# UNIVERSITY OF OREGON
# OREGON HALL FIRST FLOOR EAST WING OFFICE REMODEL

Oregon Hall First Floor
East Wing
1585 East 13th Ave,
University of Oregon,
Eugene, Oregon 97403

## PROJECT MANUAL

06/7/2012


ARCHITECT
2fORM Architecture
121 Lawrence Street
Eugene, OR 97401
t: 541.342.5777
f: 541.342.6128

Contact: Richard Shugar, A.I.A.
e: richard@2-form.com

OWNER
University of Oregon
Facilities Services
1276 University of Oregon
Eugene, OR 97403-1276
t: 541.346.2147

Contact: David Ward
e: rdward@uoregon.edu

**UNIVERSITY OF OREGON**

Oregon Hall First Floor
East Wing Office Remodel

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**Drawings**

OREGON UNIVERSITY SYSTEM

# NOTICE OF RETAINER CONTRACT OPPORTUNITY

The Oregon University System (OUS) is accepting sealed bids for a public improvement project at **UofO Capital Construction office, attn. David Ward** (1295 Franklin Blvd.) until **4:00 PM** Pacific Time, **Wednesday June 27, 2012** for the Oregon Hall First Floor East Wing Office Remodel project located at 1585 East 13th Ave, University of Oregon, in Eugene, Oregon 97403. The project includes the remodel of an existing 5685 square foot office space.

A **mandatory pre-bid conference** will be conducted from **10:30 AM to 11:30 AM** on **Wednesday June 13, 2012**. Bidders shall meet with OUS' Representative David Ward on-site at **Oregon Hall First Floor East Wing** for that purpose. Attendance will be documented through a sign-in sheet prepared by the OUS representative. Prime bidders who arrive more than 5 minutes after start of time of the meeting (as stated in the solicitation and by the OUS representative's watch) or after the discussion portion of the meeting (whichever comes first) shall not be permitted to sign in and will not be permitted to submit a bid on the project.

Bids will be received on a lump-sum basis for all of the work. Bid documents are available on the OUS website at http://ous.edu/. Please direct any questions regarding the bid documents to David Ward, Capital Construction Project Manager, at 541-346-2147.

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

# OREGON UNIVERSITY SYSTEM

# RETAINER CONTRACTS EXCEEDING $100,000

# INSTRUCTIONS TO BIDDERS

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## INSTRUCTIONS TO BIDDERS

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

**Article 1. Scope of Work**

The work contemplated under this contract with the Oregon State Board of Higher Education, hereinafter referred to as the Owner, includes all labor, materials, transportation, equipment and services necessary for, and reasonably incidental to, the completion of all construction work in connection with the project described in the Project Manual which includes, but is not necessarily limited to, the Advertisement for Bids, Instructions to Bidders, Supplemental Instructions to Bidders, Bid Form, Public Improvement Agreement Form, Performance Bond, Payment Bond, OUS General Conditions, Supplemental General Conditions, Plans and Specifications.

**Article 2. Examination of Site and Conditions**

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

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

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

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

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

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

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

Any interpretation of the Project Manual or approval of manufacturer's material will be made only by an Addendum duly issued. A copy of each Addendum will be mailed or delivered to each bidder receiving a Project Manual and becomes a part thereof. The Owner will not be responsible for any other explanation or interpretation of the Project Manual nor for any other approval of a particular manufacturer's process or item.

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

**Article 4. Execution of the Bid Form**

Each bid shall be made in accordance with the sample Bid Form accompanying these instructions; In the case of a sole individual, the bid form need only be executed as principal by the sole individual. In the case of a partnership, the bid form must be executed by at least one of the partners. In the case of a corporation, the bid form must be executed by stating the official name of the corporation under which is placed the signature of an officer authorized to sign on behalf of the corporation followed by such person's official capacity, such as president, etc. This signature shall be attested by the secretary or assistant secretary of the corporation. The corporation seal should then be affixed to the bid form.; numbers pertaining to base bids shall be stated both in writing and in figures; the bidder's address shall be typed or printed.

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

The Bid Form included in the Project Manual is a sample. One additional copy of the Bid Form may be furnished with the Project Manual. One additional copy of the Bid Bond form may also be provided with the Project Manual. Only one copy needs to be submitted with the bid.

**Article 5. Prohibition of Alterations to Bid**

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

**Article 6. Submission of Bid**

Each bid shall be sealed in an envelope, properly addressed to the appropriate project Owner within the Oregon University System, 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 7. Bid Closing and Opening of Bids**

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

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

**Article 8. Acceptance or Rejection of Bids by Owner**

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

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

The Owner reserves the right to hold the bid and bid security of the three lowest bidders for a period of 30 calendar days from and after the time of bid opening pending award of the contract.

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

If such bid has not been accepted within 30 calendar days after the opening of the bids, each of the three lowest bidders may withdraw the bid submitted.

**Article 9. Withdrawal of Bid**

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

After the time set for the bid closing, no bidder will be permitted to withdraw its bid within the time frames specified in Article 8 for award and execution, except as provided for in that Article.

**Article 10. Execution of Contract, Agreement, Performance Bond and Payment Bond**

The Owner will provide the successful bidder with contract forms within 10 calendar days after the award of the Contract. The bidder is required to execute the contract forms as provided, including a performance bond and a payment bond from a surety company licensed to do surety business in the State of Oregon, within 20 calendar days after the award of the contract. The contract forms shall be delivered to the Owner in the number called for and to the location as noted in the Notice of Award.

**Article 11. Recyclable Products**

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

## U of O CONSTRUCTION STANDARDS SUBSTITUTION REQUEST

**TO:**_____(Campus Planning Project Planner)

**PROJECT:**_____

**STANDARD ITEM:**_____

**STANDARD SECTION NUMBER:**_____ **PAGE NUMBER**_____

**PROPOSED STANDARD SUBSTITUTION:**

Attached data includes design or product description, specifications, drawings, photographs, performance and test data, product information, etc. adequate for evaluation of requested Standard substitution.

Attached data also includes description of changes to related and/or impacted building system(s) or component(s) that will result from the requested Standard substitution.

**Proposing party certifies that the following items are correct unless noted & described in attachments:**

1. Proposed Standard substitution does not affect U of O maintainability / serviceability.
2. Proposing party pays for changes to the building design and/or redesign caused by the Standard substitution.
3. Proposing party will supply appropriate detailing, specification, etc. for construction of the Standard substitution.
4. Proposed Standard substitution notes and describes all adverse effects on other trades, design schedule, drawing coordination, construction schedule, warranty requirements, project budget, etc.
5. Maintenance and service parts are available locally or readily obtainable for the proposed Standard substitution.

**Proposing party further certifies function, appearance, and quality of proposed Standard substitution are equivalent or superior to the Standard.**

**Submitted by:** _____
Name (printed or typed)

_____
Signature

_____
Firm Name (printed or typed)

_____
Date (printed or typed) Phone Number (printed or typed)

**For use by Designated U of O Representative / Owner of Standard in question:**

**APPROVED** **APPROVED AS NOTED**

**NOT APPROVED** **RECEIVED TOO LATE**

**By, Printed Name:** _____ **Date:**_____

**By, Signature:** _____

**Remarks:**

**OREGON UNIVERSITY SYSTEM**

**RETAINER CONTRACT**

# BID FORM

Revised per Addendum #1

OUS CAMPUS: University of Oregon, Eugene

PROJECT: Oregon Hall First Floor East Wing Office Remodel

BID CLOSING: 4:00 PM (Pacific Time), Wednesday, June 27, 2012

BID OPENING:

FROM: _____
*Name of Contractor*

TO: Oregon State Board of Higher Education
University of Oregon, Eugene
Attn: David Ward, Project Manager
1295 Franklin Blvd.
Eugene, OR 97403

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

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

____b. A partnership registered under the laws of the State of _____;
or

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

____d. A limited liability corporation organized under the laws of the State of _____;

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

_____ Dollars ($_____)

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

- NOPI – Contract Opportunity
- OUS Retainer Supplement Form
- OUS General Conditions
- Prevailing Wage Rates
- Plans and Specifications
- Instructions to Bidders
- Performance Bond and Payment Bond
- Supplemental General Conditions
- Payroll and Certified Statement Form
- Drawings and Details

- ADDENDA numbered ____ through____, inclusive *(fill in blanks)*

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

ALTERNATE #1: *Install new 100/3 circuit breaker in existing panel "ER1" and use to feed new flush-mounted panel "ERB-1." Use breaker poles from circuits abandoned in demolition and rearrange remaining panel circuits as required.*

ADD or DEDUCT: $_____

ALTERNATE #2: *Replace ceiling grid and ACT in the entire project area with a standard size grid system. Architect to reorganize location of light fixtures. Room 173 and 173A are not considered a part of project area.*

ADD or DEDUCT: $_____

3. The work shall be completed within the time stipulated and specified in the General Conditions of the Specifications.

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

_____.

*(name of surety company - not insurance agency)*

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

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

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

a business address in Oregon.

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

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

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

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

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

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

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 * * * * ****

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

Supplement No.:
Project Name:

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

the "Contractor":

Federal Tax ID No::

and the "Owner": The State of Oregon acting by and through the State Board of Higher Education on behalf of:
University of Oregon
Capital Construction
1295 Franklin Blvd
Eugene, OR 97403

(collectively the "Parties") pursuant to that certain Retainer Contract between the Parties dated July 1, 2010 (the "Retainer Contract"). For good and valuable consideration, the Parties agree as follows:

**1. DESCRIPTION OF THE PROJECT.** The project to which this Supplement pertains is described as follows: _____ (the "Project").

**2. WORK TO BE PERFORMED.** The Contractor will perform the following Work on the Project: _____ (the "Work"). The Contractor will perform the Work according to the terms and conditions of this Supplement and the Retainer Contract, including its attachments, which are incorporated into this Supplement by reference.

**3. SCHEDULE.** The Contractor will perform the Work according to the following schedule: use next

**4. COMPENSATION.** The Owner will compensate the Contractor for Work in the firm, fixed-price amount of $_____ in accordance with the requirements of the OUS General Conditions.

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 required approvals have been obtained (the "Effective Date"). No Work will be performed or payment made prior to the Effective Date. The Contractor will perform its

obligations according to this Supplement, unless terminated or suspended. Termination or suspension does not extinguish or prejudice Owner's right to enforce this Supplement with respect to any breach of Contractor's performance that has not been cured.

**6. PERFORMANCE AND PAYMENT BONDS.** The performance and payment bond requirements for this Project are as follows:

☒ Prior to execution of a Retainer Contract Supplement Notice to Proceed, Contractor must provide to the contracts officer of the Owner institution at which the Work will take place, a performance bond in a sum equal to the fixed price stated in paragraph 4(a) above, or the maximum not-to-exceed price stated in paragraph 4(b) above, as applicable, and a separate payment bond in the same amount.

☐ 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.** If the amount of 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 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, **effective July 1, 2011**, 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 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 401.792 to 401.816 and ORS chapters 118, 314, 316, 317, 318, 320, 321 and 323; the elderly rental assistance program under ORS 310.630 to 310.706; and local taxes administered by the Department of Revenue under ORS 305.620.

**9. INSURANCE REQUIREMENTS.** Contractor shall comply with and obtain the insurance coverage amounts stated in the OUS General Conditions. If a different insurance type or level of coverage is required, it is identified in Supplemental General Conditions.

**10. KEY PERSONS.**

The Contractor's personnel identified below shall be considered Key Persons and shall not be replaced during the Project without the written permission of Owner, which shall not be

unreasonably withheld. If the Contractor intends to substitute personnel, a request must be given to Owner at least 30 days prior to the intended time of substitution. When replacements have been approved by Owner, the Contractor shall provide a transition period of at least 10 working days during which the original and replacement personnel shall be working on the Project concurrently. Once a replacement for any of these staff members is authorized, further replacement shall not occur without the written permission of Owner. The Contractor's Project Staff shall consist of the following personnel:

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

**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 University of Oregon, Owner |
|---|---|
| Print Name: _____ | Print Name: _____ |
| Signature: _____ | Signature: _____ |
| Title: _____ | Title: _____ |
| Date: _____ | Date: _____ |

# OREGON UNIVERSITY SYSTEM

# SUPPLEMENTAL GENERAL CONDITIONS

## To The

## GENERAL CONDITIONS
## FOR PUBLIC IMPROVEMENT CONTRACTS

**Project Name: Oregon Hall First Floor East Wing Office Remodel**

**The following modify the Oregon University System "General Conditions for Public Improvement Contracts", February 1, 2011, (OUS General Conditions) for this Contract. Where a portion of the OUS General Conditions is modified by these Supplemental General Conditions, the unaltered portions shall remain in effect.**

RESERVED

**OREGON UNIVERSITY SYSTEM**

# GENERAL CONDITIONS
# FOR PUBLIC IMPROVEMENT CONTRACTS

**February 1, 2011**

INSTRUCTIONS: The attached **Oregon University System General Conditions for Public Improvement Contracts ("OUS General Conditions")** apply to all designated public improvement contracts. Changes to the OUS General Conditions (including any additions, deletions or substitutions) should only be made by attaching Supplemental General Conditions. The text of these OUS General Conditions should not otherwise be altered. These OUS General Conditions have been reviewed as to form by the Oregon Department of Justice. The legal sufficiency and approval requirements of ORS 291.047 remain applicable to individual OUS procurements, unless an exemption has been granted pursuant to that statute and Department of Justice administrative rules at OAR Chapter 137, Division 45.

## TABLE OF SECTIONS

# OREGON UNIVERSITY SYSTEM
# GENERAL CONDITIONS FOR PUBLIC IMPROVEMENT CONTRACTS
# ("OUS General Conditions")

## SECTION A
## *GENERAL PROVISIONS*

### A.1 DEFINITION OF TERMS

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

**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 of the Owner's Authorized Representative 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's Authorized Representative 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, including Owner's written change directives as well as changes reflected in a writing executed by the parties to this Contract and, if applicable, establishing a Contract Price or Contract Time adjustment for the changed Work.

**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 General Conditions.

**CONSTRUCTION CHANGE DIRECTIVE,** means a written order by the Owner's Authorized Representative 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 Public Improvement Agreement Form, OUS General Conditions, Supplemental General Conditions, if any, the accepted Offer, Plans, Specifications, amendments, Change Orders and Construction Change Directives .

**CONTRACT PERIOD**, as set forth in the Contract Documents, means the total period of time beginning with the issuance of the 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 and Change Orders.

**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, old age and unemployment insurance, and fringe benefits required by agreement or custom; worker's compensation insurance; project specific insurance (including, witout limitation, Builder's Risk Insurance and Builder's Risk Installation Floater); bond premiums, rental cost of equipment, and machinery required for execution of the work; and the additional costs of field personnel directly attributable to the Work.

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

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

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

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

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

**OFFEROR**, means a bidder in connection with Instructions to Bidders and 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 at the job site (e.g. job trailer) including expenses of personnel staffing the job site

office, 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'S AUTHORIZED REPRESENTATIVE**, means those individuals identified in writing by the Owner to act on behalf of the Owner for this project. Owner may elect, by written notice to Contractor, to delegate certain duties of the Owner's Authorized Representative to more than one party, including without limitation, to an Architect/Engineer. However, nothing in these OUS 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 an 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.

**PUNCHLIST**, 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 to Owner, operational and maintenance manuals, shop drawings, Change Orders, Construction Change Directives, MWESB Reports, correspondence, certificate(s) of occupancy, and other documents listed in Subsection B.9.1 of these OUS 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 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's Authorized Representative. The decision of the Owner's Authorized Representative is final.

**SUPPLEMENTAL GENERAL CONDITIONS**, means those conditions that remove from, add to, or modify these OUS General Conditions. 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 amendments, Change Orders and Construction Change Directives, with those of later date having precedence over those of an earlier date;

(b) The Supplemental General Conditions;

(c) The OUS Public Improvement Agreement Form;

(d) The OUS 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, including Instructions to Offerors and Supplemental Instructions to Offerors, 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 or Owner's Authorized Representative'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 or Owner's Authorized Representative. Matters concerning and interpretation of requirements of, the Contract Documents will

be decided by the Owner's Authorized Representative, 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's Authorized Representative (or the Architect/Engineer) within any time limits agreed upon or otherwise with reasonable promptness. Interpretations and decisions of the Owner's Authorized Representative (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's Authorized Representative (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's Authorized Representative, including without limitation, any nonconformity with applicable laws, statutes, ordinances, building codes, rules and regulations.

A.4.4 If the Contractor believes that additional cost or Contract Time is involved because of clarifications or instructions issued by the Owner's Authorized Representative (or Architect/Engineer) in response to the Contractor's notices or requests for information, the Contractor must submit a written request to the Owner's Authorized Representative, 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's Authorized Representative 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's Authorized Representative will provide administration of 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's Authorized Representative will act on behalf of the Owner to the extent provided in the Contract Documents, unless modified in writing in accordance with other provisions of the Contract. In performing these tasks, the Owner's Authorized Representative may rely on the Architect/Engineer or other consultants to perform some or all of these tasks.

B.1.2 The Owner's Authorized Representative 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's Authorized Representative will not make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Owner's Authorized Representative 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 endeavor to communicate with each other through the Owner's Authorized Representative or designee 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's Authorized Representative.

B.1.4 Based upon the Architect/Engineer's evaluations of the Contractor's Application for Payment, or unless otherwise stipulated by the Owner's Authorized Representative, 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's Authorized Representative to determine if they conform to the Contract Documents. Inspection of the Work by the Owner's Authorized Representative 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's Authorized Representative 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's Authorized Representative and include the cost of the Samples in the Contract Price.

**B.4 PERMITS**

Contractor shall obtain and pay for all necessary permits and licenses, except for those specifically excluded in the Supplemental General Conditions, for the construction of the Work, for temporary obstructions, enclosures, opening of streets for pipes, walls, utilities, environmental Work, etc., as required for the project. Contractor shall be responsible for all violations of the law, in connection with the construction or caused by obstructing streets, sidewalks or otherwise. Contractor shall give all requisite notices to public authorities. The Contractor shall pay all royalties and license fees. The Contractor shall defend all suits or claims for infringement of any patent or other proprietary rights and save harmless and blameless from loss, on account thereof, the State of Oregon, and its departments, divisions, members and employees.

**B.5 COMPLIANCE WITH GOVERNMENT REGULATIONS**

B.5.1 Contractor shall comply with all federal, state and local laws, codes, regulations and ordinances applicable 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 s 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 law, regulation, 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's Authorized Representative shall be confirmed in writing to the Contractor.

**B.7 INSPECTION**

B.7.1 Owner's Authorized Representative shall have access to the Work at all times.

B.7.2 Inspection of the Work will be made by the Owner's Authorized Representative at its discretion. The Owner's Authorized Representative 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's Authorized Representative, 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 laws, ordinances, rules, regulations 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's Authorized Representative timely notice of when and where tests and inspections are to be made so that the Owner's Authorized Representative 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's Authorized Representative.

B.7.4 As required by the Contract Documents, Work done or material used without inspection or testing by the Owner's Authorized Representative 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 sufficient notice to the Owner's Authorized Representative, 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's Authorized Representative, the uncovering and restoration will be paid for as a Change Order.

B.7.6 If any testing or inspection reveals failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Owner's Authorized Representative'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 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's Authorized Representative.

**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, Change Orders, Construction Change Directives and addenda, in good order and marked currently to record field changes and selections made during construction, and one record copy of Shop Drawings, Product Data, Samples and similar submittals, and shall at all times give the Owner's Authorized Representative 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 Contract is involved in litigation, Contractor shall retain all such records until all litigation is resolved. The Owner and/or its agents shall continue to be provided full access to the records during litigation.

**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 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 will 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's Authorized Representative 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's Authorized Representative 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 will fully cooperate with any and all other contractors without additional cost to the Owner in the manner described in section B.13.

