMA 2 rated enclosures for inside mounting, provide with weather shield for outside mounting.
   3. Five-year manufacturer’s warranty. Two-year unconditional and three-year product defect from date of installation.

C. Valve Actuators:
   1. Control Valve Actuators:
      a. Actuators shall have a gear release button on non spring return models to allow manual setting. The actuator shall have either an insulating air gap between it and the linkage or a non conducting thermoplastic linkage. Care shall be taken to maintain the actuator's operating temperatures and humidity within its specifications. Pipes shall be fully insulated and heat shields shall be installed if necessary. Condensation may not form on actuators and shall be prevented by a combination of insulation, air gap, or other thermal break.

b. The control circuit shall be fully modulating using 2 10 volt or 4 20 mA signals. Accuracy and repeatability shall be within 1/21 of control signal.
c. Valve body and actuators shall be shipped fully assembled and tested at the valve factory prior to shipment.

D. Acceptable Manufacturers: Belimo, Siemens, or approved.

2.08 SENSORS

A. Room Temperature Sensors:
1. DDC room sensor.
2. 10k Ohm thermister.
3. Range 40 to 90 deg F with +/- 0.5 degrees F at factory calibrated point of 70 deg F.
4. Override button for initiation of occupied mode during unoccupied hours.
5. Built-in port allows connection of portable operators terminal to query and modify operating parameters on room level sensor.
6. Cover color: White.
7. Model: Siemens, or approved. Similar to Siemens Series 1000 room sensor.

B. Duct Temperature sensors:
1. Duct temperature sensors shall be rigid or averaging as required by sequence of operations. Averaging sensors shall have sufficient length to span duct diagonally.

Part 3 - Execution

3.01 CONTROL SYSTEM INSTALLATION

A. Installation shall be by Siemens Building Technologies local branch office.

3.02 POINT SCHEDULE

A. Contractor shall collaborate with Owner directly to determine Owner's preference for naming conventions, etc. before entering data in system.

3.03 ELECTRICAL

A. Wiring in conduit and in accordance with Division 26. Wiring shall comply with requirements of local and national electrical codes.

B. Maximum Control Voltage: 120. Provide line voltage power, and transformers necessary for required devices. Route power from nearest available electrical panel with spare circuit, coordinating with Division 26 to prevent conflicts with the Division 26 scope of work.

C. Where relay coil or pilot light is connected to load side of motor starter to energize with motor operation, provide fuse block located in respective starter enclosure for external control circuit.

D. Where relays are used to control single phase motors directly, contacts shall be motor rated for not less than horsepower rating of largest motor switched by relay.

E. Where control circuits are brought into starters separately from power circuits, furnish suitable disconnecting device to disconnect control circuit in accordance with code requirements.

3.04 PRIMARY CONTROL DEVICES

A. Room Thermostats and Room Sensors:
1. Mounting Height: Four feet above finish floor for wall mounted devices.

B. Identification
1. Provide nameplates for switches and control devices in accordance with Section 20 60 00.
2. Nameplate wording shall be consistent with device names used on shop drawings and in Contract Documents.
3. Point name and address shall be indicated at each end of control wire connections to DDC equipment.

3.05 START -UP AND COMMISSIONING

A. System Start -up: When installation of system is complete, calibrate equipment and verify transmission media operation before system is placed on-line. Testing, calibrating, adjusting and final field tests shall be completed by system installer. Verify that systems are operable from local controls in specified failure mode upon panel failure or loss of power. Upon completion of calibration, Contractor shall startup system, perform necessary testing and run diagnostic tests to ensure proper operation. Contractor shall be responsible for generating software and entering database information necessary to perform sequence of control and specified software routines. Acceptance testing in the presence of the Owner's representative or Engineer shall be performed.
   1. Acceptance Test Procedure:
      a. Specified facility management software is installed and operational.
      b. BAS system equipment start/stop, and manually start/stop from BAS terminal.
      c. Commandable equipment fails to the desired state on ASC power failure.
      d. Equipment under BAS control start and stop automatically as required by the stop/start program or by an operator defined schedule.
      e. Temperature control systems under BAS control operate correctly to maintain respective temperatures within acceptable limits.
      f. Equipment monitored for safety or information purposes generates the required response when a condition needing attention occurs.

B. Modifications: Provide any recommendation for system modification in writing to Owner’s Representative. Do not make any system modification, including operating parameters and control settings, without prior approval from Owner’s Representative.

C. Demonstration: Control equipment shall be tested under operating conditions by a qualified technician in the employ of the Controls Manufacturer, in the presence of Owner's representative or Mechanical Engineer. Upon completion of testing and adjustments, submit written certification to Engineer that controls have been calibrated, adjusted and are operating satisfactorily.

D. After final adjustments and testing, provide trend logs of control points of each system over a 24 hour period to demonstrate operation of control system. Trend logs of systems to be run simultaneously for maximum number of trendable points possible with each controller, to show interaction of various systems.

E. After final acceptance, allow 4 hours of technician’s time to monitor, trend and adjust control system during warranty period to fine tune programmed items and ensure system is operating properly. Time normally required to address warranty issues is excluded. Submit trend logs of controlled equipment, as requested by Engineer periodically, to verify control system performance.

END OF SECTION

SECTION 23 10 00

CONTROLS SEQUENCE OF OPERATIONS

Part 1 - General

1.01 GENERAL

A. Provide a complete and operational temperature control and building automation system based on the following points and sequence of operation. The system shall be complete as to sequences and standard control practices. The determined point list is the minimum amount of points that are to be provided. If additional points are required to meet the sequence of operation, they shall be provided.