**B.15 GOVERNING LAW**

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

**B.16 LITIGATION**

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

**B.17 ALLOWANCES**

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

B.17.2 Unless otherwise provided in the Contract Documents:

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

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

(c) whenever costs are more than or less than allowances, the Contract Price shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (i) the difference between actual costs and the allowances under Section B.17.2(a) and (2) changes in Contractor's costs under Section B.17.2(b).

(d) Unless Owner requests otherwise, Contractor shall provide to Owner a proposed fixed price for any allowance work prior to its performance.

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

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

(a) Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor (including any sub-subcontractor), manufacturer, supplier or distributor to illustrate some portion of the Work.

(b) Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

(c) Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

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

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

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

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

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

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

**B.19 SUBSTITUTIONS**

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

**B.20 USE OF PLANS AND SPECIFICATIONS**

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

**B.21 FUNDS AVAILABLE AND AUTHORIZED**

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

**B.22 NO THIRD PARTY BENEFICIARIES**

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

## SECTION C
## *WAGES AND LABOR*

**C.1 MINIMUM WAGE RATES ON PUBLIC WORKS**

Contractor shall comply fully with the provisions of ORS 279C.800 through 279C.870. Documents establishing those conditions, as determined by the Commissioner of the Bureau of Labor and Industries (BOLI), are included as attachments to or are incorporated by reference in the Contract Documents. Contractor shall pay workers at not less than the specified minimum hourly rate of wage, and shall include that requirement in all subcontracts.

**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's Authorized Representative, 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 if 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 approval of the Owner's Authorized Representative, and then only in a manner consistent with the Change Order provisions of this Section D.1 and after any necessary approvals required by public contracting laws have been obtained. Otherwise, a formal contract 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's Authorized Representative may at any time, without notice to the sureties and without impairing the Contract, require changes consistent with this Section D.1. All Change Order Work 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 Change Order 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 additional Work, and a binding obligation exists under the Contract on the parties covering the terms and conditions of the additional 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 Change Order 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. The mark-ups set forth in D.1.3(c) shall be utilized by the parties as a guide in establishing fixed pricing, and will not be exceeded by Owner without adequate justification. Cost and price data relating to Change Orders 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 Change Order 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% |

When Change Order Work under D.1.3(c) is 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 such Change Order as follows:

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

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

D.1.4 Any necessary adjustment of Contract Time that may be required as a result of a Change Order must be agreed upon by the parties before the start of the Change Order Work unless Owner's Authorized Representative authorizes Contractor to start the 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 the Change Order. 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 Change Order are 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's Authorized Representative 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 Change Order Work under Section D.1.3 causes an increase or decrease in the Contractor's cost of, or the Contract Time required for the performance of any other part of the Work under this Contract, the Contractor must submit a written request to the Owner's Authorized Representative, 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 the Change Order by Contractor.

The thirty (30) Day time limit applies to claims of Subcontractors, suppliers, or manufacturers who may be affected by the Change Order 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 compensation and additional Contract Time requested. The Contractor will 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 additional compensation or Contract Time that Contractor submits to the Owner's Authorized Representative. Failure of Subcontractors, suppliers, manufacturers or others to submit their requests to Contractor for inclusion with Contractor's requests submitted to Owner's Authorized Representative within the time period and by the means described in this section shall constitute a waiver of these Subcontractor claims. The Owner's Authorized Representative and 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 the State of Oregon, whether in this claims process, in litigation, or in any dispute resolution process.

If the Owner's Authorized Representative denies the Contractor's request for additional compensation or an extension of 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 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) Caused by any actions of the Owner, Owner's Authorized Representative, or any other employee or agent of the Owner, or by separate contractor employed by the Owner.

(b) Caused by any site conditions which differ materially from what was represented in the Contract Documents or from conditions that would normally be expected to exist and be inherent to the construction activities defined in the Contract Documents. The Contractor shall notify the Owner's Authorized Representative immediately of differing site conditions before the area has been disturbed. The Owner's Authorized Representative 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's Authorized Representative agree that a differing site condition exists, any additional compensation or additional Contract Time will be determined based on the process set forth in Section D.1.5 for Change Order Work. If the Owner's Authorized Representative disagrees that a differing site condition exists and denies Contractor's request for additional compensation or Contract Time, Contractor may proceed to file a Claim under Section D.3, Claims Review Process.

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

(d) 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's Authorized Representative 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's Authorized Representative, a complete and detailed request for additional compensation or additional Contract Time, or both, as applicable, resulting from the delay.

If the Owner's Authorized Representative 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's Authorized Representative for review. Contractor's Claims, including Claims for additional compensation or additional Contract Time, shall be submitted in writing by Contractor to the Owner's Authorized Representative 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 General Conditions. Within thirty (30) Days after the initial Claim, Contractor shall submit to the Owner's Authorized Representative 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.

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 extension 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's Authorized Representative. The Owner's Authorized Representative and 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's Authorized Representative 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 Authorized Representative'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 parties agree to promptly submit the appropriate motions and orders documenting the settlement to the Court for its signature and filing.

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 Owner may at any time and at its discretion issue a Construction Change Directive adding to, modifying or reducing the scope of Work. Contractor and Owner shall negotiate the need for any adjustment to compensation or additional Contract Time related to the change, subject to the procedures for submitting requests or Claims for additional compensation or additional Contract Time established in this Section D. Unless otherwise directed by Owner's Authorized Representative, Contractor shall proceed with the Work while any request or Claim for additional compensation or additional Contract Time resulting from Work under a Change Order or Construction Change Directive is pending. Regardless of the review period or the final decision of the Owner's Authorized Representative, the Contractor shall continue to diligently pursue the Work as identified in the Contract Documents. In no case is the Contractor justified or allowed to cease Work without a written stop work order from the Owner or Owner's Authorized Representative.

## 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 will provide a breakdown of values for the contracted Work and will be the basis for progress payments. The breakdown will demonstrate reasonable, identifiable, and measurable components of the Work.

Unless objected to by the Owner's Authorized Representative, this schedule shall be used as the basis for reviewing Contractor's applications for payment. If objected to by Owner's Authorized Representative, Contractor shall revise the schedule of values and resubmit the same for approval of Owner's Authorized Representative.

**E.2 APPLICATIONS FOR PAYMENT**

E.2.1 Owner shall make progress payments on the Contract monthly as Work progresses. Payments shall be based upon estimates of Work completed and the Schedule of Values. All payments shall be approved by the Owner's Authorized Representative. 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 over due claims at the rate of two-thirds of one percent per month on the progress payment, not including retainage, due the Contractor. Over due claims 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 of the initial billing statement if no invoice is received;

(c) The date all goods have been received; or

(d) The date the 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 payment that is 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 will be required to arrange for receipt of the EFT/ACH payments.

E.2.2 Contractor shall submit to the Owner's Authorized Representative 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: _____

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's Authorized Representative 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 only. The submitted amount of the application for payment shall be reduced by the cost of transportation and for the cost of an inspector to check the delivery at out of town storage sites. The cost of said 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 stored.

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

(h) All required documentation must 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 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 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 Change Order;

(b) Add that portion of the Contract Price properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner pursuant to Section E.2.3, suitably stored off the site at a location agreed upon in writing), less retainage as provided in Section E.5;

(c) Subtract the aggregate of previous payments made by the Owner; and

(d) Subtract any amounts for which the Owner's Authorized Representative has withheld or nullified payment as provided in the Contract Documents.

E.2.6 Contractor's applications for payment may 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 labor, materials and equipment relating to the Work.

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

E.2.9 Contractor shall submit its initial MWESB Report within ten (10) Days of Contractor's execution of the Contract, or if there will be a Guaranteed Maximum Price (GMP) Amendment, then within ten (10) Days of Contractor's execution of the GMP Amendment. Contractor shall submit annual MWESB Reports on June 30 of each year the Contract is active. Contracts (or GMP Amendments) first executed by Contractor within ninety (90) Days before June 30 of the year of execution by Contractor may at the discretion of Owner be exempt from submitting the annual MWESB Report otherwise due on that June 30. The final MWESB Report shall be filed with the application for final payment. Timely receipt of MWESB Reports by Owner's Authorized Representative shall be a condition of any progress payments or final payment otherwise due.

**E.3 PAYROLL CERTIFICATION REQUIREMENT**

Payroll certification is required before payments are made on the Contract. Refer to Section C.2 for this information.

**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 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 opinion, 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 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 Owner shall, within fifteen (15) Days after receiving the written notice, either accept the Work or notify the Contractor of Work yet to be performed on the Contract. If Owner does not within the time allowed notify the Contractor of Work yet to be performed to

fulfill contractual obligations, the interest provided by this subsection shall commence to run forty five (45) Days after the end of the 15-Day period.

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

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

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

**E.6 FINAL PAYMENT**

E.6.1 Upon completion of all the Work under this Contract, the Contractor shall notify the Owner's Authorized Representative, in writing, that Contractor has completed Contractor's part of the Contract and shall request final payment. Upon receipt of such notice the Owner's Authorized Representative will inspect the Work, and if acceptable, submit to the Owner a recommendation as to acceptance of the completed Work and the final estimate of the amount due the Contractor. If the Work is not acceptable, Owner will notify Contractor within fifteen (15) Days of Contractor's request for final payment.. Upon approval of this final estimate by the Owner and compliance by the Contractor with provisions in Section K, AFFIDAVIT/RELEASE OF LIENS AND CLAIMS, and other provisions 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's Authorized Representative (1) a notarized affidavit/release of liens and claims in a form satisfactory to Owner that states that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) 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, (3) 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, (4) consent of surety, if any, to final payment and (5), 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, law, ordinances, permits or directions of the Owner's Authorized Representative. Contractor shall follow the Owner's Authorized Representative'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's Authorized Representative, 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 and shall comply with the Contract Documents and all applicable provisions of federal, state and municipal safety laws and building codes to prevent accidents or injury to persons on, about or adjacent to the premises where the Work is being performed. Contractor shall erect and properly maintain at all times, as required by the conditions and progress of the Work, all necessary safeguards for protection of workers and the public against any hazards created by construction. Contractor shall designate a responsible employee or associate on the Work site, whose duty shall be the prevention of accidents. The name and position of the person designated shall be reported to the Owner's Authorized Representative. The Owner's Authorized Representative has no responsibility for Work site safety. Work site safety is 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's Authorized Representative, all pertinent facts relating to such property damage and the ultimate disposition of the claim for damage.

F.2.4 Contractor is responsible for protection of adjacent work areas including impacts brought about by activities, equipment, labor, utilities, 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 will 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 of the Work or of adjoining property, the Contractor, without special instruction or authorization from the Owner's Authorized Representative, shall act reasonably to prevent threatened loss or injury, and shall so act, without appeal, if instructed by the Owner's Authorized Representative. 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 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 will 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 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 proper regulatory agencies in a manner that complies with applicable federal, state, and local laws and regulations. Cleanup shall be at no cost to the Owner and be performed by properly qualified 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 federal, state, or local statutes, rules or ordinances. Notwithstanding such written consent from the Owner, the Contractor, at all times, shall:

(a) properly handle, use and dispose or all environmental pollutants and hazardous substances or materials brought onto the Work site, in accordance with all applicable federal, state, or local statutes, rules, or ordinances;

(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, without cost to the Owner, such spills, releases, discharges, or leaks to the Owner's satisfaction and in compliance with all applicable federal, state, or local statutes, rules or ordinances.

F.5.2 Contractor shall report all reportable quantity releases to applicable federal, state, and local regulatory and emergency response agencies. Reportable quantities are found in 40 CFR Part 302, Table 302.4 for hazardous substances and in OAR 340-142-0050 for all products addressed therein. 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 no., and all other documentation required by law.)

(b) Whether amount of items released is EPA/DEQ reportable, and, if so, when it was 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 Contractor has had with members of the press or State officials other than Owner.

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

(g) Personnel 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 in 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.

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, personnel, or 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, Owner's Authorized Representative, 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.1.2, (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 this 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. The bonds may be required if the Contract Price is less than the above thresholds if 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 the Subcontractor to start Work.

**G.3 INSURANCE**

G.3.1 Primary Coverage: Insurance carried by Contractor under this Contract shall be the primary coverage, and the Owner's insurance is excess and solely for damages or losses for which the Owner is responsible. 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 $100,000 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 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 form, including earthquake and flood, for an amount equal to the full amount of the Contract. Any deductible shall not exceed $50,000 for each loss, except the earthquake and flood deductible shall not exceed 2 percent of each loss or $50,000, whichever is more. The policy will include as loss payees the Owner, the Contractor and its Subcontractors as their interests may appear.

G.3.3.2 Builder's Risk Installation Floater: For other than new construction the 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. This insurance shall include as loss payees the State of Oregon, the Owner, the Contractor and its Subcontractors as their interests may appear.

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 for the insureds, as their interests may appear. 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 Liability Insurance:

G.3.4.1 Commercial General Liability: Contractor shall obtain, at Contractor's expense, and keep in effect during the term of this Contract, Commercial General Liability Insurance covering bodily injury and property damage in a form and with coverages that are satisfactory to the State. This insurance shall include personal injury liability, products and completed operations, and contractual liability coverage for the indemnity 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. Contractor shall provide proof of insurance of not less than the following amounts:

Bodily Injury/Death:

Amounts not less than the amounts listed in the following schedule:

Per occurrence limit for any single claimant :

| From commencement of the Contract term to | |
|---|---|
| June 30, 2011: | $1,600,000 |
| July 1, 2011 to June 30, 2012: | $1,700,000 |
| July 1, 2012 to June 30, 2013: | $1,800,000 |
| July 1, 2013 to June 30, 2014: | $1,900,000 |
| July 1, 2014 to June 30, 2015: | $2,000,000 |

July 1, 2015 and thereafter the adjusted limitation as determined by the State Court Administrator pursuant to Oregon Laws 2009, chapter 67, section 3 (Senate Bill 311).

Per occurrence limit for any number of claimants:

| From commencement of the Contract term to | |
|---|---|
| June 30, 2011: | $3,200,000 |
| July 1, 2011 to June 30, 2012: | $3,400,000 |
| July 1, 2012 to June 30, 2013: | $3,600,000 |
| July 1, 2013 to June 30, 2014: | $3,800,000 |
| July 1, 2014 to June 30, 2015: | $4,000,000 |

July 1, 2015 and thereafter the adjusted limitation as determined by the State Court Administrator pursuant to Oregon Laws 2009, chapter 67, section 3 (Senate Bill 311).

Property Damage:

Amounts not less than the amounts listed in the following schedule:

Per occurrence limit for any single claimant:

From commencement of the Contract term to June 30, 2011: $100,100.

Effective as of July 1 of each year the adjusted limitation will be as determined by the State Court Administrator pursuant to Oregon Laws 2009, chapter 67, section 5 (Senate Bill 311).

Per occurrence limit for any number of claimants:

From commencement of the Contract term to June 30, 2011: $500,600.

Effective as of July 1 of each year the adjusted limitation will be as determined by the State Court Administrator pursuant to Oregon Laws 2009, chapter 67, section 5 (Senate Bill 311).

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, non-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 the following amounts:

Bodily Injury/Death:

Amounts not less than the amounts listed in the following schedule:

Per occurrence limit for any single claimant:

| From commencement of the Contract term to | |
|---|---|
| June 30, 2011: | $1,600,000. |
| July 1, 2011 to June 30, 2012: | $1,700,000. |
| July 1, 2012 to June 30, 2013: | $1,800,000. |
| July 1, 2013 to June 30, 2014: | $1,900,000. |
| July 1, 2014 to June 30, 2015: | $2,000,000. |

July 1, 2015 and thereafter the adjusted limitation as determined by the State Court Administrator pursuant to Oregon Laws 2009, chapter 67, section 3 (Senate Bill 311).

Per occurrence limit for any number of claimants:

| From commencement of the Contract term to | |
|---|---|
| June 30, 2011: | $3,200,000. |
| July 1, 2011 to June 30, 2012: | $3,400,000. |
| July 1, 2012 to June 30, 2013: | $3,600,000. |
| July 1, 2013 to June 30, 2014: | $3,800,000. |
| July 1, 2014 to June 30, 2015: | $4,000,000. |

July 1, 2015 and thereafter the adjusted limitation as determined by the State Court Administrator pursuant to Oregon Laws 2009, chapter 67, section 3 (Senate Bill 311).

Property Damage:

Amounts not less than the amounts listed in the following schedule:

Per occurrence limit for any single claimant:

From commencement of the Contract term to June 30, 2011: $100,100.

Effective as of July 1 of each year the adjusted limitation will be as determined by the State Court Administrator pursuant to Oregon Laws 2009, chapter 67, section 5 (Senate Bill 311).

Per occurrence limit for any number of claimants:

From commencement of the Contract term to June 30, 2011: $500,600.

Effective as of July 1 of each year the adjusted limitation will be as determined by the State Court Administrator pursuant to Oregon Laws 2009, chapter 67, section 5 (Senate Bill 311).

G.3.4.3 "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 24 months or the maximum time period available in the marketplace if less than 24 months. Contractor will be responsible for furnishing certification of "tail" coverage as described or continuous "claims made" liability coverage for 24 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. This will be a condition of the final acceptance of Work or services and related warranty (if any).

G.3.5 Additional Insured: The liability insurance coverage, except Professional Liability if included, required for performance of

this Contract shall include the State of Oregon, its departments, divisions, officers, and employees, 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 State of Oregon, its departments, divisions, officers and employees 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 State of Oregon, its departments, divisions, officers and employees as Named Insureds with not less than a $1,500,000.00 limit per occurrence. This policy must be kept in effect for 12 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: There shall be no cancellation, material change, potential exhaustion of aggregate limits or intent not to renew insurance coverages without thirty (30) Days' written notice from the Contractor or its insurer(s) to the Owner. 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 State of Oregon, its Owner and their divisions, officers, and employees.

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. Insurance coverage required under this Contract shall be obtained from insurance companies or entities acceptable to the Owner that are allowed 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 do an insurance business in the state of Oregon, and certain non-admitted surplus lines insurers that satisfy the requirements of applicable Oregon law and are approved by the Owner. The certificates will also specify that there shall be no cancellation, material change, potential exhaustion of aggregate limits or intent not to renew insurance coverages without thirty (30) Days' written notice from the insurer(s) to the Owner. To the extent Certificates of Insurance contain words to the effect that Contractor shall "endeavor to send notice of cancellation" or similar language, Contractor shall require its insurer to send such notice by making sure that the words “endeavor to” or similar words are removed from the Certificate. 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 approved by the Owner in writing prior to execution of the Contract and is subject to Owner's approval.

**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 on this Contract. The Contractor shall at all times carry on the Work diligently, without delay and punctually fulfill all requirements herein. Contractor shall commence Work on the site within fifteen (15) Days of Notice to Proceed, unless directed otherwise.

H.1.2 Unless specifically extended by Change Order, all Work shall be complete by the date contained in the Contract Documents. The Owner shall have the right to accelerate the completion date of the Work, which may require the use of overtime. Such accelerated Work schedule shall be an acceleration in performance of Work under Section D.1.2 (f) and shall be subject to the Change Order process 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, a detailed schedule for review and acceptance by the Owner. The submitted schedule must illustrate Work by significant project components, significant labor trades, and long lead items broken down by building and/or floor where applicable. Each schedule item shall account for no greater than 5 % of the monetary value of the project or 5 % of the available Contract Time. Schedules with activities of less than one Day or valued at less than 1% of the Contract will be considered too detailed and will not be accepted. Schedules lacking adequate detail, or unreasonably detailed, will be rejected. Included within the schedule are the following: Notice to Proceed, Substantial Completion, and Final Completion. Schedules will be updated monthly and submitted with the monthly payment application. 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's Authorized Representative, 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 This provision does not 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 affected Work has been accepted in writing by the Owner's Authorized Representative.

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 and/or the Owner's Authorized Representative 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's Authorized Representative, which are unsuitable for performing the Work;

(e) Time required to investigate differing site conditions;

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

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

**J.2 CONTRACTOR'S RESPONSIBILITIES**

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

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

**J.3 COMPENSATION FOR SUSPENSION**

J.3.1 Depending on the reason for suspension of the Work, the Contractor or the Owner may be due compensation by the other party. If the suspension was required due to acts or omissions of Contractor, the Owner may assess the Contractor actual costs of the suspension in terms of administration, remedial work by the Owner's forces or another contractor to correct the problem associated with the suspension, rent of temporary facilities, and other actual costs related to the suspension. If the suspension was caused by acts or omissions of the Owner, the Contractor shall 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 owes 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 its Authorized Representative; or

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

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 the public.

J.5.2 The Owner will provide the Contractor with seven (7) Days prior written notice of a termination 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.

## SECTION K
## *CONTRACT CLOSE OUT*

**K.1 RECORD DOCUMENTS**

As a condition of final payment (refer also to section E.6), Contractor shall comply with the following: Contractor shall provide Record Documents for the entire project to Owner's Authorized Representative. 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's Authorized Representative prior to submission of any pay request for more than 75% of the Work. No payments beyond 75% will be made by the Owner until the 0 & M Manuals have been received. The O & M Manuals shall contain a complete set of all submittals, all product data as required by the specifications, training information, phone list of 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's Authorized Representative shall review and return one O & M Manual for any modifications or additions 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's Authorized Representative.

**K.3 AFFIDAVIT/RELEASE OF LIENS AND CLAIMS**

As a condition of final payment, the Contractor shall submit to the Owner's Authorized Representative a notarized affidavit/release of liens and claims form in a form satisfactory to Owner, which states that all Subcontractors and suppliers have been paid in full, all disputes with property owners have been resolved, all obligations on the project have been satisfied, all monetary claims and indebtedness have been paid, and that, to the best of the Contractor's knowledge, there are no claims of any kind outstanding against the project. The Contractor shall indemnify, defend (with counsel of Owner's choice) and hold harmless the Owner from all claims for labor and materials finished under this Contract. The Contractor shall furnish complete and valid releases or waivers, satisfactory to the Owner, of all liens arising out of or filed in connection with the Work.

**K.4 COMPLETION NOTICES**

K.4.1 Contractor shall provide Owner 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 punchlist accompanying the Certificate. Both completion notices must be signed by the Contractor and the Owner to be valid. The Owner shall provide the final signature on the notices. The notices shall take effect on the date they are signed by the Owner.

K.4.2 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's Authorized Representative. 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's Authorized Representative with submission of the request for the Substantial Completion notice.

**K.5 TRAINING**

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

**K.6 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 specifications prior to final payment. Delivery point for extra materials shall be designated by the Owner's Authorized Representative.

**K.7 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 pollution clean-up performed as a part of this Contract has been disposed of in accordance with all applicable rules, regulations, laws, and statutes of all agencies having jurisdiction over such environmental pollution. The notice shall reaffirm the indemnification given under Section F.5.1 above.

**K.8 CERTIFICATE OF OCCUPANCY**

The Contractor shall not be granted Final Completion or receive final payment if the Owner has not received an unconditioned certificate of occupancy from the appropriate state and/or local building officials, unless failure to obtain an unconditional certificate of occupancy is due to the fault or neglect of Owner.

**K.9 OTHER CONTRACTOR RESPONSIBILITIES**

The Contractor shall be responsible for returning to the Owner all items issued during construction such as keys, security passes, site admittance badges, and all other pertinent items. The 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.10 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.

# PREVAILING WAGE RATES

# for

# Public Works Contracts in Oregon

OREGON BUREAU OF LABOR AND INDUSTRIES

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

**Effective: January 1, 2012 (as amended April 1, 2012)**

http://egov.oregon.gov/BOLI/WHD/PWR/PWR_Jan2012_Index.shtml

**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, Oregon State Board of Higher Education (OSBHE), the sum of (Total Penal Sum of Bond) _____ (Provided, that we the Sureties bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety), and

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

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

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

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

without notice to the Sureties, and shall indemnify and save harmless the State of Oregon, OSBHE, and _____(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 above-referenced agency(ies), 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, Oregon State Board of Higher Education (OSBHE), the sum of (Total Penal Sum of Bond) _____ _____ (Provided, that we the Sureties bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety), and

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

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

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

NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH that if the Principal shall faithfully and truly observe and comply with the terms, conditions and provisions of the Contract, in all respects, and shall well and truly and fully do and perform all matters and things by it undertaken to be performed under said Contract and any duly authorized modifications that are made, upon the terms set forth therein, and within the time prescribed therein, or as extended therein as provided in the Contract, with or without notice to the Sureties, and shall indemnify and save harmless the State of Oregon, OSBHE and _____ (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 above-referenced agency(ies), 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

# SECTION 01 10 00

# SUMMARY

## PART 1 GENERAL

### 1.01 PROJECT

A. Project Name: Oregon Hall 1st Floor remodel - East Wing.

B. Owner's Name: University Of Oregon.

C. Architect's Name: 2fORM Architecture.

D. The Project consists of the alteration of existing office space.

### 1.02 CONTRACT DESCRIPTION

A. The work of each separate prime contract is identified in this section and on the Drawings.
   1. All alteration work to be provided by General Contractor.

B. Third party entities hired by the Owner may include, but are not limited to, the following:
   1. Cost Estimator
   2. Site Survey
   3. Certified Arborist services
   4. Special inspections and testing
   5. Water & air balancing and testing
   6. Commissioning
   7. Energy analyst
   8. Geotechnical Consultant
   9. Hazardous materials testing and monitoring
   10. Asbestos removal
      a. In the event the Contractor encounters material that is believed to be hazardous, asbestos containing, coated with lead-based paint, and/or oily debris the Contractor shall immediately stop work in the affected area and report the condition to the PM. At no time shall such material be handled or disposed of by the Contractor. The Contractor will cooperate with the U of O PM, EH&S, any Consultants, and abatement Contractors engaged by the Owner.

### 1.03 DESCRIPTION OF ALTERATIONS WORK

A. Scope of demolition and removal work is shown on drawings and specified in Section 02 41 00.

B. Scope of alterations work is shown on drawings.

C. Renovate the following areas, complete including operational electrical work and finishes:
   1. Oregon Hall 1st Floor, East wing.

D. Plumbing: None.

E. HVAC: Clean existing system and restore to operational condition.

F. Electrical Power and Lighting: Alter existing system and add new construction, keeping existing in operation. Refer to Division 26.

G. Fire Suppression Sprinklers: Alter existing system and add new construction, keeping existing in operation.

H. Fire Alarm: Alter existing system and add new construction, keeping existing in operation.

I. Telephone: Alter existing system and add new construction, keeping existing in operation.

### 1.04 WORK BY OWNER

A. Typical work by Owner includes (the following list is subject to change at Owner's discretion):
   1. Specification and providing of door hardware.
   2. Voice and data cabling, termination, and activation. UO Network Services will provide wiring jacks and faceplates. The electrical contractor will need to provide pathways and boxes for the voice / data.
   3. Products listed in Section 01 60 00 - Product Requirements.

B. Permit fees with the City of Eugene will be paid for by the University of Oregon.

### 1.05 OWNER OCCUPANCY

A. Owner intends to continue to occupy adjacent portions of the existing building during the entire construction period.

B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

C. Schedule the Work to accommodate Owner occupancy. Coordinate with Owner.

### 1.06 CONTRACTOR USE OF SITE AND PREMISES

A. Consult with U of O PM for security and access strategies to be implemented.

B. Design of facilities that involve storage and/or disposal of special materials will require a report and recommendation from the UO Office of Environmental Health and Safety.

C. NO disposal or recycling on University property outside of construction area(s) unless approved by PM.

D. NO burying of any demolition or construction materials on site.

E. NO stockpiling of waste on-site beyond the period necessary for sorting and accumulation of practical quantities for transport off-site.

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

G. Description of work times may be limited beyond requirements set by city codes.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION - NOT USED

**END OF SECTION**

# SECTION 01 20 00

# PRICE AND PAYMENT PROCEDURES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

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

B. Procedures for preparation and submittal of application for final payment.

### 1.02 APPLICATIONS FOR PROGRESS PAYMENTS

A. Form to be used: AIA Document G702 - Application and Certificate for Payment.

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

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

D. For each item, provide a column for listing each of the following:
   1. Item Number.
   2. Description of work.
   3. Scheduled Values.
   4. Previous Applications.
   5. Work in Place and Stored Materials under this Application.
   6. Authorized Change Orders.
   7. Total Completed and Stored to Date of Application.
   8. Percentage of Completion.
   9. Balance to Finish.
   10. Retainage.

E. Execute certification by signature of authorized officer.

F. Submit three copies of each Application for Payment.

G. All Contractor payment requests must be accompanied by all wage certificates for the billing period.

### 1.03 MODIFICATION PROCEDURES

A. For minor changes not involving an adjustment to the Contract Price or Contract Time, Architect will issue instructions directly to Contractor.

B. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
   1. The document will describe the required changes and will designate method of determining any change in Contract Price or Contract Time.
   2. Promptly execute the change.

C. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 5 days.

D. Contractor may propose a change by submitting a request for change to Architect, 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 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 60 00.

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

**1.04 APPLICATION FOR FINAL PAYMENT**

A. Prior to any final payment(s) all keys checked out to Contractor(s) and/or Consultant(s) must be returned to DPS and a receipt of return provided to U of O PM by DPS.

B. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Price, previous payments, and sum remaining due.

C. Application for Final Payment will not be considered until the following have been accomplished:
   1. All required as-built and O&M documentation as listed in Section 01 70 00 must be received by Owner.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

# SECTION 01 23 00

# ALTERNATES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Description of alternates.

### 1.02 ACCEPTANCE OF ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted alternates will be identified in the Owner-Contractor Agreement.

B. Coordinate related work and modify surrounding work to integrate the Work of each alternate.

### 1.03 SCHEDULE OF ALTERNATES

A. Alternate No. 1 - New Circuit Breaker:
   1. Description: Install new 100/3 circuit breaker in existing panel "ER1" and use to feed new flush-mounted panel "ERB-1." Use breaker poles from circuits abandoned in demolition and rearrange remaining panel circuits as required..

B. Alternate No. 2 - New Ceiling Grid:
   1. Description: Replace ceiling grid and act in the entire project area with a standard size grid system. Reorganize location of light fixtures. Room 173 and 173A are not considered a part of project area.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION - NOT USED

**END OF SECTION**

# SECTION 01 30 00

# ADMINISTRATIVE REQUIREMENTS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Project Management & Coordination.

B. Preconstruction meeting.

C. Construction progress meetings.

D. Construction progress schedule.

E. Progress photographs.

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

G. Number of copies of submittals.

H. Submittal procedures.

### 1.02 PROJECT MANAGEMENT AND COORDINATION

A. Project Manager: UO Facilities Project Manager.

B. Historic preservation or historic renovation requires Owner (both CPRE and CC) review and participation.

C. Construction Standard Substitution Request Process Requirements:
   1. The Construction Standard Substitution Request Process is for design teams / consultants (only) to request variance and/or substitution items, strategies, etc. from the May 2011 edition of the Construction Standards.
   2. A formal Construction Standard Substitution Request and FS approval is required prior to any deviation from the Construction Standards. Only upon prior approval can they be included in SD, DD, or CD documents for review or implementation
      a. If deviations from the Construction Standards are included in project design or construction documents generated by the design team / consultants and the deviation did not obtain prior Owner approval through the Construction Standard Substitution Request process the cost of revision and/or redesign will be the responsibility of the design team / consultants and not the UO project.
      b. If deviations from the Construction Standards are included in project construction documents generated by the design team / consultants and the deviation did not obtain prior Owner approval through the Construction Standard Substitution Request process the cost of any resulting change order to revise and/or redesign the item/condition will be the responsibility of the design team / consultants and not the UO project.
   3. Submit requests using the provided Construction Standard Substitution Request form.
      a. Requests may take the form of a 2-part request process as needed but this approach must be indicated at submission of the request.
      b. Part 1 may consist of initial proposal/substitution information for Owner feedback of viability and whether or not the design team should proceed with further investigation towards a substitution.
      c. Part 2 would then include all the required information listed below for final Owner approval of substitution.
   4. Submit four (4) complete copies of each request and the required supporting documentation for consideration to the Project Planner (PP).

a. The PP will log and distribute these copies to internally designated FS personnel for review.

5. Identify the design strategy, product, fabrication, or installation Standard to be substituted, including the Standard section number and page number.
6. Documentation: Show compliance with requirements for substitutions and the following as it applies.
   a. Statement(s) indicating why the Standard method, product, or material cannot be provided.
   b. Coordination information, including a list of changes or modifications needed to other parts of the design or work that will be necessary to accommodate proposed substitution.
   c. Comparison(s) of significant qualities of the proposed substitution with those of the design or work; may include attributes such as performance, weight, size, durability, maintainability, serviceability, visual effect, and specific features and requirements.
   d. Product and/or material data including drawings and descriptions of products / materials and fabrication and installation procedures.
   e. Sample(s) where applicable or requested.
   f. List of similar installations for completed projects with project names and addresses and names and addresses of Architects and Owners.
   g. Show compliance with current building code and acceptable to Authorities having jurisdiction.
   h. Comparison of design and construction schedules using proposed substitution, including effect on the overall contract time. For example, if the Standard design method, material, product, or method of construction cannot be provided within the contract time, include a letter from the manufacturer, on manufacturer's letterhead, stating the lack of availability or delay in delivery. Likewise, for a substitution of an accelerated availability, include a letter from the manufacturer, on manufacturer's letterhead, stating the availability or accelerated delivery.
   i. Cost information, including a proposal of change, if any, in the construction estimate.
   j. The proposed substitution complies with performance, maintenance, and serviceability requirements in the Construction Standards and is appropriate for applications indicated.
7. Owner Facilities Action:
   a. Designated FS personnel review and approval is required for substitution requests varying from the approved Construction Standards.
   b. If necessary, FS will request additional information, documentation, or discussion to evaluate a substitution request; through the PP.
   c. PP will notify Architect / Consultant of approval or rejection of proposed substitution(s).

D. During construction, coordinate use of site and facilities through the Project Manager.

E. Comply with Project Manager's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.

F. Comply with instructions of the Project Manager for use of temporary utilities and construction facilities.

G. Make the following types of submittals to Architect:
1. Requests for interpretation.
2. Requests for substitution.
3. Shop drawings, product data, and samples.
4. Test and inspection reports.
5. Manufacturer's instructions and field reports.

6. Applications for payment and change order requests.
7. Progress schedules.
8. Closeout submittals.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION**

**3.01 PRECONSTRUCTION MEETING**

A. Attendance Required:
   1. Owner.
   2. Architect.
   3. Contractor.

B. Meeting location shall be either on site at FS or conducted by the Lead Consultant with PM.

C. Meeting minutes shall be by the Lead Consultant and distributed to all attendees.

D. Agenda items at a minimum and/or applicable; this list is subject to addition as needed:
   1. Designation of key personnel and complete list of sub-contractors with contact information.
   2. Construction schedule
   3. Owner occupancy, schedule, and activities requiring accommodation and/or coordination.
   4. Impacts to building operations, building systems, and/or building occupants.
   5. Site safety and access specific to project
   6. Critical work sequencing and long-lead items.
   7. Distribution of Contract Documents as needed.
   8. Designation of personnel representing the parties to Contract and Architect.
   9. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, RFI's, testing and inspecting, Change Orders, Contract closeout procedures, etc.
   10. Use of the site, campus premises, and existing building(s).
   11. Work restrictions.
   12. Temporary facilities and controls.
   13. Parking availability.
   14. Office, work, and storage areas.
   15. Equipment deliveries and priorities.
   16. Site security.
   17. Progress cleaning.
   18. Submittal schedule.
   19. ALL shut-off locations.
   20. Define plan to reduce impact to building users regarding application of finishes, paints, adhesives, etc.
   21. Utility meter removals or connections.
   22. Facilities EH&S items include but are not limited to the following:
      a. List of emergency contacts and contact information.
      b. Process for accessing emergency assistance.
      c. Process for spills & clean up.
      d. EH&S expectations regarding maintaining safe conditions for UO employees, students, visitors, construction workers, etc. including odors, egress, avoidance of fire alarms, etc.
      e. If applicable, EH&S expectations regarding compliance with erosion control permits.

**3.02 CONSTRUCTION PROGRESS MEETINGS**

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

B. Meeting location shall be on-site and conducted by the Contractor.

C. Meeting minutes shall be by the Contractor and distributed to attendees and to the Architect and individuals requesting courtesy copies.

D. Agenda items at a minimum and/or applicable include the following; list is subject to addition as needed:
   1. Overall construction schedule progress and status.
   2. 2 to 3 week detailed schedule of coming weeks' activities and needed shutdowns.
   3. Owner schedule and activities requiring accommodation and/or coordination.
   4. Site access & utilization and any changes due to construction or delivery activities.
   5. Work hours and notification of evening or weekend events needing notification to campus.
   6. Status of correction of deficient items.
   7. Field observations, problems, and decisions.
   8. Identification of problems that impede, or will impede, planned progress.
   9. Review of submittals schedule and status of submittals.
   10. RFI progress, status, and/or outstanding responses.
   11. Proposal Request progress, status, and outstanding questions/responses.
   12. Pending changes.
   13. Change Order status and budget update(s).
   14. Payment request status.
   15. Other business relating to Work.

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

### 3.03 CONSTRUCTION PROGRESS SCHEDULE

A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.

B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

C. Submit updated schedule with each Application for Payment.

D. All UO Owner (building users & neighbors, Facilities Services, etc.) activities and milestones are to be listed.

E. All OFCI and OFOI items, delivery dates, and completion dates are to be listed.

F. All required shutdowns must be requested in writing by the Contractor to U of O PM a minimum of (10) ten days in advance.

G. For all disruptive noise, odor, etc. work within occupied buildings (or close neighboring buildings) the Contractor must notify U of O PM for distribution of such notice to campus a minimum of 48 hrs prior to start of such work.

H. All commissioning activities and milestones are to be listed.

### 3.04 PROGRESS PHOTOGRAPHS

A. This requirement may be waived at UO discretion.

B. Monthly, an 8"x10" printed photograph. On the front of the photograph identify the project name, location where photograph was taken, and month/date/year.

C. At project start before demolition, a photo record of the project site, surrounding and adjacent structures and conditions.

D. At final completion, final color photo documentation; date stamped on the back of the photo.

E. With closeout documentation submittal a complete digital set of all construction photographs shall be included.

### 3.05 SUBMITTALS FOR REVIEW

A. When the following are specified in individual sections, submit them for review:
   1. Product data.
   2. Shop drawings.
   3. Samples for selection.
   4. Samples for verification.

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

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

D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below.

### 3.06 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
   1. Design data.
   2. Certificates.
   3. Test reports.
   4. Inspection reports.
   5. Manufacturer's instructions.
   6. Manufacturer's field reports.
   7. Other types indicated.

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

### 3.07 SUBMITTALS FOR PROJECT CLOSEOUT

A. When the following are specified in individual sections, submit them at project closeout:
   1. Project record documents.
   2. Operation and maintenance data.
   3. Warranties.
   4. Bonds.
   5. Other types as indicated.

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

### 3.08 NUMBER OF COPIES OF SUBMITTALS

A. Documents for Review:
   1. Small Size Sheets, Not Larger Than 8-1/2 x 11 inches (215 x 280 mm): Submit the number of copies that Contractor requires, plus two copies that will be retained by Architect.
   2. Larger Sheets, Not Larger Than 36 x 48 inches (910 x 1220 mm): Submit the number of opaque reproductions that Contractor requires, plus two copies that will be retained by Architect.

B. Documents for Information: Submit two copies.

C. Documents for Project Closeout: Make one reproduction of submittal originally reviewed. Submit one extra of submittals for information.

D. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
   1. After review, produce duplicates.
   2. Retained samples will not be returned to Contractor unless specifically so stated.