B. Point Definitions and Abbreviations:
   1. The following points as defined for each piece of equipment are designated as follows:
      a. Binary Input (BI) - Defined as any two-state input to controller, such as an alarm, status, etc.
      b. Binary Output (BO) - Defined as any two-state output from controller, such as start/stop, enable/disable, etc.
      c. Analog Input (AI) - Defined as any variable input to controller, such as temperature, pressure, position, etc.
      d. Analog Output (AO) - Defined as any electrical variable output. 0–20mA, 4–20mA and 0–10VDC are the only acceptable analog outputs. The driver for analog outputs must come from both hardware and software resident in the controllers. Transducers will not be acceptable under any circumstance.
      e. Floating Point Control Output (FO): Use of floating point control will utilize two (2) BO outputs of single AO where utilized.

C. Control set-points noted herein are estimated set-points for initial start-up. During testing and monitoring, Control Contractor shall be responsible for set-point adjustment to obtain optimum system performance. Record final settings in Operation and Maintenance Manual.

D. System set points (i.e., temperatures, static pressure, operating times, alarm tolerance, Lead-lag times, etc.) shall be adjustable.
   1. Whenever a setpoint is referred to as “adjustable” in these standards, the setpoint is to be easily and directly adjustable at the operator’s terminal and Maintenance Building remote operator’s station, and will not to require any code modification. This may require assigning virtual points to adjustable setpoints. Frequently adjusted points, including space temperature setpoints, shall be adjustable from the graphics screen (e.g., floor plan screen).

E. Equipment shut-down to safeties shall not automatically restart, but shall first require manual reset.

F. Reset loop parameters and setpoints to initial values at the beginning of each operating mode, and after restart due to power failure.

Part 2 - Products

2.01 NOT USED

Part 3 - Execution

3.01 FAN COIL, FCU-1:

A. Fan coil is two-pipe, constant volume cooling only unit with modulating chilled water coil. System components shall modulate in response to the BAS in accordance with these listed operational requirements, referenced control sequences, and set points, subject to safeties. Existing room

exhaust fan (EF-10) functions as back-up cooling in conjunction with outside air opening through wall, when temperature reaches 85 deg F. Existing fan not under BAS control.

B. FCU Fan start/stop: Through unit fan motor contactor.

C. Unit controller HAND-OFF-AUTO switch functionality, subject to operational safety interlocks and limit controls shall remain in effect in each switch position, with summary as follows:
   1. AUTO: Fan operates in accordance with system control programs, subject to safeties.
   2. OFF: Fan off.
   3. HAND: Fan on, subject to safeties.

D. Enabled Mode:
   1. Fan operates to maintain airflow through system.
   2. System temperature setpoint maintained by modulating chilled water coil.
   3. Zone temperature setpoint: 73 deg F.

E. Disabled Mode:
   1. Fan off, chilled water valve off.

F. Input/Output Point Monitoring Summary:
   1. General: As a minimum, the following points and features are to be monitored and alarmed. Control Contractor shall provide additional points necessary to accomplish the sequence of operation and interface with other control equipment.
   2. Inputs:
      a. Elevator Machine Room Temperature (AI)
      b. Supply Air Temperature (AI)
      c. Fan coil motor run status (BI)
   3. Outputs:
      a. Supply Fan Start/Stop (BO)
      b. Cooling Coil Valve (AO)
   4. Alarms:
      a. Fan failure (annunciated)
      b. Machine Room High Temperature at 90 deg F

3.02 SUMP PUMPS

A. Sump Pump SP-1:
   1. Automatic control through sump pump manufacturer control panel. Sump pump high water alarm connected to Fire Alarm System for alarm remote monitoring.
   2. No BAS connection required.

END OF SECTION

SECTION 23 31 00

DUCTWORK

Part 1 - General

1.01 RELATED SECTIONS

A. Section 20 10 00 - General Mechanical Provisions

B. Section 20 20 00 - Mechanical Operation and Maintenance Manuals

C. Section 23 07 00 - Ductwork Insulation

D. Section 23 33 00 - Ductwork Accessories

1.02 SHOP DRAWINGS, PRODUCT DATA, OPERATION & MAINTENANCE DATA

A. Submittals required for the products listed in the Product Table, in accordance with Section 20 10 00. Operation & Maintenance Information required as indicated in the Product Table in accordance with Section 20 20 00.

B. Operation & Maintenance Information requirements indicated by number designation as follows. Refer to Section 20 20 00 for a description of each type of information.
1. Shop Drawings (submittal data)
2. Product Data (submittal data)
3. Manufacturer's Operation Manuals
4. Manufacturer’s Service and Lubrication Requirements
5. Service Contracts and Field Start-up Reports
6. Cleaning, Certification, and Test Reports
7. System Information
8. Warranties

	Operation & Maintenance Information							
PRODUCT TABLE	1	2	3	4	5	6	7	8
Duct Sealants		X						

Part 2 - Products

2.01 DUCTWORK

A. Fabrication and Site Delivery:
1. Factory / Shop sealed by blanking or capping duct ends, bagging of small fittings, surface wrapping or shrink wrapping.

B. Rectangular Ducts:
1. Material: Galvanized steel.
2. Fabricate and support in accordance with:
   a. Oregon Mechanical Specialty Code, current edition.
   b. SMACNA HVAC Duct Construction Standards, current edition.
3. Pressure Classification:
   a. Supply Ducts: 2 inch w.g. positive static pressure.
   b. Return: 2 inch w.g. negative static pressure.
4. Transverse Joints: In accordance with details in SMACNA HVAC Duct Construction Standards or one of the following proprietary joint systems:
   a. Ductmate "25" with butyl gasket tape.
   b. Ductmate "35" with butyl gasket tape.
   c. Lockformer "TDC" with butyl gasket tape.

d. Ward Duct Connectors Inc. "WDCI Lite" with butyl gasket tape.
e. Ward Duct Connectors Inc. "WDCI Heavy" with butyl gasket tape.
f. Spinfinity “AccuFlange.”