### 3.09 SUBMITTAL PROCEDURES

A. Transmit each submittal with AIA Form G810.

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

C. U of O PM shall receive a minimum of one stamped original of all submittals at the time of Consultant approval.

D. U of O PM will provide the A/E and Contractor with a list of submittal items that require concurrent Facilities Maintenance & PM review and approval prior to official submittal acceptance. This list consists of, but is not limited to the following items:
   1. Variable Frequency Drives (VFD)
   2. AHU and motor-mounts
   3. Transformers
   4. Building controls
   5. Soils
   6. Light Fixtures
   7. Backflow devices
   8. Fire Alarm systems
   9. Fire sprinkler components

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

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

G. Deliver submittals to Architect at business address.

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

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

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

K. Provide space for Contractor and Architect review stamps.

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

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

### 3.10 CONSTRUCTION OVERSTOCK REQUIREMENTS

A. Specific Construction overstock requirements are stated in each section as applicable.

B. Overstock goods shall be from the same manufacturer, lot and/or run as the material installed.

C. Contractor shall provide complete written invertory of overstock goods in Excel format indicating product type, model number, installed location(s), name of supplier, quantity supplied, and storage locationl. Inventory shall be confirmed prior to issuance of Substantial Completion.

**END OF SECTION**

# SECTION 01 40 00

# QUALITY REQUIREMENTS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. References and standards.

B. Quality control.

### 1.02 DEFINITIONS

A. FS: University of Oregon Facilities Services

B. EH&S: University of Oregon Facilities Services, Office of Environmental Health & Safety

C. GC: General Contractor

D. CM: Construction Manager

E. DPS: University of Oregon, Department of Public Safety

F. PM: Project Manager

G. CPS: Central Power Station

H. LC: Lead Consultant

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

### 3.01 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 Architect before proceeding.

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

E. Have Work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

### 3.02 MOCK-UPS

A. Need for mockups and/or field samples are to be determined by 100% CD and included in contract documents.

### 3.03 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not conforming to specified requirements.

B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct an appropriate remedy or adjust payment.

**END OF SECTION**

# SECTION 01 50 00

# TEMPORARY FACILITIES AND CONTROLS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Temporary and construction utilities.

B. Scaffolding.

C. Barriers.

D. Temporary Controls: Barriers, enclosures, and fencing.

E. Security and access to construction site.

F. Vehicular access and parking.

G. Protection of Existing Asbestos Containing Materials

H. Removal of utilities, facilities, and controls.

### 1.02 TEMPORARY AND CONSTRUCTION UTILITIES

A. ALL shut-off locations are to be documented for emergency purposes prior to pre-construction meeting.

B. Documentation of locations are to be determined by U of O PM, Facilities Zone Supervisor, DPS, EH&S, and any others determined by individual projects.

### 1.03 SCAFFOLDING

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

### 1.04 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

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

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

### 1.05 INTERIOR ENCLOSURES

A. Provide temporary partitions and ceilings as indicated to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.

B. Construction: Framing reinforced polyethylene sheet materials, zipwall system, or similar with closed joints and sealed edges at intersections with existing surfaces.

### 1.06 SECURITY AND ACCESS TO CONSTRUCTION SITES

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

B. Consult with U of O PM to determine strategies to be implemented.

C. UO Fire Marshal and Facilities EH&S consultation regarding egress routes from the project site and adjacent buildings to be provided and maintained at all times.

D. ADA routes must be provided and maintained at all times from the site & adjacent buildings.

**1.07 VEHICULAR ACCESS AND PARKING**

A. Unless written approval is obtained, do NOT obstruct private or public streets, driveways, pedestrian walkways, ADA routes, fire lanes, egress of occupied buildings, etc.

B. Coordinate access and haul routes with governing Authorities and Owner.

C. Owner will provide 2 parking permits to Contactor.

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

E. Parking within site fencing is controlled and managed by the Contractor.

F. If the project does not have site fencing then parking is restricted by issued parking permits through DPS in designated locations only. Parking permits are requested of DPS by the PM.

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

**1.08 CONSTRUCTION FENCING SIGNAGE**

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

**1.09 PROTECTION OF EXISTING ASBESTOS CONTAINING MATERIALS**

A. Due to the age of many facilities asbestos containing materials are known to be present.

B. UO will provide information on known asbestos containing materials and locations to design consultant for inclusion into construction contract documents.

C. Contract documents shall include requirements related to asbestos containing materials:
   1. Shall not be disturbed
   2. If disturbed, what actions are to be taken
   3. Provide protection for asbestos containing materials to prevent disturbance

**1.10 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS**

A. Remove temporary utilities, equipment, facilities, materials, prior to Final Application for Payment inspection.

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

C. Restore permanent facilities used during construction to their specified and/or original condition.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

# SECTION 01 60 00

# PRODUCT REQUIREMENTS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Submittals.

B. General product requirements.

C. Re-use of existing products.

D. Transportation, handling, storage and protection.

E. Product option requirements.

F. Substitution limitations and procedures.

G. Procedures for Owner-supplied products.

H. Maintenance materials, including extra materials, spare parts, tools, and software.

### 1.02 SUBMITTALS

A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
   1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

## PART 2 PRODUCTS

### 2.01 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by the Contract Documents.

B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.

### 2.02 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by the Contract Documents.

B. All products and materials must be commercial grade at a minimum; NO residential grade.

### 2.03 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

**2.04 MAINTENANCE MATERIALS**

A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

**PART 3 EXECUTION**

**3.01 SUBSTITUTION PROCEDURES**

A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.

B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

C. A request for substitution constitutes a representation that the submitter:
1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
2. Will provide the same warranty for the substitution as for the specified product.
3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
4. Waives claims for additional costs or time extension that may subsequently become apparent.

D. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

E. Substitution Submittal Procedure:
1. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
3. The Architect will notify Contractor in writing of decision to accept or reject request.

**3.02 OWNER-SUPPLIED PRODUCTS**

A. Definitions:
1. OFCI - Owner Funished Contractor Installed
2. OFOI - Owner Furnished Owner Installed

B. Typical work by Owner's Facilities Services includes but not limited to:
1. Ash posts or smoking stations. Custom UO fabrication, OFOI.
2. Specification of and providing of door hardware; OFOI.
3. Exterior trash cans. Custom UO design and order, OFOI.
4. Exterior benches; OFCI.
5. Toilet dispenser accessories; OFCI.
6. Exterior light poles, globes, lamps, and junction box; OFCI.
7. Interior signage on small to medium projects only; OFOI.
8. Exterior building marker signage; OFOI.
9. Room numbering; See Appendix - Room Numbering Guide
10. Wall clocks; OFOI.
11. Waste receptacles for all spaces; OFOI.

12. Walk off mats; OFOI.

### 3.03 TRANSPORTATION AND HANDLING

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.

B. All construction materials, deliveries, etc. must be made to the project site and attention of the contractor, NOT to FS Receiving.

C. Store and protect products in accordance with manufacturers' instructions.

D. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

E. Store with seals and labels intact and legible.

F. Transport and handle products in accordance with manufacturer's instructions.

G. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

H. For exterior storage of fabricated products, place on sloped supports above ground.

I. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

J. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

K. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

L. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

### 3.04 STORAGE AND PROTECTION

A. Prevent contact with material that may cause corrosion, discoloration, or staining.

B. All products and materials must be protected by the Contractor from damage, weather, vandalism, etc. prior to installation. Replacement and replacement cost will be the responsibility of the Contractor.

C. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

D. All products and materials must be protected from damage, weather, vandalism, etc. after installation and prior to final completion. Replacement and replacement cost will be the responsibility of the Contractor.

E. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

**END OF SECTION**

# SECTION 01 70 00

# EXECUTION AND CLOSEOUT REQUIREMENTS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Project conditions and coordination.

B. Patching materials.

C. Examination, preparation, and general installation procedures.

D. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.

E. Cutting and patching.

F. Daily progress cleaning.

G. Protecting installed construction.

H. Demonstration and instruction of Owner personnel.

I. Adjusting.

J. Final cleaning and waste management.

K. Closeout procedures, except payment procedures.

L. As-built documentation.

M. Operation and Maintenance Manuals.

N. Warranty requirements.

### 1.02 PROJECT CONDITIONS

A. Provide protection and conditions that ensure installed Work is without damage or deterioration at the time of Substantial Completion.

B. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

C. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
   1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
   2. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.

D. Work activities that are especially dusty, invasive, odorous, or noisy (including, but not limited to mechanical duct cleaning, wall framing, drywall installation and finishing, ceiling work in occupied spaces, painting in or directly adjacent to occupied spaces, carpet removal, demolition, etc.) or that may be unusually disruptive to the building occupants, shall be performed during unoccupied hours. Assume normal work hours from 7:30am-5:00pm. Coordinate with university of oregon project manager.

E. Contractor to provide HEPA air filtration system (or approved equal) in conjunction with a negative air machine in the space during entire course of work. Both machines to run during all work hours.

F. No open storage containers will be allowed within the building outside of work hours. This includes but is not limited to sealants, paints, adhesives, cleaners, drywall finishing materials, etc.

### 1.03 COORDINATION

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

B. Notify affected utility companies and comply with their requirements.

C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

F. Coordinate completion and clean-up of work of separate sections.

G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

## PART 2 PRODUCTS

### 2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements

subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

### 3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

### 3.03 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

### 3.04 ALTERATIONS

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

B. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
   1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
   2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.

C. Remove existing work as indicated and as required to accomplish new work.
   1. Remove items indicated on drawings.
   2. Relocate items indicated on drawings.
   3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
   4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.

D. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.

a. Disable existing systems only to make switchovers and connections; minimize duration of outages. Coordinate with Owner.
b. Provide temporary connections as required to maintain existing systems in service.

3. Verify that abandoned services serve only abandoned facilities.
4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.

E. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
3. Repair adjacent construction and finishes damaged during removal work.

F. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.
2. Trim existing wood doors as necessary to clear new floor finish. Refinish trim as required.

G. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.

H. Refinish existing surfaces as indicated:
1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.

I. Clean existing systems and equipment.

J. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.

K. Do not begin new construction in alterations areas before demolition is complete.

L. Comply with all other applicable requirements of this section.

### 3.05 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. See Alterations article above for additional requirements.

C. Perform whatever cutting and patching is necessary to:
1. Complete the work.
2. Fit products together to integrate with other work.
3. Provide openings for penetration of mechanical, electrical, and other services.
4. Match work that has been cut to adjacent work.
5. Repair areas adjacent to cuts to required condition.
6. Repair new work damaged by subsequent work.
7. Remove samples of installed work for testing when requested.
8. Remove and replace defective and non-conforming work.

D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to

original condition.

E. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

G. Restore work with new products in accordance with requirements of Contract Documents.

H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of the penetrated element.

J. Patching:
   1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
   2. Match color, texture, and appearance.
   3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

### 3.06 DAILY PROGRESS CLEANING

A. Collect waste material which may constitute a fire hazard, place inclosed metal containers, and remove daily from site.

B. After cutting and boring, contractor is required to clean the space of all debris, water and concrete.

C. Keep the premises free from accumulation of debris.

D. Remove all debris, equipment, surplus materials and leave the premises in a neat and orderly condition at the completion of the work day.

E. Clean all walks, streets, etc. affected by the work.

F. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

G. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

### 3.07 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

G. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

### 3.08 DEMONSTRATION AND INSTRUCTION

A. Provide overview training & demonstration session for all trades and response groups.

B. Provide in-depth training & demonstration session for maintenance, technician, and service personnel. MUST be to maintenance, technician, and/or service levels for ALL systems.

C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.

D. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

E. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

### 3.09 ADJUSTING

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

### 3.10 FINAL CLEANING

A. Special cleaning for specific work may be noted in following sections of this document.

B. Comply with manufacturer's instructions for cleaning of all system components, equipment, and materials installed into the project.

C. Prior to the time the Contractor requests Substantial Completion Inspection:
1. Remove labels that are not required as permanent labels.
2. Clean exposed hard-surfaced finishes including glass, metals, stone, concrete, painted surfaces, plastics, tile, wood, special coatings, and similar surfaces, to a dirt free condition, free of dust, stains, films, and similar noticeable distracting substances.
3. Clean concrete floors in non-occupied spaces.
4. Clean lighting fixtures and lamps of ALL dust and debris.
5. Remove crates, cartons, and other flammable waste materials or trash from work areas. Building(s) shall be turned over free of concealed garbage, trash, and rodent infestation. If any of the preceding is revealed, or odors from them occur, they shall be removed by the Contractor at Contractor's expense.
6. Restore all surrounding property to its original condition.
7. Elevator shafts, electric closets, pipe, and duct shafts, chases, furred spaces, and similar spaces which are generally unfurnished, shall be cleaned and left free from rubbish, loose plaster, mortar drippings, extraneous construction materials, dirt, and dust.
8. Rubbish and debris shall be lowered by way of chutes, hoists, or lowered in receptacles. Under no circumstances shall any rubbish or waste be dropped or thrown from one level to another within or outside the building(s).
9. No marking, soiling, or other defacing of finished surfaces. In the event that finished surfaces become defaced, all costs for cleaning and restoring such surfaces to their originally intended condition shall be the responsibility and cost of the Contractor.
10. Remove debris from and clean tops of all equipment, AHU, lights, etc. this includes mechanical rooms.

D. Prior to Contractor request of Final Acceptance Inspection:
1. Clean transparent materials, including mirrors and window or door glass, to a polished condition, removing substances that are noticeable as vision-obscuring materials.
2. Turn the work over in immaculate condition inside and outside including the premises.

3. Clean all work on the premises including walks, drives, curbs, paving, fences, grounds, and walls. Slick surfaces shall be left with a clear shine. Cleanup shall include removal of smudges, marks, stains, fingerprints, soil, dirt, paint, dust, lint, labels, discolorations, and other foreign materials.
4. Clean all finished surfaces on interior and exterior of project including floors, walls, ceilings, windows, glass, doors, fixtures, hardware, and equipment.
5. Clean and apply finish (including 'Anchor' wax) to all floors as recommended by the manufacturer.
6. Wash exterior glass using a window-cleaning contractor specializing in such work.
7. Remove temporary buildings and structures, fences, scaffolding, surplus materials, and rubbish of every kind from the site of the work. Repair these areas to be compatible with the surrounding finished conditions.
8. Clean tops of all equipment, AHU, lights, etc. This includes mechanical rooms.

### 3.11 CONSTRUCTION WASTE MANAGEMENT

A. Salvage and Recycling Requirements: Our goal is to salvage and recycle as much non-hazardous demolition and construction waste as possible including any demolition and/or construction waste.

B. All hazardous material removal and disposal will be by UO; See Section 01 10 00.

C. Submittals:
1. Recycling Plan: Prior to preparation of the Waste Management Plan, submit the recycling plan to the U of O PM and Architect for approval.
2. Waste Management Plan: Submit 3 copies of plan within 30 days of the Notice to Proceed.
3. Waste Reduction Calculations: Before request for Substantial Completion, submit three copies of calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste in weight generated by the Work.

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

E. Provide recycling education and recycling information to Contractor and Subcontractor employees working on the project.

F. Waste Management Plan:
1. General: Develop plan consisting of waste identification, waste reduction work plan, and cost/revenue analysis. Include separate sections in plan for demolition and construction waste. Indicate quantities by weight throughout waste management plan.
2. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.
3. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

a. Reused Materials: For materials salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
b. Sold Materials: For materials sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
c. Donated Materials: For materials donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
d. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
e. Disposed Materials: Indicate how and where materials disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
f. Handling and Transportation Procedures: Include method used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

4. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:
   a. Total quantity of waste.
   b. Estimated cost of disposal (cost per ton). Include hauling and tipping fees and rental cost of collection containers for each type of waste.
   c. Total cost of disposal (with no waste management).
   d. Revenue from salvaged materials.
   e. Revenue from recycled materials.
   f. Savings in hauling and tipping fees by donating materials.
   g. Savings in hauling and tipping fees that are avoided. .
   h. Handling and transportation costs. Include cost of collection containers for each type of waste
   i. Net additional cost or net savings from waste management plan.
5. Plan Implementation:
   a. Provide containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
   b. Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
   c. Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
      1) Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
      2) Comply with project requirements for controlling dust and dirt, environmental protection, and noise control.
6. Clean salvaged items.
7. Sale of salvaged items is not permitted on Project site. Labor for loading donated items acceptable to local trade practices; union labor if applicable.
8. Separate recyclable waste from other waste materials, trash, and debris.
9. NO on-site crushing of asphalt pavement, brick, and concrete rubble.
10. Demolition Recycling:
    a. Asphaltic Concrete Paving: Break up and transport paving to asphalt-recycling facility.
    b. Concrete: Deposit all debris in designated container to be transported to approved aggregate recycling facility.
    c. Masonry: Deposit all masonry debris in designated container to be transported to approved aggregate recycling facility. Clean and stack undamaged whole masonry units on wood pallets for reuse.
    d. Wood Materials: Sort and stack salvageable members according to size, type, and length. Separate lumber waste and deposit into appropriate container. Separate engineered wood products, panel products, and treated wood materials into designated

containers.

e. Metals: Separate metals by type if practical. Stack salvageable structural steel members according to size, type of member, and length.
f. Asphalt Shingle Roofing: Organic and glass-fiber asphalt shingles and felts shall be disposed of. Recycle nails, staples acceptable, flashing trim and accessories as metals. Asbestos containing shingles shall be abated and properly disposed of by UO; See Section 01 10 00.
g. Carpet and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
h. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs.
i. Plumbing Fixtures: Separate by type, size, and fixtures suitable for reuse. All other fixtures are to be transported to approved recycling facility.
j. Piping: Separate piping materials by material composition and deposit in designated containers. Separate supports, hangers, valves, sprinklers, and other components by material type and recycle.
k. Lighting Fixtures: Separate lamps and ballasts and protect from breakage for collection and disposal by Facilities EH&S.
l. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type
m. Conduit: Deposit conduit and fittings into designated container.

11. Recycling of Construction Packaging:
    a. Cardboard and Boxes: Break down packaging into flat sheets.
    b. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
    c. Crates: Break down crates to component wood pieces and recycle.
    d. Site-Clearing Wastes: Chip brush, branches, and trees on-site.
    e. Wood Materials: Deposit into designated clean wood container to be transported to designated recycling facility.
12. Remove waste materials from Project site and legally dispose of them.
    a. Do not allow waste materials that are to be disposed of accumulate on-site.
    b. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
13. Do not burn waste materials on-site.

### 3.12 CLOSEOUT PROCEDURES

A. Closeout delivery of any and all closeout and/or overstock items to the U of O PM requires formal transmittals for project records; includes O&M manuals, extra materials, custom finish knives, etc.

B. Make submittals that are required by governing or other authorities.
    1. Provide copies to Architect and Owner.

C. Notify Architect when work is considered ready for Substantial Completion.

D. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's review.

E. Correct items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Owner-occupied areas.

F. Notify Architect when work is considered finally complete.

G. Complete items of work determined by Architect's final inspection.

### 3.13 DESIGN TEAM RECORD DOCUMENT REQUIREMENTS / DELIVERABLES AT PROJECT CLOSEOUT

A. 1 complete reproducible CD set of all AutoCAD drawing files, Revit models, etc.; including egress maps.

B. 1 complete reproducible CD set of each drawing sheet in 'pdf' file format.

C. 2 complete full-size, reproducible drawing and specification sets on bond paper.

D.

### 3.14 GENERAL CONTRACTOR AS-BUILT DOCUMENT REQUIREMENTS / DELIVERABLES AT PROJECT CLOSEOUT

A. With all the following listed items, give particular attention to concealed products and portions of the work that are not clearly identified in the original submittal or cannot otherwise be readily discerned at a later date by direct observation.
   1. Original permit set of documents with sign off of inspections. Contractor should make copies of these sign offs for their records.
   2. 2 complete full-size, reproducible drawing sets on bond paper.
   3. 2 complete sets of as-built specifications.
   4. 1 complete reproducible CD of as-built specifications in 'pdf' file format.
   5. 1 complete full-size reproducible drawing & specification set of Contractor's red-lines on bond paper.

### 3.15 OPERATION AND MAINTENANCE MANUALS

A. 2 complete physical hard copies of ALL listed items.

B. 1 complete reproducible CD of ALL listed items in 'pdf' file format.

C. ALL part numbers of manufacturers and suppliers.

D. Total quantities installed under the contract.

E. Manufacturer's and supplier's names and addresses.

F. Complete manufacturer's serial number(s) or other identity symbol(s).

G. Parts lists that clearly identify every part in the item of equipment with the proper manufacturer's name, part nomenclature and number, local source, and list price.

H. Draw-downs of all finish paint used.

I. Recommended Spare Parts:
   1. Furnish a list of recommended spare parts for each equipment item that will be needed to support that item of equipment for a 12-month period.
   2. The quantities of spare parts recommended shall be based upon the quantity of like equipment items installed under the contract.
   3. Storage shelf life of part, in months, if the part has a limited life.
   4. Recommended quantity of part(s) to inventory and support the installed quantity of equipment in which the part appears for a period of 12 months.
   5. Name, address, and phone number of the nearest supplier for the part.

J. Normal Operating Instructions: Provide sufficient information that will permit a journeyman mechanic to adjust, startup, operate, and shutdown the equipment. Special startup precautions and other action items required before the equipment is put into service must be noted.

K. Emergency Operating Procedures: Detail description of the sequence of action to be taken in the event of a malfunction, either to permit a short period of continued operation or an emergency shutdown to prevent further damage to the unit and to the system.

L. Preventative Maintenance: Detail information to cover routine and special inspection requirements, including field adjustments, inspections for wear, adjustment changes, packing wear, lubrication points, frequency and specific lubrication type required, cleaning of the unit, type of solvent to use, and other measures applicable.

M. Calibration: Detailed data on what to calibrate, how to calibrate, when to calibrate, and procedures to enable checking the equipment for reliability; provide indications and data for test equipment, special tools and the location of test points.

N. Scale and Corrosion Control: Detailed information for prevention and removal of scale and corrosion.

O. Trouble Shooting Procedures: Detailed information and procedures for detecting and isolating malfunctions; provide detailed information concerning probable causes and applicable remedies.

P. Removal and Installation Instructions: Detailed information concerning the logical sequence of steps required to remove and install the item including instructions for the use of special tools and equipment.

Q. Disassembly and Assembly Instructions: Detailed illustrations and text to show the logical procedure and provide the instructions necessary to disassemble and assemble the unit properly. The text shall include all checks and special precautions and list the use of special tools and equipment required to perform the assembly or disassembly.

R. Repair Instructions: Detailed repair procedures to bring the equipment up to the required operating standard including instruction for examining equipment and parts for needed repairs and adjustments, and tests or inspections required to determine whether old parts may be reused or must be replaced.

S. System Drawings: Detailed drawings, where applicable, that clearly show wiring diagrams, control diagrams, system schematics, pneumatic and fluid flow diagrams, etc., which pertain to the unit function. Drawings are required to show modifications to another manufacturer's standard unit which is incorporated into the assembly or packaged unit.
   1. The Contractor shall provide diagrammatic drawings for each installed system, which shall show the placement of the system in relation to the building, and the physical location of each item or equipment installed within the system. Each installed item of equipment shown on the drawing will be identified by the equipment item model and/or serial/part number.

T. Special Tools and Test Equipment: Furnish a detailed list of the special tools and test equipment needed to perform repair and maintenance for each equipment item. The list shall contain the special tool and test equipment part number, size, quantity, price, manufacturer's name and address, and local supplier's name and address.
   1. ALL/ANY item that requires special tools and/or test equipment must be brought to the attention of the pertinent Owner's Facilities personnel prior to specification and/or installation.

U. Warranties and Guarantees: Within each tabbed section of the O&M, include an executed copy of the specified warranty/guarantee covering the particular system, equipment item, or material.
   1. This is to include both the manufacturer's warranty and the installing contractor's guarantee for workmanship and system operation. This copy of the particular warranty/guarantee is in addition to the original signed copies that are to be bound together separately.
   2. Provide a separate binder containing all original project warranties and guarantees.

V. Training of Owner's Facilities personnel: Documentation of training of Owner's Facilities personnel regarding operation of particular systems shall be included within the tabbed section for that particular system. Such documentation shall include identification of parties receiving training and date(s) of training.

W. Field records on excavations, foundations, underground construction, wells, and similar work.

X. Accurate survey showing locations and elevations of underground lines, including invert elevations of drainage piping.

Y. Surveys establishing lines and levels of buildings.

Z. Load and/or performance testing.

AA. Final inspection and deficiency corrections.

AB. Prior to date of substantial completion the Architect and U of O PM shall determine which (if any) samples or mock-ups are to be transmitted to the U of O PM for record purposes.

AC. Contractor shall incorporate all commissioning and closeout documentation and/or verification not included in the O&M manuals. This document is intended to be a consolidation of documentation and verification for the project commissioning and closeout process.

AD. With all the above listed items, give particular attention to concealed products and portions of the work that are not clearly identified in the original submittal or cannot otherwise be readily discerned at a later date by direct observation. Cross reference items to change orders and markup of record drawings and specifications.

### 3.16 WARRANTY REQUIREMENTS

A. Oregon Revised Statutes - 2007; 701.340 Commercial Structure Warranty: "A commercial general contractor level 1 or level 2 that constructs a new large commercial structure shall provide the owner with a two-year warranty of the building envelope and penetration components against defects in materials and workmanship. The warranty shall provide for the contractor to annually inspect the building envelope and penetration components during the warranty period. The warranty need not cover conditions resulting from improper maintenance by the owner [2007 c.836 §12]"

B. Minimum warranty for all material and workmanship, building envelope & penetration components excluded per above noted ORS, for a minimum of 1-year after date of substantial completion OR for the extended period of time determined by manufacturer's guarantee.

C. Extended warranties may be required for specific items as noted in the following document.

D. Correct immediately any failure caused by poor material or workmanship during warranty period; within 72 hours of notice.

E. If the PM or FS personnel are required to proceed with repairs, the responsible party of the warranty will be billed for costs and damages when failing to comply.

### 3.17 DEMONSTRATION AND/OR TRAINING

A. Training & demonstration session of overveiw for all trades and response groups.

B. In depth training & demonstration session for maintenance, technician, and service personnel. MUST be to a maintenance, technician, and/or service levels for ALL systems.

C. Required hours will be listed in following standards.

**END OF SECTION**

# SECTION 02 41 00

# DEMOLITION

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Selective demolition of building elements for alteration purposes.

B. Abandonment and removal of existing utilities and utility structures.

## PART 2 PRODUCTS -- NOT USED

## PART 3 EXECUTION

### 3.01 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   3. Provide, erect, and maintain temporary barriers and security devices.
   4. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   5. Do not close or obstruct roadways or sidewalks without permit.
   6. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. Protect existing structures and other elements that are not to be removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.

D. All demolition work to be done between the hours of 5:00pm and 7:30am to minimize distuption to building occupants.

E. Minimize production of dust due to demolition operations.

F. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

### 3.02 EXISTING UTILITIES

A. Coordinate work with Owner's Authorized Represe ntative; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from Owner's Authorized Representative.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without permission from Owner's Authorized Representative.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without permission from Owner's Authorized Representative.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

### 3.03 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as shown.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Separate areas in which demolition is being conducted from other areas that are still occupied.
   1. Provide, erect, and maintain temporary dustproof partitions of construction between project site and public areas of the building specified in Section 01 50 00.

C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

D. Remove existing work as indicated and as required to accomplish new work.
   1. Remove items indicated on drawings.

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. Verify that abandoned services serve only abandoned facilities before removal.
   4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.

F. Cutting and Boring
   1. Locate existing pipe, conduit, structure, etc. prior to any cutting and/or boring; interior and exterior.
   2. When in any part of the sciences complex the building manager and users must be notified by U of O PM a minimum of 48 hours prior to work beginning due to the sensitive nature of the activities.
   3. All cutting is to be with vertical, straight-line joints using saw or other power tool designed for cutting pavement. Replace to condition at least as good as existing prior to cutting.

G. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch as specified for patching new work.

### 3.04 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

**END OF SECTION**

# SECTION 06 10 00

# ROUGH CARPENTRY

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Concealed wood blocking, nailers, and supports.

B. Miscellaneous wood nailers, furring, and grounds.

### 1.02 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.

B. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.

C. WWPA G-5 - Western Lumber Grading Rules; Western Wood Products Association; 2011.

## PART 2 PRODUCTS

### 2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
   2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

B. Lumber fabricated from old growth timber is not permitted.

C. No particle board is to be used in underlayment or exterior applications.

D. Non formaldehyde materials only.

E. Wood species, profiles, trims, etc. are to match throughout the building; new and existing conditions.

### 2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Grading Agency: Western Wood Products Association (WWPA).

B. Sizes: Nominal sizes as indicated on drawings, S4S.

C. Moisture Content: Kiln-dry or MC15.

D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

### 2.03 ACCESSORIES

A. Fasteners and Anchors:
   1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
   2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.

## PART 3 EXECUTION

### 3.01 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

### 3.02 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.

C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.

D. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

**END OF SECTION**

# SECTION 06 20 00

# FINISH CARPENTRY

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Finish carpentry items.

B. Wood door frames, glazed frames.

C. Wood casings and moldings.

### 1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.

B. Section 08 14 33 - Stile and Rail Wood Doors.

C. Section 08 80 00 - Glazing: Glass and glazing of transoms and re-lites.

D. Section 09 90 00 - Painting and Coating: Painting and finishing of finish carpentry items.

### 1.03 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2009.

### 1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with electrical rough-in and installation of associated and adjacent components.

### 1.05 SUBMITTALS

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

B. Samples: Submit two samples of wood trim 6 inches long.

### 1.06 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

### 1.07 DELIVERY, STORAGE, AND HANDLING

A. Protect work from moisture damage.

## PART 2 PRODUCTS

### 2.01 FINISH CARPENTRY ITEMS

A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI/AWMAC/WI Architectural Woodwork Standards for Grades as indicated.

B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.

C. Interior Woodwork Items:
   1. Moldings, Bases, Casings, and Miscellaneous Trim: Species to match existing; prepare for clear finish. See drawings for base details, match existing profiles throughout.
   2. Door, Glazed Light, and Pocket Door Frames: Use existing door trim where feasible and match existing species where new; prepare for clear finish. Match existing profiles.

### 2.02 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

### 2.03 LUMBER MATERIALS

A. Softwood Lumber: Douglas Fir species, quarter sawn, maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish. Finish to match existing.

### 2.04 FASTENINGS

A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.

B. Fasteners: Of size and type to suit application.

C. Concealed Joint Fasteners: Threaded steel.

### 2.05 ACCESSORIES

A. Lumber for Shimming, Blocking, and backing: Softwood lumber of Clear white pine or Douglas Fir or Hemlock species.

B. Glass: Type S-1 as specified in Section 08 80 00.

C. Primer: as specified in Section 09 90 00.

D. Wood Filler: Solvent base, tinted to match surface finish color.

### 2.06 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

### 3.02 INSTALLATION

A. Install work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards requirements for grade indicated.

B. Set and secure materials and components in place, plumb and level.

C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch (1 mm). Do not use additional overlay trim to conceal larger gaps.

### 3.03 PREPARATION FOR SITE FINISHING

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

B. Site Finishing: See Section 09 90 00.

### 3.04 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch (1.5 mm).

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch (0.7 mm).

**END OF SECTION**

# SECTION 06 41 00

# ARCHITECTURAL WOOD CASEWORK

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Specially fabricated cabinet units.

B. Cabinet hardware.

C. Factory finishing.

### 1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.

B. Section 12 36 00 - Countertops.

### 1.03 REFERENCE STANDARDS

A. ANSI A135.4 - American National Standard for Basic Hardboard; 2004.

B. ANSI A208.1 - American National Standard for Particleboard; 2009.

C. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2009.

D. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2009.

E. BHMA A156.9 - American National Standard for Cabinet Hardware; Builders Hardware Manufacturers Association; 2010 (ANSI/BHMA A156.9).

F. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; Hardwood Plywood & Veneer Association; 2004 (ANSI/HPVA HP-1).

### 1.04 SUBMITTALS

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

B. Shop Drawings: Indicate materials, component profiles and elevations, assembly methods, jointing details, fastening methods, accessory listings, hardware location and schedule of finishes.

C. Product Data: Provide data for hardware accessories.

D. Samples: Submit actual samples of architectural cabinet construction, minimum 8 inches (200 mm) square, illustrating proposed cabinet, countertop, and shelf unit substrate and finish.

### 1.05 QUALITY ASSURANCE

A. Perform all work in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Custom Grade quality, unless other quality is indicated for specific items.

### 1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage.

B. Store surfacing materials to prevent breakage and marring of surfaces in accordance with manufacturer's printed instructions.

## PART 2 PRODUCTS

### 2.01 CABINETS

A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI//AWMAC/WI Architectural Woodwork Standards for Grades as indicated.

B. Plastic Laminate Faced Cabinets: Custom grade.

C. Cabinets:
1. Finish - Exposed Exterior Surfaces: High Pressure Decorative Laminate.
2. Finish - Exposed Interior Surfaces: Decorative laminate.
3. Finish - Concealed Surfaces: Thermally Fused Melamine Laminate.
4. Door and Drawer Front Edge Profiles: Square edge covered with matching High Pressure Laminate.
5. Casework Construction Type: Type A - Frameless.
6. Interface Style for Cabinet and Door: Style 1 - Overlay; flush overlay.
7. Adjustable Shelf Loading: 40 lbs. per sq. ft..
8. Cabinet Style: Flush overlay.
9. Cabinet Doors and Drawer Fronts: Flush style.
10. Visible Edges and Reveals: Square edge covered with matching High Pressure Laminate.
11. Outside Corners: ]Square edge covered with matching High Pressure Laminate]].

D. Reception Desk
1. Finish - Exposed Exterior Surfaces: High Pressure Decorative Laminate.
2. Finish - Exposed Interior Surfaces: High Pressure Decorative Laminate.
3. Finish - Light box / Signage Panel: Cast resin panel
    a. Manufacturers:
        1) 3Form: 3-form.com.
            (a) Product: Struttura Pep
            (b) Thickness: 3/4"
            (c) Color / Finish: Clear + Pep + White
4. Finish - Light box / Signage Box: Lacquer finish

### 2.02 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

### 2.03 LAMINATE MATERIALS

A. Manufacturers:
1. Formica Corporation: www.formica.com.
2. Wilsonart International, Inc: www.wilsonart.com.
3. Abet Laminati: www.abetlaminate.com

### 2.04 COUNTERTOPS

A. Plastic Laminate Countertops: Medium density fiberboard substrate covered with HPDL, conventionally fabricated and self-edge banded.

### 2.05 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application.

B. Fasteners: Size and type to suit application.

C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel, or chrome-plated finish in exposed locations.

## 2.06 HARDWARE

A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.

B. Adjustable Shelf Supports: Standard side-mounted system using multiple holes for pin supports and coordinated self rests, satin chrome finish, for nominal 1 inch (25 mm) spacing adjustments.

C. Shelf Standards and Brackets at Countertops
   1. Heavy duty steel.
   2. Product: 208 Series Ultimate L-Bracket manufactured by Knape & Vogt.
      a. 22" Deep
      b. Titanium Finish

D. Drawer and Door Pulls: "U" shaped wire pull, steel with satin finish, 6 inch centers ("U" shaped wire pull, steel with satin finish, 6 mm centers) Where indicated in Construction Documents.

E. Door Catches: Magnetic, where indicated in Construction Documents.

F. Door and Drawer Bumpers:
   1. Rubber, clear color

G. Drawer Slides:
   1. Type: Full extension.
   2. Static Load Capacity: Commercial Grade.
   3. Mounting: Side mounted.
   4. Stops: Integral type.
   5. Features: Provide self closing/stay closed type.

H. Hinges: Blum: Clip top Bluemotion or approved equal; self-closing type, steel with satin finish.

I. Grommets:
   1. Plastic 2.5 inch diameter opening, matching caps with slot for wire passage.
   2. Color to coordinate with adjacent finish material.

## 2.07 FABRICATION

A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.

B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.

C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.

D. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises.
   1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
   2. Cap exposed plastic laminate finish edges with material of same finish and pattern.

## 2.08 SHOP FINISHING

A. Lightbox / Signage at Reception Desk to be lacquered MDF.

B. Department Signage to be lacquered MDF.

C. Sand work smooth and set exposed nails and screws.

D. For opaque finishes, apply wood filler in exposed nail and screw indentations and sand smooth.

E. Finish work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 5 -

Finishing for Grade specified and as follows:

1. Opaque:
   a. System - 2, Lacquer, Precatalyzed.
   b. Color: As selected by Architect.
   c. Sheen: Gloss.

F. Seal all surfaces exposed to view, semi-concealed surfaces and internal surfaces, whether exposed or not with Safe Coat Safe Seal Particle Board and Plywood Sealer. Apply according to Manufacturer's instructions.

**2.09 APPLICATION**

A. Apply products in accordance with manufacturer's instructions, using the preparation, products, sheens, textures, and colors as indicated.
   1. Provide completed work matching approved samples for color, texture, and coverage.
   2. Remove, refinish, or repaint work not complying with requirements.

B. Protect all surfaces not to be coated.

C. Do not apply finishes over dirt, rust, scale, grease, moisture, scuffed surfaces, or other conditions detrimental to formation of a durable coating film; do not apply finishes to surfaces that are not dry.

D. Use applicators and methods best suited for substrate and type of material being applied and according to manufacturer's instructions.
   1. Spray Application: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.

E. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate; provide total dry film thickness of entire system as recommended by manufacturer.
   1. Number of coats and film thickness required are the same regardless of application method.
   2. If undercoats, stains, or other conditions show through final coat of, apply additional coats until paint film is of uniform finish, color, and appearance.
   3. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive dry film thickness equivalent to that of flat surfaces.

F. Apply finish to completely cover surfaces with uniform appearance without brush marks, runs, sags, laps, ropiness, holidays, spotting, cloudiness, or other surface imperfections.
   1. Before applying finish coats, apply a prime coat of material recommended by manufacturer, unless the surface has been prime coated by others; where evidence of suction spots or unsealed areas in first coat appear, recoat primed and sealed surfaces to ensure finish coat with no burn through or other defects due to insufficient sealing.
   2. Apply first coat to surface that has been cleaned, pretreated, or otherwise prepared as soon as practical after preparation and before subsequent surface deterioration.
   3. Do not apply succeeding coats until the previous coat has cured as recommended by manufacturer.
   4. Do not recoat until lacquer has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat will not cause the undercoat to lift or lose adhesion.
   5. If manufacturer's instructions recommend sanding to produce a smooth, even surface, sand between coats.
   6. Inspect each coat before applying next coat; touch-up surface imperfections with coating material, feathering, and sanding if required; touch up areas to achieve flat, uniform surface without surface defects visible from 5 feet.
   7. Allow manufacturer's specified drying time, and ensure correct coating adhesion, for each coat before applying next coat.

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

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

### 3.02 INSTALLATION

A. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.

B. Use fixture attachments in concealed locations for wall mounted components.

C. Use concealed joint fasteners to align and secure adjoining cabinet units.

D. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch (1 mm). Do not use additional overlay trim for this purpose.

E. Secure cabinets to floor using appropriate angles and anchorages.

### 3.03 ADJUSTING

A. Adjust installed work.

B. Adjust moving or operating parts to function smoothly and correctly.

### 3.04 WOOD TRIM

A. Extra trim of specialty types are to be provided with overstock at the end of project.

B. Any custom profiles, trims, etc. require delivery of a copy of the knife to the PM for future use; transmittal required with as-built requirements.

### 3.05 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

**END OF SECTION**

# SECTION 07 84 00

# FIRESTOPPING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Firestopping systems.

B. Firestopping of all joints and penetrations in fire-resistance rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

### 1.02 REFERENCE STANDARDS

A. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops; 2011a.

B. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.

C. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

## PART 2 PRODUCTS

### 2.01 FIRESTOPPING SYSTEMS

A. Firestopping: Any material meeting requirements.
   1. Fire Ratings: Use any system listed by UL or tested in accordance with ASTM E814 that has F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and that meets all other specified requirements.

### 2.02 MATERIALS

A. Firestopping Sealants: Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.

B. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Type required for tested assembly design.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify openings are ready to receive the work of this section.

### 3.02 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter that could adversely affect bond of firestopping material.

B. Remove incompatible materials that could adversely affect bond.

### 3.03 INSTALLATION

A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.

B. Do not cover installed firestopping until inspected by Authority having jurisdiction.

### 3.04 CLEANING

A. Clean adjacent surfaces of firestopping materials.

### 3.05 PROTECTION

A. Protect adjacent surfaces from damage by material installation.

**END OF SECTION**

# SECTION 07 90 05

# JOINT SEALERS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Sealants and joint backing.

### 1.02 REFERENCE STANDARDS

A. ASTM C834 - Standard Specification for Latex Sealants; 2010.

B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2011.

C. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2010.

D. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.

### 1.03 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

## PART 2 PRODUCTS

### 2.01 SEALANTS

A. Sealants and Primers - General: Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.

B. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, Type OP, Grade NF single component, paintable.
   1. Color: Standard colors matching finished surfaces.
   2. Applications: Use for:
      a. Interior wall and ceiling control joints.
      b. Joints between door and window frames and wall surfaces.
      c. Other interior joints for which no other type of sealant is indicated.

C. No adhesive style sealants are to be used in any application.

D. No silicone material on the building envelope/skin.

### 2.02 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

B. Verify that joint backing and release tapes are compatible with sealant.

### 3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean and prime joints in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Protect elements surrounding the work of this section from damage or disfigurement.

### 3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Install bond breaker where joint backing is not used.

D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

F. Tool joints concave.

### 3.04 CLEANING

A. Clean adjacent soiled surfaces.

### 3.05 PROTECTION

A. Protect sealants until cured.

**END OF SECTION**

# SECTION 08 14 33

# STILE AND RAIL WOOD DOORS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Wood doors, stile and rail design.

B. Panels of wood and glass.

### 1.02 RELATED REQUIREMENTS

A. Section 06 20 00 - Finish Carpentry: Wood door frames.

B. Section 08 71 00 - Door Hardware.

C. Section 08 80 00 - Glazing.

D. Section 09 90 00 - Painting and Coating: Site finishing doors.

### 1.03 REFERENCE STANDARDS

A. AWI (QCP) - Quality Certification Program, www.awiqcp.org; current edition at www.awiqcp.org.

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2009.

### 1.04 SUBMITTALS

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

B. Product Data: Indicate stile and rail core materials and construction; veneer species, type and characteristics.

C. Specimen warranty.

D. Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, factory machining criteria, factory finishing criteria, identify cutouts for glazing.

E. Manufacturer's Installation Instructions: Indicate special installation instructions.

F. Warranty, executed in Owner's name.

### 1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years of documented experience.

### 1.06 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver, and store doors in accordance with quality standard specified.

B. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

### 1.07 WARRANTY

A. Interior Doors: Provide manufacturer's warranty for the life of the installation.

B. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

A. Stile and Rail Wood Doors:
   1. Eggers Industries: www.eggersindustries.com.
   2. Maiman Company: www.maiman.com.
   3. Marshfield DoorSystems, Inc: www.marshfielddoors.com.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

### 2.02 DOORS

A. Quality Level: Grade to match existing, in accordance with AWI/AWMAC/WI Architectural Woodwork Standards.

B. Interior Doors: 1-3/4 inches (44 mm) thick unless otherwise indicated; solid lumber construction; mortised and tenoned joints. To match existing doors.

C. Transom Panels: To match door.

### 2.03 DOOR AND PANEL FACINGS

A. Interior Doors: Wood veneer, matching existing door species, with matched grain, for transparent finish.

B. Adhesive: Type I - waterproof.

### 2.04 ACCESSORIES

A. Molding: Wood, of same species as door facing, mitered corners; prepared for countersink style tamper proof screws.

### 2.05 DOOR CONSTRUCTION

A. Vertical Exposed Edge of Stiles: Of same species as veneer facing.

B. Factory machine doors for finish hardware in accordance with hardware requirements and dimensions. Do not machine for surface hardware.

### 2.06 FACTORY FINISHING

A. Finish work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 5 - Finishing for Grade specified and as follows:
   1. Transparent:
      a. System - 12, Polyurethane, Water-based.
      b. Stain: Match existing
      c. Sheen: To match existing.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out of tolerance for size or alignment.

### 3.02 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and AWI/AWMAC Quality Standards requirements.

B. Trim door width by cutting equally on both jamb edges.

C. Trim door height by cutting bottom edges to a maximum of 3/4 inch (19 mm).

D. Machine cut for hardware.

E. Coordinate installation of doors with installation of frames and hardware.

F. Coordinate installation of glazing.

**3.03 TOLERANCES**

A. Conform to specified quality standard for fit, clearance, and joinery tolerances.

**3.04 ADJUSTING**

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

**3.05 SCHEDULE - See Drawings**

**END OF SECTION**

# SECTION 08 71 00

# DOOR HARDWARE

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Hardware for wood doors.

B. Weatherstripping, seals and door gaskets.

### 1.02 RELATED REQUIREMENTS

A. Section 08 14 33 - Stile and Rail Wood Doors.

### 1.03 REFERENCE STANDARDS

A. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2003.

B. BHMA A156.18 - American National Standard for Materials and Finishes; Builders Hardware Manufacturers Association, Inc.; 2006 (ANSI/BHMA A156.18).

C. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors; Door and Hardware Institute; 1993; also in WDHS-1/WDHS-5 Series, 1996.

D. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2010.

E. NFPA 101 - Code for Safety to Life from Fire in Buildings and Structures; National Fire Protection Association; 2009.

F. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.

### 1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the manufacture, fabrication, and installation of products onto which door hardware will be installed.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS - BASIS OF DESIGN

A. Ives: I

B. LCN: LCN

C. SCHLAGE: SCH

D. PEMKO: P

E. GLYNN JOHNSON: G/J

F. HESS: H

G. CURRAN: C

H. SDC: SDC

### 2.02 DOOR HARDWARE - GENERAL

A. Door Hardware to be Owner Furnished Contractor Installed (OFCI).

B. Provide all items of a single type of the same model by the same manufacturer.

C. Provide products that comply with the following:

1. Applicable provisions of federal, state, and local codes.
2. ANSI/ICC A117.1, American National Standard for Accessible and Usable Buildings and Facilities.
3. Applicable provisions of NFPA 101, Life Safety Code.
4. Fire-Rated Doors: NFPA 80.
5. All Hardware on Fire-Rated Doors: Listed and classified by UL as suitable for the purpose specified and indicated.
6. Hardware for Smoke and Draft Control Doors (Indicated as "S" on Drawings): Provide hardware that enables door assembly to comply with air leakage requirements of the applicable code.

D. Function: Lock and latch function numbers and descriptions of manufactures series as listed in hardware schedule.

E. Finishes: All door hardware the same finish unless otherwise indicated.
1. Primary Finish: Satin chrome plated over nickel on brass or bronze, 626 (approx US26D).
2. Finish Definitions: BHMA A156.18.
3. Exceptions:
   a. Where base metal is specified to be different, provide finish that is an appearance equivalent according to BHMA A156.18.
   b. Hinges for Fire-Rated Doors: Steel base metal with painted finish.

**2.03 HINGES**

A. IVES: I

B. LCN: LCN

C. SCHLAGE: SCH

D. PEMKO: P

E. GLYNN JOHNSON: G/J

F. HESS: H

G. CURRAN: C

H. SDC: SDC

I. Hinges: Provide hinges on every swinging door.
1. Provide five-knuckle full mortise butt hinges unless otherwise indicated.
2. Provide ball-bearing hinges at all doors having closers.
3. Provide hinges in the quantities indicated.
4. Provide non-removable pins on exterior outswinging doors.
5. Where electrified hardware is mounted in door leaf, provide power transfer hinges.

**2.04 LOCKS AND LATCHES**

A. Locks: Provide a lock for every door, unless specifically indicated as not requiring locking.
1. Hardware Sets indicate locking functions required for each door.
2. If no hardware set is indicated for a swinging door provide an office lockset.
3. Trim: Provide lever handle or pull trim on outside of all locks unless specifically stated to have no outside trim.
4. Lock Cylinders: Provide key access on outside of all locks unless specifically stated to have no locking or no outside trim.

B. Latches: Provide a latch for every door that is not required to lock, unless specifically indicated "push/pull" or "not required to latch".

**PART 3 EXECUTION**

### 3.01 EXAMINATION

A. Verify that doors and frames are ready to receive work; labeled, fire-rated doors and frames are present and properly installed, and dimensions are as indicated on shop drawings.

### 3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Use templates provided by hardware item manufacturer.

C. Mounting heights for hardware from finished floor to center line of hardware item:
   1. For wood doors: Comply with DHI "Recommended Locations for Architectural Hardware for Wood Flush Doors."
   2. Wood doors: See Section 08 1433. New doors to be installed in new frames unless otherwise indicated on drawings.

### 3.03 ADJUSTING

A. Adjust work under provisions of Section 01 70 00.

B. Adjust hardware for smooth operation.

### 3.04 SCHEDULE

A. Hardware Schedule - See Drawing A601.

B. Hardware to be University standard, owner furnished, contractor installed.

**END OF SECTION**

# SECTION 08 80 00

# GLAZING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Glass.

B. Glazing compounds and accessories.

### 1.02 RELATED REQUIREMENTS

A. Section 06 20 00 - Finish Carpentry: Wood components with requirement for glass.

B. Section 08 14 33 - Stile and Rail Wood Doors: Glazed doors.

### 1.03 REFERENCE STANDARDS

A. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005.

B. ASTM C1036 - Standard Specification for Flat Glass; 2006.

C. GANA (GM) - GANA Glazing Manual; Glass Association of North America; 2009.

D. GANA (SM) - FGMA Sealant Manual; Glass Association of North America; 2008.

### 1.04 SUBMITTALS

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

B. Samples: Submit two samples 12 x 12 inch in size of glass units, showing coloration.

### 1.05 QUALITY ASSURANCE

A. Perform Work in accordance with GANA Glazing Manual and FGMA Sealant Manual for glazing installation methods.

## PART 2 PRODUCTS

### 2.01 GLAZING TYPES

A. Type S-1 - Single Vision Glazing:
   1. Applications: All interior glazing unless otherwise indicated.
   2. Type: Fully tempered float glass.
   3. Tint: Clear.
   4. Thickness: 1/4 inch (6 mm).

### 2.02 GLAZING ACCESSORIES

A. Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness, ASTM C864 Option I. Length of 0.1 inch for each square foot (25 mm for each square meter) of glazing or minimum 4 inch (100 mm) x width of glazing rabbet space minus 1/16 inch (1.5 mm) x height to suit glazing method and pane weight and area.

B. Glazing Tape: Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; black color.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that openings for glazing are correctly sized and within tolerance.

B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions and ready to receive glazing.

### 3.02 PREPARATION

A. Clean contact surfaces with solvent and wipe dry.

B. Install sealant in accordance with manufacturer's instructions.

### 3.03 GLAZING METHODS

### 3.04 INSTALLATION - INTERIOR DRY METHOD (TAPE AND TAPE)

A. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch (1.6 mm) above sight line.

B. Place setting blocks at 1/4 points with edge block no more than 6 inches (150 mm) from corners.

C. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.

D. Place glazing tape on free perimeter of glazing in same manner described above.

E. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.

F. Knife trim protruding tape.

### 3.05 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste.

**END OF SECTION**

# SECTION 09 21 16

# GYPSUM BOARD ASSEMBLIES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Metal stud wall framing.

B. Acoustic insulation.

C. Gypsum wallboard.

D. Joint treatment and accessories.

E. Textured finish system.

### 1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.

### 1.03 REFERENCE STANDARDS

A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2010.

C. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2002 (Reapproved 2007).

D. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2009a.

E. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2006.

F. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2009a.

G. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2008.

H. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2010.

I. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2007.

J. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2010a.

K. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2009a.

L. GA-216 - Application and Finishing of Gypsum Board; Gypsum Association; 2010.

### 1.04 SUBMITTALS

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

B. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

## PART 2 PRODUCTS

## 2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.

## 2.02 METAL FRAMING MATERIALS

A. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf (240 Pa).
   1. Minimum of 20 gage metal stud material.
   2. Studs: "C" shaped with flat or formed webs with knurled faces.
   3. Runners: U shaped, sized to match studs.
   4. Furring: Hat-shaped sections, minimum depth of 7/8 inch (22 mm).

B. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws and anti-friction bushings, preventing rotation of studs while maintaining structural performance of partition.
   1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members.
   2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot dipped galvanized coating.

## 2.03 BOARD MATERIALS

A. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces, unless otherwise indicated.
   2. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
   3. Thickness:
      a. Vertical Surfaces: 5/8 inch (16 mm).
   4. Edges: Tapered

## 2.04 ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Thickness: 3 inches. (Thickness: 76 mm.)

B. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.

C. Finishing Accessories: ASTM C1047, galvanized steel or rolled zinc, unless otherwise indicated.
   1. Types: As detailed or required for finished appearance.

D. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.

E. Textured Finish Materials: Latex-based compound; plain.

F. Screws for Attachment to Steel Members Less Than 0.03 inch (0.7 mm) In Thickness, to Wood Members, and to Gypsum Board: ASTM C1002; self-piercing tapping type.

G. Screws for Attachment to Steel Members From 0.033 to 0.112 inch (0.8 to 2.8 mm) in Thickness: ASTM C954; steel drill screws for application of gypsum board to loadbearing steel studs.

## PART 3 EXECUTION

### 3.01 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. All framing and gypsum board work to be done between the hours of 5:00pm and 7:30am to minimize distuption to building occupants.

### 3.02 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

### 3.03 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.

B. Studs: Space studs as permitted by standard.
   1. Extend partition framing to structure in all locations.
   2. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.

C. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs and support headers on cripple studs.

D. Blocking: Install wood blocking for support of:
   1. Framed openings.
   2. Wall mounted cabinets.
   3. Wall mounted door hardware.
   4. Speakers and A/V Equipment, as required.

### 3.04 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
   1. Place continuous bead at perimeter of each layer of gypsum board.
   2. In non-fire-rated construction, seal around all penetrations by conduit, pipe, ducts, and rough-in boxes.

### 3.05 BOARD INSTALLATION

A. Comply with ASTM C 840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
   1. Exception: Tapered edges to receive joint treatment at right angles to framing.

C. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

D. Installation on Metal Framing: Use screws for attachment of all gypsum board.

### 3.06 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

### 3.07 JOINT TREATMENT

A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.

B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch (0.8 mm).

### 3.08 TEXTURE FINISH

A. Texture Required: match existing.

B. Tape, fill, and sand as necessary existing irregular areas to produce smooth surface ready to receive finishes.

**END OF SECTION**

# SECTION 09 51 00

# ACOUSTICAL CEILINGS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

### 1.02 REFERENCE STANDARDS

A. ASTM C635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2007.

B. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels; 2008.

C. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2011.

D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2008e1.

### 1.03 SUBMITTALS

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

B. Product Data: Provide data on suspension system components and acoustical units.

## PART 2 PRODUCTS

### 2.01 ACOUSTICAL UNITS

A. Match existing

B. Acoustical Units - General: ASTM E1264, Class A.

C. Acoustical Tile: Painted mineral fiber, with to the following characteristics:
   1. VOC Content: As specified in Section 01 61 16.
   2. Size: Match Existing
   3. Thickness: Match existing
   4. Edge: Square.
   5. Surface Color: Paint color and extent as shown on drawings.
   6. Suspension System: Concealed grid.

### 2.02 SUSPENSION SYSTEM(S)

A. Manufacturers:
   1. Match existing.

B. Suspension Systems - General: ASTM C635; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.

C. Exposed Steel Suspension System: Formed steel, commercial quality cold rolled; heavy-duty.
   1. Finish: White painted.

D. Comply with all applicable seismic codes and ordinances.

E. Concealed Suspension System: Formed steel, commercial quality cold rolled; light-duty.

### 2.03 ACCESSORIES

A. Support Channels and Hangers: Primed steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Perimeter Moldings: Same material and finish as grid.
   1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.
   2. At Concealed Grid: Provide exposed L-shaped molding.

C. Touch-up Paint: Type and color to match acoustical and grid units.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

### 3.02 INSTALLATION - SUSPENSION SYSTEM

A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.

B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

C. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

D. Do not eccentrically load system or induce rotation of runners.

### 3.03 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

D. Cutting Acoustical Units:
   1. Make field cut edges of same profile as factory edges.

### 3.04 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet (3 mm in 3 m).

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

**END OF SECTION**

# SECTION 09 68 13

# TILE CARPETING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Carpet tile, loose laid with edges and control grid adhered.

### 1.02 REFERENCE STANDARDS

A. CRI (CIS) - Carpet Installation Standard; Carpet and Rug Institute; 2009.

B. CRI 104 - Standard for Installation of Commercial Textile Floorcovering Materials; Carpet and Rug Institute; 2002.

C. CRI (GLA) - Green Label Testing Program - Approved Adhesive Products; Carpet and Rug Institute; Current Edition.

D. CRI (GLC) - Green Label Testing Program - Approved Product Categories for Carpet; Carpet and Rug Institute; Current Edition.

E. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; National Fire Protection Association; 2011.

### 1.03 SUBMITTALS

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

B. Shop Drawings: Indicate layout of joints.

C. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

D. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

A. Lees; Product Faculty IV Modular. www.mohawkgroup.com

### 2.02 MATERIALS

A. Carpet Tile: Tufted, manufactured in one color dye lot.
   1. Tile Size: 19.7x19.7 inch (500x500 mm), nominal.
   2. Color: 4285 Vineyard.
   3. Pattern: Faculty IV Modular.

### 2.03 ACCESSORIES

A. Sub-Floor Filler: White premix latex; type recommended by flooring material manufacturer.

B. Edge Strips: to match wall base, color as selected.

C. Adhesives: Acceptable to carpet tile manufacturer, compatible with materials being adhered; maximum VOC of 50 g/L; CRI Green Label certified; in lieu of labeled product, independent test report showing compliance is acceptable.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that sub-floor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to sub-floor surfaces.

C. Verify that required floor-mounted utilities are in correct location.

### 3.02 PREPARATION

A. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.

B. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

C. Vacuum clean substrate.

### 3.03 INSTALLATION

A. Starting installation constitutes acceptance of sub-floor conditions.

B. Install carpet tile in accordance with manufacturer's instructions and CRI Carpet Installation Standard.

C. Install carpet tile in accordance with manufacturer's instructions and CRI 104.

D. Blend carpet from different cartons to ensure minimal variation in color match.

E. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

F. Lay carpet tile in square pattern, with pile direction alternating to next unit, set parallel to building lines.

G. Adhere carpet tile to substrate along centerline of rooms, at perimeter of rooms, where tiles are cut, and at 15 foot (4.5 m) intervals throughout rooms. Lay remainder of tile dry over substrate.

H. Trim carpet tile neatly at walls and around interruptions.

I. Complete installation of edge strips, concealing exposed edges.

### 3.04 CLEANING

A. Remove excess adhesive without damage, from floor, base, and wall surfaces.

B. Clean and vacuum carpet surfaces.

**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 sealers.

C. Surfaces to be finished are indicated in this section and on the Drawings.

### 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. GreenSeal GS-11 - Architectural Paints; 1993.

C. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; current edition, www.paintinfo.com.

D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Master Painters and Decorators Association; 2004.

### 1.03 SUBMITTALS

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

B. Product Data: Provide data on all finishing products, including VOC content.
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").