5. Crossbreaking or Rollbeading:
   a. Duct panels 16 inches wide and larger shall be rollbeaded or crossbroken, regardless of whether or not duct is lined or insulated.
6. Material Thickness:
   a. Duct gauges shall be determined using tables in SMACNA HVAC Duct Construction Standards, based on duct size, material, pressure class, joint type, and reinforcement spacing.
   b. "Addendums to SMACNA" and other publications by proprietary joint manufacturers shall not be used for determining material thickness.
   c. For determining duct gauges using SMACNA tables, proprietary joint systems shall be considered equivalent to the following SMACNA rigidity classes:
      1) Lockformer "TDC," 24 gauge: Class "D."
      2) Lockformer "TDC," 22 gauge: Class "E."
      3) Lockformer "TDC," 20 gauge: Class "F."
      4) Lockformer "TDC," 18 gauge, with tie rod(s) on each side of joint: Class "K."
      5) Ductmate "25": Class "F."
      6) Ductmate "35": Class "J."
      7) Ward "WDCI Lite": Class "F."
      8) Ward "WDCI Heavy": Class "J."
   d. Ducts with proprietary joints shall be 24 gauge minimum.
   e. Equivalent aluminum duct gauges shall be determined in accordance with SMACNA HVAC Duct Construction Standards.
7. Sealing Requirements: Seal transverse joints and longitudinal seams with tape-and-adhesive or liquid duct sealer, specified herein. Not required for gasketed, flanged joints.
8. Fittings: Refer to details on Drawings.

C. Liquid Duct Sealer, Indoors:
1. U.L. Classification: Flame spread rating not to exceed 25; smoke developed rating not to exceed 50; when applied in a 2 inch wide strip at a thickness of 0.0032 inch.
2. Low-Emitting Material: Volatile organic compound (VOC) content less than 30 grams per liter for metal-to-metal bonding per SCAQMD Rule #1168.
3. Application Temperature Limits: 40 to 110 deg. F.
4. Manufacturer: United McGill Corp., Accumetric, Vulkem, Carlisle Hardcast, Alcoa, Design Polymerics, Miracle Adhesives, Ductmate, or approved. Similar to Accumetric Boss 350.

D. Tape-and-Adhesive Duct Sealer, Indoors:
1. U.L. Classification: Flame spread rating not to exceed 25; smoke developed rating not to exceed 50; when applied in a 2 inch wide strip at a thickness of 0.0032 inch.
2. Application Temperature Limits: 30 to 110 deg. F.
3. Manufacturer:
   a. Hardcast Inc. DT tape with FTA-20 adhesive
   b. United McGill MDT6-300 tape with MTA-20 adhesive

Part 3 - Execution

3.01 GENERAL

A. Install products in accordance with manufacturer's recommendations.

B. Provide duct fittings and offsets not shown on Drawings, if required for coordination with the work of other sections.

C. Install products in accordance with Manufacturer's recommendations and standards referenced herein.

D. Duct sizes on Drawings are net inside dimensions.

E. Fabricate and install ductwork to minimize gaps. Gaps in sheetmetal shall be no larger than allowed for sealant per sealant manufacturer's installation instructions.

3.02 DUCT AND FITTING HANDLING

A. Delivery to Site:
   1. At site, sealed ends shall be visually examined and resealed as required.

B. Storage:
   1. Store away from high dust generating processes.
   2. Provide pallets or blocking to keep above floor.
   3. Provide temporary cover to protect stored material.

C. Installation:
   1. Protective coverings shall be removed immediately before installation and inspected to determine if wipe down is necessary.
   2. During construction, provide temporary sealing of openings into duct systems, to prevent accumulation of dust in ducts.
   3. Open ends of completed duct and overnight work-in-progress shall be sealed.

3.03 DUCT SEALANTS

A. Clean duct surfaces prior to applying sealant.

B. Prior to application, verify that ducts are dry and within specified temperature limits.

C. Inspect after first application of sealant to identify areas where shrinkage has occurred. Fill voids with a second application.

END OF SECTION

SECTION 23 33 00

DUCTWORK ACCESSORIES

Part 1 - General

1.01 RELATED SECTIONS

A. Section 20 10 00 - General Mechanical Provisions

B. Section 20 20 00 - Mechanical Operation and Maintenance Manuals

C. Section 23 31 00 - Ductwork

1.02 SHOP DRAWINGS, PRODUCT DATA, OPERATION & MAINTENANCE DATA

A. Submittals required for the products listed in the Product Table, in accordance with Section 20 10 00. Operation & Maintenance Information required as indicated in the Product Table in accordance with Section 20 20 00.

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   7. System Information
   8. Warranties

	Operation & Maintenance Information							
PRODUCT TABLE	1	2	3	4	5	6	7	8
Turn Vanes		X						
Fire Dampers - Include installation instruction with wall framing requirements	X	X	X	X		X		X
Flexible Duct Connectors		X						

Part 2 - Products

2.01 FIRE, COMBINATION FIRE/SMOKE, AND SMOKE DAMPERS

A. Fire Dampers, at wall and floor penetrations:
   1. Type: Galvanized steel, folding curtain, with fusible link.
   2. Free Area: 100 percent, blades out of airstream.
   3. Approvals: Comply with UL Standard 555.
   4. Closure Rating: Dynamic.
   5. Fire Resistance Rating: 1-1/2 hour.
   6. Duct Connection Collars: Rectangular, round, or oval, as required to match ducts indicated on Drawings.
   7. Sealant: Dampers with round or oval duct connection collars shall have factory applied sealant at collar connections and at all seams.
   8. Mounting Position: Vertical or horizontal, as indicated on Drawings. Provide spring closure and latches for horizontal mount dampers.
   9. Manufacturer: Ruskin, Greenheck, Air Balance, Cesco, Prefco, Safe Air, Nailor, or approved. Similar to Ruskin DIBD Series.

2.02 TURN VANES

A. Turn Vanes, 20 inch and less duct width:
   1. Arrangement: Stationary vanes fixed to side rails installed in 90 degree square elbows.
   2. Vane and Rail Material: Galvanized steel.
   3. Vanes: Double wall, minimum 26 gauge, 90 degree, 2-inch throat radius.
   4. Rails: Minimum 24 gauge, 1-1/2 inch on center vane spacing.
   5. Manufacturer: Durodyne, Ductmate, Hardcast, Ward Industries, Cain, or approved. Similar to Durodyne Junior Vane Rail JVR2.

2.03 FLEXIBLE DUCT CONNECTORS

A. Flexible Duct Connectors:
   1. Assembly: Two 3 inch wide strips of metal connected to 3 inch wide strip of fabric with continuous crimped seams.
   2. Metal Strips: 24 gauge galvanized steel.
   3. Fabric Strip:
      a. Indoor: Glass fabric with black DuPont Neoprene coating, flame resistant, approximately 30 ounces per yard.
      b. Outdoor: Glass fabric with white DuPont Hypalon coating, flame resistant, UV resistant, approximately 26 ounces per yard.
   4. Manufacturer: Ventfabrics, Durodyne or approved. Similar to Durodyne "Metal-Fab".

Part 3 - Execution

3.01 GENERAL

A. Install products in accordance with manufacturer's recommendations.

3.02 FIRE DAMPERS

A. Fire Dampers:
   1. Install fire dampers in accordance with manufacturer's printed installation drawings. It is the Contractor's responsibility to obtain complete manufacturer's instructions, including requirements for wall opening preparation. Installation instructions shall be included with shop drawing submittal. Coordinate with other trades for proper construction of openings.

3.03 FLEXIBLE DUCT CONNECTORS

A. Provide flexible duct connectors where shown on Drawings

END OF SECTION

SECTION 23 37 00

AIR OUTLETS AND INLETS

Part 1 - General

1.01 RELATED SECTIONS

A. Section 20 10 00 - General Mechanical Provisions

B. Section 20 20 00 - Mechanical Operation and Maintenance Manuals

C. Section 20 91 00 - Testing, Adjusting, and Balancing

1.02 SHOP DRAWINGS, PRODUCT DATA, OPERATION & MAINTENANCE DATA

A. Submittals required for the products listed in the Product Table, in accordance with Section 20 10 00. Operation & Maintenance Information required as indicated in the Product Table in accordance with Section 20 20 00.

B. Operation & Maintenance Information requirements indicated by number designation as follows. Refer to Section 20 20 00 for a description of each type of information.
   1. Shop Drawings (submittal data)
   2. Product Data (submittal data), including documentation of ORS 453.005 (7) (e) compliance.
   3. Manufacturer's Operation Manuals
   4. Manufacturer's Service and Lubrication Requirements
   5. Service Contracts and Field Start-up Reports
   6. Cleaning, Certification, and Test Reports
   7. System Information
   8. Warranties

	Operation & Maintenance Information							
PRODUCT TABLE	1	2	3	4	5	6	7	8
Grilles	X	X						

Part 2 - Products

2.01 GRILLES, REGISTERS, AND DIFFUSERS

A. General:
   1. Refer to Drawings for types, neck sizes, and blow patterns.

B. Supply Grille Wall (SGW-1):
   1. Type: Double deflection, individually adjustable blades.
   2. Material: Steel or aluminum.
   3. Border: 1-1/4 inch wide, countersunk screw holes, gasket.
   4. Front Blades: Maximum 3/4 inch on center, parallel to long dimension.
   5. Rear Blades: Maximum 3/4 inch on center, parallel to short dimension.
   6. Finish: White.
   7. Manufacturer: Titus, Kreuger, Carnes, Tuttle & Bailey, Anemostat, E.H. Price, or approved. Similar to Titus 300RL.

C. Return Grille Wall (RGW-1):
   1. Type: Single deflection, fixed blades.
   2. Material: Steel or aluminum.
   3. Border: 1-1/4 inch wide, countersunk screw holes, gasket.

4. Blades: Spaced 3/4 inch on center maximum, parallel to long dimension.
5. Blade Angle: Fixed, between 35 and 45 degrees.
6. Finish: White.
7. Manufacturer: Titus, Kreuger, Carnes, Tuttle & Bailey, Anemostat, E.H. Price, or approved. Similar to Titus 350RL.

Part 3 - Execution

3.01 GENERAL

A. Install products in accordance with manufacturer's recommendations.

B. Secure grilles and registers with flat head, countersunk screws, flush with borders, painted to match borders. Hex head and/or bright finish screws are not acceptable.