C. Certification: By manufacturer that all paints and coatings do not contain any of the prohibited chemicals specified; GreenSeal GS-11 certification is not required but if provided shall constitute acceptable certification.

D. Samples: Submit two paper "drop" samples, 8-1/2 by 11 inches (216 by 279 mm) in size, illustrating range of colors available for each finishing product specified.

E. VOC content of all interior opaque coatings actually used.

### 1.04 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 (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

### 1.05 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 (860 lx) measured mid-height at substrate surface.

### 1.06 EXTRA MATERIALS

A. Supply 1 gallon (4 L) of each color; store where directed by owner.

B. Label each container with color in addition to the manufacturer's label.

## 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. Provide all paint and coating products from the same manufacturer to the greatest extent possible.

C. In the event that a single manufacturer cannot provide all specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.

D. Paints: Acceptable manufacturers are limited to the following:
   1. Benjamin Moore & Co: www.benjaminmoore.com.
   2. Miller Paint: www.millerpaint.com.
   3. Approved substitutions.

### 2.02 MATERIALS - GENERAL

A. Volatile Organic Compound (VOC) Content:
   1. When possible, use no-VOC content. If not possible, consult the Architect and comply with the most stringent requirements specified in the following:
      a. USGBC LEED Rating System, edition as specified in Section 013515; for interior wall and ceiling finish (all coats), anti-corrosive paints on interior ferrous metal, clear wood stains and finishes, sanding sealers, other sealers, shellac, and floor 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.

B. Chemical Content: The following compounds are prohibited:
   1. Aromatic Compounds: In excess of 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
   2. Acrolein, acrylonitrile, antimony, benzene, butyl benzyl phthalate, cadmium, di (2-ethylhexyl) phthalate, di-n-butyl phthalate, di-n-octyl phthalate, 1,2-dichlorobenzene, diethyl phthalate., dimethyl phthalate, ethylbenzene, formaldehyde, hexavalent chromium, isophorone, lead, mercury, methyl ethyl ketone, methyl isobutyl ketone, methylene chloride, naphthalene, toluene (methylbenzene), 1,1,1-trichloroethane, vinyl chloride.

C. Paints and Coatings: Provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI Categories, except as otherwise indicated.
   1. Provide ready mixed paints and coatings, except field-catalyzed coatings.
   2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

### 2.03 PAINT SYSTEMS

A. Provide Premium Grade systems (2 top coats) as defined in MPI Architectural Painting Specification Manual, except as otherwise indicated.

B. Where a specified paint system does not have a Premium Grade, provide Custom Grade system.

C. Provide colors as directed by Architect.
   1. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Owner.
   2. Extend colors to surface edges; colors may change at any edge as directed by Architect.

D. In finished areas, finish exposed pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.

### 2.04 INTERIOR PAINT/SEALER SYSTEMS

A. Gypsum Board and Plaster Wall Surfaces, General: Latex, 3 coat system.
   1. One coat of primer sealer.
   2. Two coats of latex enamel minimum or as required to properly cover, eggshell finish.

B. Wood Trim to be Clear-Coated: Water-based polyurethane
   1. Fill open grain with wood filler paste MPI #91 before finishing
   2. Min. two coats of sealant, lightly sand between coats. Repeat as necessary to achieve uniform finish to match existing.

## PART 3 EXECUTION

### 3.01 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. All ceiling painting to be done between the hours of 5:00pm and 7:30am to minimize disruption to building occupants.

### 3.02 SCOPE -- SURFACES TO BE FINISHED

A. Paint all exposed surfaces except where indicated not to be painted or to remain natural; the term "exposed" includes areas visible through permanent and built-in fixtures when they are in place.

B. Paint the surfaces described in PART 2 PRODUCTS, indicated on the Drawings, and as follows:
   1. If a surface, material, or item is not specifically mentioned, paint in the same manner as similar surfaces, materials, or items, regardless of whether colors are indicated or not.
   2. Paint surfaces behind movable equipment and furnishings the same as similar exposed surfaces.
   3. Paint surfaces to be concealed behind permanently installed fixtures, equipment, and furnishings, using primer only, prior to installation of the permanent item.
   4. Paint back sides of access panels and removable and hinged covers to match exposed surfaces.
   5. Paint all insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment occurring in finished areas to match background surfaces, unless otherwise indicated.
      a. If painting occurs where an item is labeled, remove label before painting and reinstall after painting has been completed.
   6. Paint shop-primed mechanical and electrical items occurring in finished areas.
   7. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
   8. Paint interior surfaces of air ducts and convector and baseboard heating cabinets with flat, nonspecular black paint where visible through registers, grilles, or louvers.

C. Do Not Paint or Finish the Following Items:
   1. Items fully factory-finished unless specifically noted; factory-primed items are not considered factory-finished.
   2. Items indicated to receive other finish.

3. Items indicated to remain naturally finished.
4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
5. Glass
6. Concealed piping, ductwork, and conduit.

### 3.03 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; report incompatible primer conditions and submit recommended changes for Architect's approval.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
1. Plaster and Gypsum Board: 12 percent.
2. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

### 3.04 PREPARATION

A. Prepare surfaces as specified in MPI Architectural Painting Specification Manual and as follows for the applicable surface and coating; if multiple preparation treatments are specified, use as many as necessary for best results; where the Manual references external standards for preparation (e.g. SSPC standards), prepare as specified in those standards; comply with coating manufacturer's specific preparation methods or treatments, if any.

B. Coordinate painting work with cleaning and preparation work so that dust and other contaminants do not fall on newly painted, wet surfaces.

C. Surface Appurtenances: Prior to preparing surfaces or finishing, remove electrical plates, hardware, light fixtures, light fixture trim, escutcheons, machined surfaces, fittings, and similar items already installed that are not to be painted.
1. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before preparation and finishing.
2. After completing painting in each space or area, reinstall items removed using workers skilled in the trades involved.

D. Surfaces: Correct defects and clean surfaces which affect work of this section. Remove or repair existing coatings that exhibit surface defects.

E. Marks: Seal with shellac those which may bleed through surface finishes.

F. Impervious Surfaces: Remove mildew by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

G. Concrete, Cement Plaster and Unit Masonry Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.
1. Prepare concrete, concrete masonry block, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.

H. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.

I. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

J. Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.
   1. Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.

K. 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.

**3.05 APPLICATION**

A. Apply products in accordance with manufacturer's instructions and as specified or recommended by MPI Manual, using the preparation, products, sheens, textures, and colors as indicated.
   1. Provide completed work matching approved samples for color, texture, and coverage.
   2. Remove, refinish, or repaint work not complying with requirements.

B. Protect all surfaces not to be coated.

C. Provide adequate fresh air and ventilation during application.

D. Do not apply finishes over dirt, rust, scale, grease, moisture, scuffed surfaces, or other conditions detrimental to formation of a durable coating film; do not apply finishes to surfaces that are not dry.

E. Use applicators and methods best suited for substrate and type of material being applied and according to manufacturer's instructions.
   1. Brush Application: Use brushes best suited for the type of material applied; use brush of appropriate size for the surface or item being painted; produce results free of visible brush marks.
   2. Roller Application: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
   3. Spray Application: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.
      a. Use spray application on the ceiling and asbestos insulated pipes. Any necessary abatement of hazardous materials in the affected spaces to be completed by owner prior to the commencement of this project.
   4. Where application method is listed in the MPI Manual for the paint system that application method is required; otherwise any application method recommended by manufacturer for material used and objects to be painted is acceptable.

F. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate; provide total dry film thickness of entire system as recommended by manufacturer.
   1. Number of coats and film thickness required are the same regardless of application method.
   2. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance.
   3. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive dry film thickness equivalent to that of flat surfaces.

G. Apply finish to completely cover surfaces with uniform appearance without brush marks, runs, sags, laps, ropiness, holidays, spotting, cloudiness, or other surface imperfections.
   1. Before applying finish coats, apply a prime coat of material recommended by manufacturer, unless the surface has been prime coated by others; where evidence of suction spots or unsealed areas in first coat appear, recoat primed and sealed surfaces to ensure finish coat with no burn through or other defects due to insufficient sealing.
   2. Apply first coat to surface that has been cleaned, pretreated, or otherwise prepared as soon as practical after preparation and before subsequent surface deterioration.
   3. Do not apply succeeding coats until the previous coat has cured as recommended by manufacturer.
   4. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat will not cause the undercoat to lift or lose adhesion.
   5. If manufacturer's instructions recommend sanding to produce a smooth, even surface, sand between coats.
   6. Inspect each coat before applying next coat; touch-up surface imperfections with coating material, feathering, and sanding if required; touch up areas to achieve flat, uniform surface without surface defects visible from 5 feet.
   7. Allow manufacturer's specified drying time, and ensure correct coating adhesion, for each coat before applying next coat.
   8. Where coating application abuts other materials or other coating color, terminate coating with a clean sharp termination line without coating overlap.
   9. Contractor must redo unsatisfactory finishe; refinish entire area to corners or other natural terminations.

**3.06 CLEANING AND PROTECTION**

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

B. At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from site.

C. Protect other work, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting as approved by Architect.

D. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

E. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in MPI Manual.

**3.07 SCHEDULE - COLORS: SEE DRAWINGS A601 and A602.**

**END OF SECTION**

# SECTION 10 14 00

# SIGNAGE

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Interior directional and informational signs.

### 1.02 REFERENCE STANDARDS

A. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2003.

B. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines; 2002.

### 1.03 SUBMITTALS

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

B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.

C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
   1. When content of signs is indicated to be determined later, request such information from Owner through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
   2. Submit for approval by Owner through Architect prior to fabrication.

D. Verification Samples: Submit samples showing colors specified.

E. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

### 1.04 DELIVERY, STORAGE, AND HANDLING

A. Package signs as required to prevent damage before installation.

B. Store tape adhesive at normal room temperature.

### 1.05 FIELD CONDITIONS

A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.

B. Maintain this minimum temperature during and after installation of signs.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

A. Flat Signs: CFCI

B. Dimensional Letter Signs: CFCI
   1. Takeform: takeform.net.

### 2.02 SIGNAGE APPLICATIONS

A. Accessibility Compliance: All signs are required to comply with ADAAG and ANSI/ICC A 117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.

B. Interior Directional and Informational Signs:
   1. Sign Type: Flat signs with applied character media as specified.
   2. Sizes: As indicated on the drawings.
   3. Wording of signs is scheduled on the drawings.
   4. Character Height at Individual Department signage: 3 inch (25 mm).
   5. Character Height at Reception Desk signage: 2 inch (25 mm).

### 2.03 SIGN TYPES

A. Flat Signs: Signage media without frame.
   1. Edges: Square.
   2. Corners: Square.
   3. Wall Mounting of One-Sided Signs: Tape adhesive.

B. Color and Font: Unless otherwise indicated:
   1. Character Font: Rotis sans serif bold.
   2. Character Case: Upper and lower case (title case).
   3. Background Color: As scheduled.
   4. Character Color: Pewter #CO102 color.

### 2.04 DIMENSIONAL LETTERS

A. Plastic Letters:
   1. Product: Takeform Ethos Painted Acrylic Letters.
   2. Mounting: Tape adhesive.

### 2.05 ACCESSORIES

A. Concealed Screws: Stainless steel, galvanized steel, chrome plated, or other non-corroding metal.

B. Tape Adhesive: Double sided tape, permanent adhesive.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

### 3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install neatly, with horizontal edges level.

C. Locate signs where indicated:

D. Protect from damage until Substantial Completion; repair or replace damage items.

**END OF SECTION**

# SECTION 10 44 00

# FIRE PROTECTION SPECIALTIES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Fire extinguishers.

B. Fire extinguisher cabinets.

C. Accessories.

### 1.02 REFERENCE STANDARDS

A. UL (FPED) - Fire Protection Equipment Directory; Underwriters Laboratories Inc.; current edition.

### 1.03 SUBMITTALS

A. Product Data: Provide extinguisher operational features.

B. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

## PART 2 PRODUCTS

### 2.01 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
   1. Provide extinguishers labeled by UL for the purpose specified and indicated.
   2. Provide 2A10BC type extinguishers

### 2.02 FIRE EXTINGUISHER CABINETS

A. Manufacturer: AmeraProducts / Strike First Corp.
   1. Product: Apex Semi-recessed with Square Corners
   2. Door Style: Vertical Duo with Clear Acrylic
   3. Finish: Clear Aluminum

B. Cabinet Configuration: Semi-recessed type.
   1. Sized to accommodate accessories.

C. Cabinet Mounting Hardware: Appropriate to cabinet. Pre-drill for anchors.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify rough openings for cabinet are correctly sized and located.

### 3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions and ADA requirements.

B. Install cabinets plumb and level in wall openings.

C. Secure rigidly in place.

D. Place extinguishers and accessories in cabinets.

**END OF SECTION**

# SECTION 12 24 00

# WINDOW SHADES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Window shades and accessories.

### 1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Concealed wood blocking for attachment of headrail brackets.

B. Section 09 21 16 - Gypsum Board Assemblies: Substrate for window shade systems.

C. Section 09 51 00 - Suspended Acoustical Ceilings: Shade Pockets, pocket closures and accessories.

### 1.03 REFERENCE STANDARDS

A. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; 2010.

### 1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week prior to commencing work related to products of this section; require attendance of all affected installers.

B. Sequencing:
   1. Do not fabricate shades until field dimensions for each opening have been taken.
   2. Do not install shades until final surface finishes and painting are complete.

### 1.05 SUBMITTALS

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

B. Product Data: Provide manufacturer's standard catalog pages and data sheets including materials, finishes, fabrication details, dimensions, profiles, mounting requirements, and accessories.

C. Manufacturer's Instructions: Include instructions for storage, handling, protection, examination, preparation, and installation of product.

D. Warranty: Submit sample of manufacturer's warranty and documentation of final executed warranty completed in Owner's name and registered with manufacturer.

### 1.06 QUALITY ASSURANCE

### 1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver shades in manufacturer's unopened packaging, labeled to identify each shade for each opening.

B. Handle and store shades in accordance with manufacturer's recommendations.

### 1.08 FIELD CONDITIONS

A. Do not install products under environmental conditions outside manufacturer's absolute limits.

### 1.09 WARRANTY

A. See Section 01 78 00 - Closeout Requirements, for additional warranty requirements.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

A. Manually Operated Roller Shades:
   1. Hunter Douglas: www.hunterdouglas.com.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

B. Source Limitations: Furnish products produced by a single manufacturer and obtained from a single supplier.

### 2.02 WINDOW SHADE APPLICATIONS

A. Shades at 10% Open weave: Translucent shades.
   1. Type: Roller shades.
   2. Fabric: See Schedule on Drawing A601.
   3. Color: As selected by Architect from manufacturer's full range of colors.
   4. Mounting: Inside (between jambs).
   5. Operation: Manual.

### 2.03 ROLLER SHADES

A. Roller Shades: Fabric roller shades complete with mounting brackets, roller tubes, hembars, hardware and accessories; fully factory-assembled.
   1. Drop: Regular roll.
   2. Size: As indicated on drawings.

B. Fabric: Non-flammable, color-fast, impervious to heat and moisture, and able to retain its shape under normal operation; PVC-free; 100 percent recycled.
   1. Translucent Shades: Soften the light and reveal only shadow-like outlines to the outside; substantial privacy; Openness Factor less than 1 percent.
   2. Flammability: Pass NFPA 701 large and small tests.

C. Roller Tube: As required for type of operation, extruded aluminum with end caps.
   1. Dimensions: Manufacturer's standard, selected for suitability for installation conditions, span, and weight of shades.

D. Manual Operation: Clutch operated continous loop; beaded ball chain meeting WCMA A100.1.

### 2.04 FABRICATION

A. Field measure finished openings prior to ordering or fabrication.

B. Fabricate shades to fit openings within specified tolerances.
   1. Vertical Dimensions: Fill openings from head to sill with 1/2 inch (13 mm) space between bottom bar and window sill.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Examine finished openings for deficiencies that may preclude satisfactory installation.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Start of installation shall be considered acceptance of substrates.

### 3.02 PREPARATION

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

B. Coordinate with window installation and placement of concealed blocking to support shades.

### 3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved shop drawings, using mounting devices as indicated.

B. Installation Tolerances:
   1. Inside Mounting: Maximum space between shade and jamb when closed of 1/16 inch (1.5 mm).
   2. Maximum Offset From Level: 1/16 inch (1.5 mm).

C. Adjust level, projection and shade centering from mounting bracket. Verify there is no telescoping of shade fabric. Ensure shades for smooth operation.

### 3.04 CLEANING

A. Clean soiled shades and exposed components as recommended by manufacturer.

B. Replace shades that cannot be cleaned to "like new" condition.

### 3.05 CLOSEOUT ACTIVITIES

A. Demonstration: Demonstrate operation and maintenance of window shade system to Owner's personnel.

### 3.06 PROTECTION

A. Protect installed installed products from subsequent construction operations.

B. Touch-up, repair or replace damaged products before Substantial Completion.

### 3.07 MAINTENANCE

A. See Section 01 70 00 - Execution Requirements, for additional requirements relating to maintenance service.

**END OF SECTION**

# SECTION 12 36 00

# COUNTERTOPS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Countertops for architectural cabinetwork.

### 1.02 RELATED REQUIREMENTS

A. Section 06 41 00 - Architectural Wood Casework.

### 1.03 REFERENCE STANDARDS

A. ANSI A208.1 - American National Standard for Particleboard; 2009.

B. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2009.

C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2009.

D. ISSFA-2 - Classification and Standards for Solid Surfacing Material; International Solid Surface Fabricators Association; 2001 (2007).

E. MIA (DSDM) - Dimensional Stone Design Manual; VII, 2007.

### 1.04 SUBMITTALS

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

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Specimen warranty.

C. Shop Drawings: Complete details of materials and installation.

D. Verification Samples: For each finish product specified, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

E. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces and list of materials detrimental to quartz.

### 1.05 QUALITY ASSURANCE

A. Fabricator and Installer Qualifications: Minimum 2 years documented experience in work of this Section.

### 1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local Authorities having jurisdiction.

### 1.07 FIELD CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

## PART 2 PRODUCTS

### 2.01 COUNTERTOP ASSEMBLIES

A. Plastic Laminate Countertops: High pressure decorative laminate sheet bonded to substrate.
   1. Laminate Sheet, Unless Otherwise Indicated: NEMA LD 3 Grade HGP, for postforming, 0.039 inch (HGP, for postforming, 1.0 mm) nominal thickness.
      a. Finish: Matte or suede, gloss rating of 5 to 20.
      b. Surface Color and Pattern: As indicated on drawings.
      c. Manufacturers:
         1) Formica Corporation: www.formica.com.
         2) Wilsonart International, Inc: www.wilsonart.com.
   2. Exposed Edge Treatment: Square, substrate built up to minimum 1-1/4 inch (32 mm) thick; covered with matching laminate.
   3. Fabricate in Commercial Grade.

### 2.02 ACCESSORY MATERIALS

A. Wood-Based Components:
   1. Wood fabricated from old growth timber is not permitted.

B. Medium Density Fiberboard for Supporting Substrate: ANSI A208.2.

C. Adhesives: Type recommended by manufacturer.

### 2.03 FABRICATION

A. Fabricate tops in the largest sections practicable, with top surface of joints flush.
   1. Join lengths of tops using best method recommended by manufacturer.
   2. Fabricate to overhang fronts and ends of cabinets 1 inch (25 mm) except where top butts against cabinet or wall.
   3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.
   4. Fabricate with hairline joints.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

### 3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

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

### 3.03 INSTALLATION

A. Install countertops in accordance with manufacturer's instructions and approved Shop Drawings.

B. Attach plastic laminate countertops using screws with minimum penetration into substrate board of 5/8 inch (16 mm).

C. Adhere countertops with continuous beads of adhesive.

D. Seal joint between back/end and vertical surfaces.

### 3.04 TOLERANCES

A. Variation From Horizontal: 1/8 inch in 10 feet (3 mm in 3 m), maximum.

B. Offset From Wall, Countertops: 1/8 inch (3 mm) maximum; 1/16 inch (1.5 mm) minimum.

C. Seal all unfinished exposed and unexposed surfaces and edges with Safe Coat Safe Seal Particle Board and Plywood Sealer.