C. Install outlets and inlets tight to mounting surfaces.

D. Install outlets and inlets plumb and square with walls and ceilings.

END OF SECTION

SECTION 26 01 00

GENERAL ELECTRICAL PROVISIONS

Part 1 - General

1.01 CONTRACT CONDITIONS

A. Work of this Section is bound by the provisions of this Specification and accompanying Drawings.

1.02 DESCRIPTION OF SYSTEM

A. Provide all related Electrical Work specified herein and diagramed or scheduled on Electrical Drawings. All work shall conform to applicable national, state, and local codes.

B. Provide all required electrical work specified and diagrammed in these documents to replace existing elevator #4 in Knight library with a complete and functioning new elevator.

1.03 COORDINATION

A. Coordinate the Work specified in this Division with all other trades. Note that there is some mechanical work related to this project in the elevator penthouse. Coordinate all aspects of electrical work with the mechanical contractor.

1.04 SUBMITTALS

A. Provide submittal information for the following:
   1. Wiring devices
   2. Light fixtures

1.05 RECORD DRAWINGS

A. Provide record drawings showing all deviations to plan shown electrical work.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

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

1.07 PROTECTION

A. Suitably protect any unfinished Work from potential physical damage.

1.08 EXISTING JOB CONDITIONS

A. Report any discrepancies discovered between existing job conditions and Work to be installed. Fully resolve such discrepancies prior to continuation of work.

1.09 STANDARD WARRANTY

A. Warrant all Work included in this Specification for period of one year from date of final acceptance, UON.

1.10 SCHEDULE OF VALUES

A. After award of contract, submit to Engineer a cost breakdown of work.

Part 2 - Products

2.01 MATERIAL

A. Provide new material and equipment items that are standard products of manufacturers regularly engaged in production of such materials and equipment.

Part 3 - Execution

3.01 COMPLETION

A. Complete each system as shown or specified herein and place in operation, except where only roughing-in or partial systems are called for.

3.02 SITE VISITATION AND INSPECTION

A. Visit site of proposed Work before submitting bid, and become familiar with all job conditions affecting Work.

3.03 SCHEDULING OF WORK

A. Schedule Work with all other Contractors to maintain job progress schedule, and avoid conflicts in installation of Work by various trades.

3.04 SLEEVES AND OPENINGS

A. Provide through floors and walls for Electrical Work.

3.05 EXCAVATION

A. There will be no excavation for electrical needs, this project.

3.06 TRENCHING AND BACKFILLING

A. None required this project.

3.07 CUTTING AND PATCHING

A. Provide all cutting and patching for electrical work.

3.08 COORDINATION

A. Coordinate all light fixture, device, and control equipment locations with other trades and elevator contractor to avoid possible conflicts with ducts, sprinkler piping, and other obstacles affecting installation.

END OF SECTION

SECTION 26 01 60

ELECTRICAL DEMOLITION

Part 1 - General

1.01 SECTION INCLUDES

A. In general, electrical demolition will entail:
   1. Light fixture removals, lamp removals and wiring removals.

Part 2 - Products

2.01 MATERIALS AND EQUIPMENT

A. Materials and Equipment for Patching and Extending Work: As specified in individual sections.

Part 3 - Execution

3.01 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

A. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit serving them is abandoned and removed. Provide blank cover for abandoned outlets which are not removed.

B. Repair adjacent construction and finishes damaged during demolition and extension work.

C. Extend existing installations using materials and methods compatible with existing electrical installations.

D. Check branch circuit wiring disturbed in execution of this Work which is to remain for continuity, overloads and grounds. Repair any deficiencies.

END OF SECTION

SECTION 26 05 19

WIRE AND CABLE

Part 1 - General

1.01 SECTION INCLUDES

A. Building wire.

B. Cable.

C. Wiring connections and terminations.

Part 2 - Products

2.01 BUILDING WIRE

A. Feeders and Branch Circuits:
   1. Copper conductor.
   2. 600 volt insulation.
   3. THHN/THWN.
   4. Stranded conductor, only.
   5. Not less than 98% conductivity.
   6. UL approved.

B. Color Coding: (Obtain state and local electrical inspectors' approval.)
   1. 120/208 Volt System:
      a. A phase - black
      b. B phase - red
      c. C phase - blue
      d. Neutral - white
      e. Travelers - violet, purple, lavender also
      f. Switch leg - pink
      g. Ground - green

Part 3 - Execution

3.01 GENERAL WIRING METHODS

A. Use no wire smaller than 12 AWG for power and lighting circuits, and no smaller than 16 AWG for control wiring.

B. Place an equal number of conductors for each phase of a circuit in same raceway or cable.

C. Edison circuits not allowed.

D. All conductors shall maintain the same color the entire length of the circuit.

3.02 WIRING INSTALLATION IN RACEWAYS

A. Install wire in raceway after interior of building has been physically protected from the weather and all mechanical work likely to injure conductors has been completed.

B. Equipment Grounding Conductors:
   1. Provide a separate, insulated equipment grounding conductor in feeder, lighting, and receptacle branch circuits. Provide and use a crimp lug on all terminations.

3.03 WIRING CONNECTIONS AND TERMINATIONS

A. Splice only in accessible junction boxes.

END OF SECTION

SECTION 26 05 29

SUPPORTING DEVICES

Part 1 - General

1.01 SECTION INCLUDES

A. Conduit and equipment supports.

B. Fastening hardware.

1.02 QUALITY ASSURANCE

A. Support systems shall be adequate for weight of equipment and conduit, including wiring, which they carry.

Part 2 - Products

2.01 MATERIAL

A. Support Channel: Zinc plated.

B. Hardware: Corrosion resistant.

Part 3 - Execution

3.01 INSTALLATION

A. Equipment Support From Building Structure:
   1. Expansion anchors.
   2. Spring steel clips.
   3. Powder-actuated anchors, if approved for use by Owner. (Do not use driven "nails." All anchors shall have screwdriver or bolt type heads for easy removal.)
   4. Do not fasten supports to piping, ductwork, mechanical equipment, or conduit.
   5. Do not drill structural steel members.

B. Equipment Support from Partitions:
   1. Toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls.
   2. Expansion anchors in solid masonry walls.
   3. Self-drilling anchors or expansion anchor on concrete surfaces.
   4. Sheet metal screws in sheet metal studs.
   5. Do not use plastic expansion type anchors in sheet rock walls or ceilings.

C. Cabinets and Panelboards:
   1. Minimum of four anchors.
   2. Bridge studs top and bottom with channels to support flush-mounted cabinets and panelboards in stud walls.

END OF SECTION

SECTION 26 05 30

CONDUIT

Part 1 - General

1.01 SECTION INCLUDES

A. Electrical metallic tubing and fittings.

B. Flexible metal conduit and fittings.

C. Liquidtight flexible metal conduit and fittings.

Part 2 - Products

2.01 ELECTRIC METALLIC TUBING (EMT)

A. Manufacturer: Allied Tube and Conduit, Triangle PWC Inc., or approved.

2.02 FLEXIBLE CONDUIT

A. Manufacturer: Anamet (Type DE-710), Triangle PWC, Inc. (Type 710), or approved.

2.03 FLEXIBLE CONDUIT, LIQUID TIGHT

A. Manufacturer: AFC Nortek, Alflex, Anamet (Type "UA"), Electriflex, Thomas & Betts, or approved.

2.04 COUPLINGS AND CONNECTORS FOR ELECTRICAL METALLIC TUBING (EMT)

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

B. Interior: Set-screw type shall be permitted:
   1. Hex head set screw for 2-1/2" and larger; screw type for smaller.
   2. Provide insulated throat type.
   3. Steel type, only. Cast connectors prohibited.
   4. No crimp fittings allowed.

C. Manufacturer: Appleton, Raco, Thomas & Betts, or approved.

Part 3 - Execution

3.01 CONDUIT SIZING AND ARRANGEMENT

A. Size conduit for Type THW conductors, 1/2 inch minimum size unless otherwise noted. Fill each conduit to 50% of NEC-allowed fill, only.

3.02 CONDUIT SUPPORT

A. Arrange conduit supports to prevent distortion of alignment by wire pulling operations.

B. Fasten conduit using galvanized straps, lay-in adjustable hangers, clevis hangers, or bolted split stamped galvanized hangers. No J-nails allowed.

C. Attachment of one hole straps on horizontal runs shall be from below.

3.03 CONDUIT PENETRATIONS

A. Fire-Rated Walls and Floors: Seal conduit penetrations using one of the following methods:
   1. Provide mechanical fire-stop fittings with UL listed fire rating equal to wall or floor rating.
   2. Seal opening around conduit with UL listed foamed silicone elastomer compound.

3.04 FLEXIBLE CONDUIT

A. Use limited to the following:
   1. Lighting fixture pigtails to remote junction box in accessible ceilings.
   2. Interior motor connections.
   3. At building expansion joints.
   4. Vibrating or movable equipment connections.
   5. Flexible conduit may not be installed in stud walls in new construction.
   6. MC cable not allowed.
   7. Provide separate ground conductor full length of flexable conduit (not outside of conduit).

3.05 FLEXIBLE CONDUIT, LIQUID TIGHT

A. Where called for on drawings.

3.06 ELECTRICAL METALLIC TUBING

A. Dry locations where not subject to damage.

END OF SECTION

SECTION 26 05 32

OUTLET, PULL AND JUNCTION BOXES

Part 1 - General

1.01 SECTION INCLUDES

A. Wall and ceiling outlet boxes.

B. Pull and junction boxes.

Part 2 - Products

2.01 ACCEPTABLE MANUFACTURERS - OUTLET BOXES

A. Appleton.

B. Bowers.

C. Crouse Hinds.

D. Killark.

E. O Z Gedney.

F. Raco/Bell.

G. Steel City.

H. Thepitt.

I. Substitutions: under provisions in Section 26 01 00.

2.02 OUTLET BOXES

A. Sheet Metal Outlet Boxes: Galvanized steel.

B. Cast Boxes: Aluminum or cast feralloy, deep type, gasketed cover, threaded hubs.

Part 3 - Execution

3.01 COORDINATION OF BOX LOCATIONS

A. Provide electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and code compliance.

3.02 OUTLET BOX INSTALLATION

A. Do not install boxes back-to-back in walls. Provide minimum 6 inch separation, except provide minimum 24 inch separation in acoustic-rated walls.

3.03 PULL AND JUNCTION BOX INSTALLATION

A. Locate pull boxes and junction boxes above accessible ceilings or in unfinished areas.

B. Support pull and junction boxes independent of conduit.

END OF SECTION

SECTION 26 05 53

ELECTRICAL IDENTIFICATION

Part 1 - General

1.01 SECTION INCLUDES

A. Nameplates.

B. Wire and cable markers.

Part 2 - Products

2.01 MATERIALS

A. Nameplates:
   1. Engraved three-layer laminated plastic.
   2. Black letters.
   3. White background.

B. Wire and Cable Markers:
   1. Cloth markers split sleeve or tubing type. Use 3M vinyl markers.

Part 3 - Execution

3.01 INSTALLATION

A. Secure nameplates to equipment fronts using screws, rivets, or adhesive. Secure nameplate to inside face of recessed panelboard doors in finished locations.

3.02 WIRE IDENTIFICATION

A. Provide wire markers on each conductor in panelboards gutters, pull boxes, and at load connection.

3.03 NAMEPLATE ENGRAVING SCHEDULE

A. Identify all electrical distribution and control equipment, and loads served.

3.04 PULL BOX AND JUNCTION BOX IDENTIFICATION

A. Identify each junction box with complete system description.

B. Marking Methods:
   1. Neat hand lettering with permanent black marker.

3.05 RECEPTACLE COVER PLATE IDENTIFICATION

A. Identify each coverplate with panel source and branch circuit number.

B. P-touch label acceptable.

END OF SECTION

SECTION 26 27 26

WIRING DEVICES

Part 1 - General

1.01 SECTION INCLUDES

A. Wall switches.

B. Receptacles.

Part 2 - Products

2.01 ACCEPTABLE MANUFACTURERS - WALL SWITCHES AND RECEPTACLES

A. Arrow Hart.

B. Hubbell.

C. Leviton.

2.02 WALL SWITCHES (STANDARD TOGGLE)

A. Specification grade, self grounding type.

B. Grey handle

C. Leviton 1220 Series.

2.03 RECEPTACLES

A. Straight-blade Receptacles:
   1. Specification grade, self grounding type.
   2. Leviton 20 amp, 125 V., 5362 Series UON.
   3. Grey face.

B. GFCI Receptacles:
   1. Duplex convenience receptacle.
   2. Leviton 6898-H66 125 V. 20 AMP.
   3. Color, same as for straight-blade receptacles.

2.04 WALL PLATES

A. Acceptable Manufacturers:
   1. Arrow Hart.
   2. Hubbell.
   3. Leviton 80700, 84000, and MNW Series.

B. Decorative Cover Plate:
   1. Satin brushed stainless steel.

Part 3 - Execution

3.01 INSTALLATION

A. Switches:
   1. Wall switches 48 inches above floor to top of box.
   2. OFF position down, UON.

B. Receptacles:
   1. 18" above floor to top of box, UON.

END OF SECTION

SECTION 26 50 00

LIGHTING FIXTURES

Part 1 - General

1.01 WORK INCLUDED

A. Provide a typical lighting fixture, complete with lamps, at each lighting outlet shown.

1.02 SECTION INCLUDES

A. Interior luminaires and accessories.

B. Lamps.

C. Ballasts.

1.03 SUBMITTALS

A. Submit product data under provisions of Section 26 01 00.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site under provisions of Section 26 01 00.

B. Store and protect products under provisions of Section 26 01 00.

1.05 JOB CONDITIONS

A. Existing Conditions:
   1. Prior to ordering lighting fixtures, verify conditions for mounting lighting fixtures and select proper mounting hardware.

Part 2 - Products

2.01 INTERIOR LUMINAIRES AND ACCESSORIES

A. See Building Luminaire Schedule.

B. Lighting Fixture Construction:
   1. Light leaks not accepted. Fixture designed or gasketed to eliminate light leaks.
   2. Surface Mounted Fixture With Surface Conduit: Constructed with knockouts or collars to allow fixture mounting tight to ceiling or wall. Fixtures not allowed to mount on surface boxes, U.O.N.
   3. Prismatic lenses shall be A19, 0.156 inches minimum thickness virgin acrylic. See luminaire schedule for thicker lens requirements at selected luminaires.
   4. Lampholders (sockets) for T5 and T8 linear lamps shall be rotating and locking.
   5. Provide internal mounted in-line fusing.

2.02 LAMPS

A. Fluorescent T8 Lamps:
   1. Average Lamp Life: 24,000 hrs.
   2. Minimum color rendering index of 85.
   3. Correlated color temperature of 3,500°K.
   4. Must comply with federal TCLP standards for mercury content.
   5. All by same manufacturer.
   6. Manufacturer: Osram Sylvania, “XPS” Series.

2.03 ELECTRONIC FLUORESCENT BALLASTS

A. General:
   1. Solid state electronic.
   2. Minimum power factor: 90%.
   3. Maximum crest factor: 1.4.
   4. Maximum total harmonic distortion: 20%
   5. Minimum lamp frequency: 40 KHz.
   6. Sound rating: A.
   7. UL listed: Class P.
   8. Integral leaded ballasts shall be color coded to ANSI standard C82.11.
   9. Manufacturer:
      a. As noted for each ballast type below.
      b. Substitutions: Other manufacturers that can meet the basic specification may formally submit for approval per Section 26 01 00.
   10. All ballasts to meet U of O/EWEB sheet, for example: Osram Sylvania, Extreme Systems, QTP2X32/UNIV-PSX-F-PRS.

B. Type - T8 Fluorescent:
   1. Rapid start.
   2. Ballast factor: 0.86-0.89.
   3. Manufacturers: Osram Sylvania.

Part 3 - Execution

3.01 PREPARATION

A. Field Measurements:
   1. Coordinate lighting fixture location in elevator spaces with elevator equipment. Report adverse conditions to Engineer.
   2. Lighting fixtures are generally located for symmetrical pattern and to suit structural conditions. Location changes shall be approved by Architect.
   3. Do not install any work until any discrepancies discovered have been resolved.

B. Preparation of Surfaces:
   1. Clean field painted lighting fixtures, etc., prior to application of paint.
   2. Label all fixture ballasts with fixture install date and voltage. Felt tip marker is suitable for this purpose.

3.02 INSTALLATION

A. Install lamps in luminaires and lampholders.

3.03 RELAMPING

A. Relamp luminaires which have failed lamps at substantial completion of work.

3.04 ADJUSTING AND CLEANING

A. Align luminaires and clean lenses and diffusers at completion of work. Clean paint splatters, dirt, and debris from installed luminaires.

3.05 NOISY BALLASTS

A. Engineer shall determine which ballasts are excessively noisy and to be replaced at no cost to Owner.

B. Check: Ballasts shall be tightly fastened to fixture and have no loose connections.

3.06 BUILDING LUMINAIRE SCHEDULE

A. See Drawings.

3.07 PRODUCT WARRANTY

A. Manufacturers' Warranty (see Section 26 01 00):
   1. Ballast manufacturer's warranty statements:
      a. Include a "Statement of Compatibility" indicating that the ballast/lamp combination supplied to the project has been tested to insure full advertised ballast and lamp life, and full flicker free lamp lumen output.
      b. Include in manufacturer's warranty statement, that any failed electronic ballast will be replaced (including labor), in the fixture, within 48 hours, for a period of five (5) years commencing at current project phase substantial completion.

END OF SECTION

SECTION 28 31 23

FIRE ALARM SYSTEMS (EXISTING)

Part 1 - General

1.01 SUMMARY

A. The Contractor shall furnish and install fire alarm devices, as specified herein and indicated on the drawings.

B. The system shall include initiation devices required for replacement of elevator #4 in Knight Library.

C. All components shall be compatible with the existing system which is a Cerberus/ Pyrotronics MXL addressable system.

1.02 RELATED SECTIONS

A. Section 26 05 30 - Conduit.

B. Section 26 05 32 - Outlet, Pull and Junction Boxes.

1.03 SUBMITTALS

A. Submit complete and descriptive shop drawings in accordance with Section 01 33 00.

B. Submit plans and specifications to the local fire marshal. Obtain his written acceptance of the system prior to beginning work and ordering equipment.

1.04 OPERATION AND MAINTENANCE DATA

A. Submit data under provisions of Section 26 01 00.

B. Install an additional manual inside the fire alarm control panel.

C. Include operating instructions, and maintenance and repair procedures, including trouble shooting procedures.

D. Include manufacturer representative's letter stating that system is operational.

1.05 REFERENCES

A. NFPA 72 - National Fire Alarm Code.

B. NFPA 101 - Life Safety Code.

C. UBC Chapter 11 - Accessibility.

Part 2 - Products

2.01 ACCEPTABLE MANUFACTURERS

A. Cerberus

Part 3 - Execution

3.01 INSTALLATION

A. Install system in accordance with manufacturer's instructions.

B. Wire:
   1. Furnish and install all required wiring in accordance with Local and National Codes and Article 210 of the National Board of Fire Underwriter's Standard Number 72.
   2. 14 AWG minimum size conductors for fire alarm detection and signal circuit conductors or as per manufacturer's recommendations and as per NEC.
   3. All wiring shall be in conduit. Conduit shall be sized by the Contractor.

C. The Contractor shall test all conductors for ground before making final wiring connections. This shall be done with a megger insulation tester or equal.

D. All "J" boxes for fire alarm system shall be painted red and labeled in white letters, minimum 1/4" "fire alarm".

3.02 FIELD QUALITY CONTROL

A. Field testing will be performed under provisions of Section 26 01 00.

B. Test in accordance with NFPA 72H and local fire department requirements.

3.03 MANUFACTURER'S FIELD SERVICES

A. Provide manufacturer's field services under provisions of Section 26 01 00.

B. Include services of factory trained representative to supervise installation, adjustments, final connections, and system testing.

3.04 INSPECTION AND TESTS UPON COMPLETION OF SYSTEM

A. Check out and final connections to the fire alarm control panel shall be made by factory trained technicians in the employ of a factory authorized franchised dealer for the products installed. In addition, factory trained technicians shall demonstrate operation of the complete system and each major component to the Owner.

B. The system, upon completion of installation by the Electrical Contractor, shall be checked out and all connections to initiating and indicating devices shall be supervised by factory trained technicians in the employ of a factory franchised dealer for the product installed. Each individual device shall be checked out and tested for operation by a factory trained technician.

C. System field wiring diagrams shall be provided to the Electrical Contractor by the system manufacturer prior to installation.

D. Tests by the Electrical Contractor shall include tests for grounds and short circuits, continuity tests of exterior circuit. Performance of controls and all initiating and indicating devices shall be made by the factory trained technicians in the employ of a factory authorized franchised dealer for the product installed.

E. The report covering these tests and inspection will be submitted direct to the Architect in triplicate.

F. Documentation from the manufacturer shall be presented to the Architect and/or Engineer upon request indicating that the persons making the final connections and check out are factory trained technicians in the employ of a factory authorized franchised dealer for the products installed.

G. The system, upon completion of installation by the Electrical Contractor, shall be tested. All initiating devices and control functions shall be tested for operation.
   1. The completed Fire Alarm System shall be fully tested (100% point tested)in accordance with NFPA 72 by the Contractor in the presence of the Owner's Representative and the local Fire marshal.
   2. The test shall be supervised by factory trained technicians in the employ of a factory franchised dealer for the product installed.
   3. Each individual device shall be checked out and tested for operation by a factory trained technician.

4. Upon completion of a successful test, the Contractor shall so certify in writing to the Owner and Architect.

3.05 WARRANTY

A. The Contractor shall warrant the completed Fire Alarm System wiring and equipment to be free from inherent mechanical and electrical defects for a period of one (1) year from the date of the completed and certified test or from the date of first beneficial use.

B. The equipment supplier shall make available to the Owner a maintenance contract proposal in compliance with NFPA 72 guidelines.

END OF SECTION