### 3.05 CLEANING

A. Clean countertops surfaces thoroughly.

### 3.06 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

**END OF SECTION**

# SECTION 23 01 30.51

# HVAC AIR DUCT CLEANING

## Part 1 - GENERAL

### 1.01 REFERENCED STANDARDS

A. Follow National Air Duct Cleaners Association Specification ″ACR 2006″

## Part 2 - EXECUTION

### 2.01 CLEANING

A. Filter box installation
   1. Calculate size of new filter box and filters, so as to not adversely impact system airflow.
   2. Install a ″MERV-8″ or approved equal filter box on the supply side of the terminal unit discharge.
   3. filter box to be hinged and sealed so there is no leakage. Submit shop drawing indicating coordinated hinge door locations for approval.
   4. Provide SMACNA transitions from duct and terminal unit to filter box, do not choke or impede airflow in transitions.

B. Flexible duct replacement:
   1. Replace all low pressure flexible ducts that run from the trunk line to the light fixtures, ceiling diffusers, and perimeter diffusers with ″ATCO 70″ or approved equal.
   2. Replace damaged medium pressure flexible duct from the air handler supply trunk to the terminal unit with ″THERMAFLEX S-LP″ or approved equal. (assume 75%) Iinsulate medium pressure flex after installation; ″THERMAFLEX S-LP″ comes un-insulated.

C. Induction boxes:
   1. For induction box terminal units that do not have a heating coil, install 20x25 slide-in filters on the induction dampers on side of the filter box (low pressure inlet).
   2. Use SMACNA transition from induction inlet on box to filter size. Do not choke or impede airflow.

D. Lighting:
   1. Clean existing light fixture troffers.

### 2.02 QUALITY ASSURANCE

A. Performance of machinery:
   1. The use of a high efficient HEPA filtration machine for interior mechanical equipment is required per NADCA ″ACR 2006″ minimum requirements. Machinery to be ″ABATEMENT TECHNOLOGIES HEPA-AIRE H4500IV″ or approved equal.

B. Years experience:
   1. Minimum of 5 years experience required for crew

C. Time:
   1. Work to be done after work hours.
   2. Means and methods to be determined by contractor.

## 2.03 FIELD QUALITY CONTROL

A. At each filter location, install a small engraved tag (approximately 0.5″ x 1.0″, white field with black letters, stating: filter) applied to the ceiling grid at the access point for filter maintenance.

B. Vacuum tops of all ceiling tile in vicinity of other work. Any tile removed must have any exposed fiberglass edges sealed prior to re-installation.

C. Supply fan and mechanical room shall be cleaned in accordance with NADCA ″ACR 2006″ standards. Include blower wheel, plenum, filter bank, and all surfaces. Replace filters (owner supplied) after cleaning is completed.

## 2.04 ADJUSTING

A. Testing and balancing of cleaned systems will be provided by owner.

**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 General Conditions, Supplementary Conditions, and Division 1 bound herewith in addition to this Specification and accompanying Drawings.

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

C. The Contractor shall inspect the job site prior to bidding and become familiarized with existing conditions which will affect the work.

D. Prior to start of work, obtain "As built," "Record," or other Drawings showing existing conditions or underground utilities.

### 1.02 RELATED WORK SPECIFIED ELSEWHERE

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

### 1.03 DESCRIPTION OF SYSTEM

A. Electrical Drawings are diagrammatic and do not necessarily show all raceways, wiring, number and types of fittings required.

B. 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. Contractor is responsible for installation of complete and operating electrical systems.

### 1.04 QUALITY ASSURANCE

A. Qualifications of Installers:
   1. For actual fabrication, installation and testing of Work of this Section, use only thoroughly trained and experienced personnel familiar with requirements for this Work and with installation recommendations of Manufacturers of specified items.

B. Design Criteria:
   1. Conform Work with conditions shown and specified.
   2. Where adjustments or modifications of Work are necessary for fabrication and installation of items, or for resolution of conflicts between items, make such adjustments at no added expense to Owner.
   3. Submit adjustments or modifications of Work affecting functional or aesthetic design of Work to Architect for review.
   4. Pay for equipment relocations or modifications necessitated by failure to advise Architect of conflicts or coordinate work.

C. Select equipment to meet design conditions stated. Contractor is responsible for meeting technical data and performance requirements of system.

D. Satisfy requirements of regulatory agencies or codes having jurisdiction over project. Provide U.L. labels for all equipment falling under testing capabilities of U.L.

E. Procure licenses and permits, and pay fees, deposits, assessments and tax charges required for Electrical Work.

F. Arrange for and pay for inspections and tests required by codes and ordinances during construction.

## 1.05 REFERENCE STANDARDS

A. The following specifications and standards, except as hereinafter modified, are incorporated herein by reference and from a part of this specification to the extent indicated by the references thereto. Except where a specific date is given, the issue in effect (including amendments, addenda, revisions, supplements, and errata) on the date of Invitation for Bids shall be applicable. In text such specifications and standards are referred to by basic designation only.
   1. Underwriters Laboratories (UL).
   2. National Fire Protection Association (NFPA), Specifically:
      a. NFPA 70 - National Electric Code.
      b. NFPA 72 - National Fire Alarm Code.
      c. NFPA 101 - Life Safety Code.
      d. NFPA 90A - Installation of Air Conditioning and Ventilating Systems.
   3. National Electrical Safety Code.
   4. International Mechanical Code (IMC) with State of Oregon Amendments.
   5. International Building Code (IBC) with State of Oregon Amendments.
   6. International Fire Code (IFC) with State of Oregon Amendments.
   7. National Electrical Manufacturer's Association (NEMA).
   8. American National Standards Institute (ANSI).
   9. National Electrical Testing Associations (NETA).
   10. Occupational Safety and Health Administration (OSHA).
   11. City, County, and State Codes and Ordinances.

B. Provide shop drawings and product data in accordance with Division 1.

C. Submittal material sent by facsimile machine will not be accepted.

D. Post Contract Award:
   1. Prepare and submit as follows:
      a. Provide complete drawings, diagrams, illustrations, performance charts, brochures, and/or other data which adequately describes product to enable thorough evaluation.
      b. Number of copies, method of distribution, format and schedule for submission; per Supplementary Conditions or Division 1.

E. Provide product data for materials and equipment as required by individual sections.

F. Provide Shop Drawings for materials and equipment as required by individual sections.

## 1.06 SUBSTITUTIONS

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

B. Products specified herein are so specified to establish a minimum level of product quality. Except where indicated that no substitutions are allowable, equivalent quality products may be submitted to the Architect for approval.

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

### 1.07 RECORD DRAWINGS

A. Provide in accordance with Division 1.

### 1.08 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Make inspection of equipment for possible damage at time of delivery to avoid future delays in construction due to replacement or repair.

B. Protect against damage, theft and deterioration.
   1. Store in original factory containers.
   2. Do not expose equipment to dust, powder, abrasive, wetness, excessive dampness or temperature extremes, unless equipment approved for that use.

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

### 1.09 PROTECTION

A. Suitably protect any unfinished Work from potential physical damage.

B. Do not leave unfinished Work unattended, which would pose life safety hazard.

C. Protect other Work against damage and discoloration caused by Work of this Section.

### 1.10 COORDINATION

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

B. Report any discrepancies discovered between existing job conditions and Work to be installed. Fully resolve such discrepancies prior to continuation of work.

C. Coordinate sequencing of equipment installation and energizing with other trades.

D. Consult Architect prior to installing equipment in area which obviously exceeds, or will exceed, ambient operating requirements such as for temperature and humidity.

### 1.11 ALTERNATIVES AND ALLOWANCES

A. Refer to Division 1 for possible effect upon Work of this Section.

### 1.12 WARRANTY

A. Warrant all Work included in this Specification for period of one year from date of substantial completion, under provisions of Division 1.

B. During warranty period, remedy without delay or expense to Owner any defects providing, in judgment of Engineer, that such defects are not result of misuse or abuse on part of Owner.

C. Warrant that all equipment and installations are in compliance with OSHA regulations.

## Part 2 - PRODUCTS

### 2.01 MATERIAL

A. Provide new material and equipment items that are standard products of Manufacturers regularly engaged in production of such materials and equipment. Architect reserves right to reject items not in accordance with Specifications.

B. For each type of equipment, use same manufacturer throughout.

C. Provide corrosion protection for ferrous metalwork exposed to weather by hot dip galvanizing, or factory painted finish suitable for outdoor installations.

D. Verify all materials are acceptable to Authority having jurisdiction, as suitable for the use intended.

## Part 3 - EXECUTION

### 3.01 COMPLETION

A. Complete each system as shown or specified herein and place in operation, except where only roughing-in or partial systems are called for.

B. Outlets or equipment shown on the plans, with no supply conduit or conductors indicated, shall be completed in the same methods and manner as similar or like outlets or equipment shown on the drawings.

### 3.02 SCHEDULING OF WORK

A. Schedule Work with all other Contractors to maintain job progress schedule, and avoid conflicts in installation of Work by various trades.

B. Coordinate with General Contractor to provide adequate access for installing large equipment.

### 3.03 SLEEVES AND OPENINGS

A. Provide through floors and walls for Electrical Work.

B. Coordinate with General Contractor and other trades involved.

C. Patch and seal around all openings, both sides of material penetrated where possible.

### 3.04 CUTTING AND PATCHING

A. See Division 1.

B. Inform General Contractor of all openings required in building construction for installation of Work.

C. Where access within or behind existing surfaces is required by the work of this Section, remove, cut, patch reinstall, and refinish surfaces and assemblies as required to restore them to their previous and/or scheduled finish condition.

### 3.05 PAINTING

A. See Division 9.

B. Painting of Electrical Work shall be performed by General Contractor.

C. Painting of Electrical Work not included in Electrical Work, unless otherwise noted on Drawings or specified herein.

D. Coordinate with General Contractor.

### 3.06 MANUFACTURER'S INSTALLATION DETAILS

A. Follow exactly, where available.

## 3.07 ACCESSIBILITY OF EQUIPMENT

A. Install equipment accessible for operation, maintenance or repair as required by NEC.

B. Inaccessible Equipment:
   1. Where the Owner's representative determines that the Contractor has installed equipment not conveniently accessible for operation and maintenance, equipment shall be removed and reinstalled as directed, at no additional cost to the Owner.
   2. "Conveniently accessible" is defined as being capable of being reached without the use of ladders, or without climbing or crawling under or over obstacles such as motors, pumps, belt guards, transformers, piping and ductwork.

## 3.08 COORDINATION

A. Coordinate all light fixture and device locations with other trades to avoid possible conflicts with ducts, sprinkler piping, and other obstacles affecting installation.

B. Coordinate conduit, junction boxes, supporting equipment, etc. Affecting normal operating and maintenance activities related to mechanical equipment, piping, valves, accessories, etc.

## 3.09 TESTS

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

B. Do not test or operate for any other purpose, such as checking motor rotation, any item of equipment until fully checked in accordance with Manufacturer's instructions.

## 3.10 CLEANING OF ELECTRICAL INSTALLATION

A. See Division 1.

B. Prior to acceptance of building, thoroughly clean all exposed portions of electrical installation.

C. Remove all nonessential labels and traces of foreign substances.

D. Use only cleaning solution approved by Manufacturer.

E. Avoid any damage to finished surfaces.

## 3.11 EQUIPMENT CONNECTIONS

A. Provide a complete electrical connection for all items of equipment including incidental wiring, materials, devices and labor necessary for a complete operating system. The location and method for connecting to each item of equipment shall be verified prior to rough-in. The voltage and phase of each item of equipment shall be checked before connecting. Motor rotations shall be made in the proper direction. Pump motors are not to be test run until liquid is in the system and proper lubrication to all bearings in unit is checked.

**END OF SECTION**

# SECTION 26 05 19

# WIRE AND CABLE

## Part 1 - GENERAL

### 1.01 SECTION INCLUDES

A. Building wire and cable.

B. Wiring connections and terminations.

### 1.02 SUBMITTALS

A. Submit shop drawings and product data under the provisions of Section 26 01 00.

B. Submit manufacturer's instructions.

## Part 2 - PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS - WIRE

A. Rome

B. General Cable

C. Anaconda-Erickson

D. Southwire

E. General Electric

F. Substitutions: Under provisions of Section 260100.

### 2.02 BUILDING WIRE

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

B. Color Coding:
   1. 120/208 Volt System:
      a. A phase - black.
      b. B phase - red.
      c. C phase - blue.
      d. Neutral - white.
      e. Ground - green.
   2. 277/480 Volt System:
      a. A phase - brown.
      b. B phase - orange.
      c. C phase - yellow.
      d. Neutral - white.
      e. Travelers - purple.
      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. Use 10 AWG conductor for 20 ampere, 120 volt branch circuit home runs longer than 75 feet.

C. Place an equal number of conductors for each phase of a circuit in same raceway or cable.

D. No shared neutrals. Provide one neutral for each phase conductor in branch circuits.

E. Splice only in junction or outlet boxes.

F. Neatly train and lace wiring inside boxes, equipment, and panelboards using cable ties.
   1. Manufacturer: T&B Ty-Rap, or approved.

### 3.02 WIRING INSTALLATION IN RACEWAYS

A. Pull all conductors into a raceway at the same time.

B. 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.

C. Pull wiring in a manner that will avoid kinking or abrasion of the insulation.

D. Use only approved lubricants when pulling conductors.

E. Do not exceed pulling tension or bending radius recommended by wire manufacturer.

F. Equipment Grounding Conductors:
   1. Provide a separate, insulated equipment grounding conductor in lighting and receptacle branch circuits.
   2. Terminate each end on a grounding lug, bus, or bushing.
   3. Provide individual ground wire in flexible conduit and non-metallic raceways.

### 3.03 CABLE INSTALLATION

A. Provide protection for exposed cables where subject to damage.

B. Support cables 12" minimum above accessible ceilings.

C. Use spring metal clips or plastic cable ties to support cables from structure or ceiling suspension system.

D. Include bridle rings or drive rings.

E. Use suitable cable fittings and connectors.

F. Install cables in conduits where installed in walls or other inaccessible spaces.

### 3.04 WIRING CONNECTIONS AND TERMINATIONS

A. Splice only in accessible junction boxes.

B. #8 Copper Wire and Smaller:
   1. Use solderless spring connectors with insulating covers.

2. Manufacturer: Buchanan, Ideal, Scotch, or approved.
3. Connection by means of wire binding screws or studs and nuts having upturned lugs or equivalent shall be permitted for No. 10 solid or smaller conductors only.

C. Thoroughly clean wires before installing lugs and connectors.

D. Make splices, taps, and terminations to carry full ampacity of conductors without perceptible temperature rise.

E. Terminate spare conductors with electrical tape.

## 3.05 FIELD QUALITY CONTROL

A. Inspect wire and cable for physical damage and proper connection.

B. Torque test conductor connections and terminations to manufacturer's recommended values.

C. Perform continuity test on all power and equipment branch circuit conductors. Verify proper phasing connections.

## 3.06 WIRE AND CABLE INSTALLATION SCHEDULE

A. Interior Locations: Building wire in continuous metallic raceways, as shown on Drawings.

B. Cross marks for power and lighting branch circuits installed in raceways indicate quantity of number 12 copper branch circuit conductors unless otherwise noted. Where no cross marks appear on power or lighting circuits it shall be understood to provide two (2) number 12 conductors for lighting and three number 12 conductors for receptacle circuits.

C. Conductor sizes indicated, such as home run annotations, shall be maintained through out entire circuit length.

**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.

## Part 2 - PRODUCTS

### 2.01 ELECTRIC METALLIC TUBING (EMT)

A. Zinc coated by hot dip galvanizing or sherardizing.

B. Manufacturer: Allied Tube and Conduit, Triangle PWC Inc., or approved.

### 2.02 FLEXIBLE CONDUIT

A. Galvanized steel or aluminum, abrasion resistant.

B. Manufacturer: Anamet (Type DE-710), Triangle PWC, Inc. (Type 710), or approved.

### 2.03 CONNECTIONS AND FITTINGS

A. Especially for purpose used.

B. Same material and finish as raceway.

### 2.04 COUPLINGS AND CONNECTORS FOR ELECTRICAL METALLIC TUBING (EMT)

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

B. Interior: Set-screw type shall be permitted:
   1. Screws must be visible and accessible after installation.

C. Manufacturer: Appleton, Raco, Thomas & Betts, or approved.

D. Cast connectors and couplings are not allowed.

### 2.05 CONDUIT HANGERS AND SUPPORTS

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

B. Fastener designed for the purpose may be used in wood or metal stud construction or for support from ceiling tees, ceiling support wires, channel, or beams.
   1. Manufacturer: Caddy, B-Line, or approved.

C. No Drive-nail type anchors in concrete or masonry. Use plastic anchors with screws or para-bolts (sleeve anchor studs).

## Part 3 - EXECUTION

### 3.01 CONDUIT SIZING AND ARRANGEMENT

A. Size conduit for Type THW conductors. Minimum conduit size for home runs to panelboards is 3/4 inch. Individual branch circuits to device or fixture locations may be run in 1/2 inch conduit.

B. Arrange conduit to maintain headroom and present a neat appearance.

C. Route exposed conduit and conduit above accessible ceilings parallel and perpendicular to walls and adjacent piping.

D. Maintain minimum 6 inch clearance between conduit and mechanical piping if practical. Coordinate installation with other trades. Maintain 12 inch clearance between conduit and heat sources such as flues, steam pipes, and heating appliances.

E. Maintain 12 inch clearance above removable ceiling tiles.

F. Run minimum ¾" conduit from each network faceplate location to existing cable tray in accessible ceiling area.

### 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.

C. Group conduit in parallel runs where practical and use conduit rack constructed of steel channel with conduit straps or clamps.
   1. Provide space for 25 percent additional conduit on conduit racks.

D. Do not fasten conduit with wire or perforated pipe straps.

E. Remove all wire used for temporary conduit support during construction, before conductors are pulled.

F. Exposed conduit and tubing attached directly to building surface, use one hole galvanized steel pipe clamps.

G. Conduit and tubing in metal stud walls shall be supported by fasteners approved for the purpose.

H. Conduits rising vertically between studs shall be supported by approved fasteners attached to supports horizontally secured between studs for multiple runs and shall be offset and attached to vertical stud, by an approved fastener, for single runs.

I. Wire suspension systems above suspended ceilings:
   1. Support conduits above suspended ceilings from structure.
   2. Provide a dedicated support wire system for conduits.
   3. Use fasteners and support hardware designed for the purpose.
   4. Do not support conduits from ceiling support wires.

J. Hanger Spacing:
   1. Do not exceed 8 foot 0 inches on center.
   2. Provide one hanger adjacent to each outlet box, and one hanger within 12 inches on each side of a change in direction.

K. Conduits not permitted to be supported from ducts, pipes or other systems foreign to electrical installation.

L. Support conduit as close to ceiling structure as practical. Coordinate conduit location with other trades.

M. Attachment of one hole straps on horizontal runs shall be from above.

**3.03 CONDUIT INSTALLATION**

A. Cut conduit square using a saw; de-burr cut ends.

B. Bring conduit to the shoulder of fittings and couplings and fasten securely.

C. Install no more than the equivalent of four 90 degree bends between boxes.

D. Use conduit bodies to make sharp changes in direction, as around beams.

E. Use hydraulic one-shot conduit bender or factory elbows for bends in conduit larger than 1-1/4 inch size.

F. Avoid condensation between moist warm locations and cool locations by blocking air flow in conduit with "Duct Seal" or similar material.

G. Thoroughly clean interior of conduits.

H. Use suitable conduit caps to protect installed conduit against entrance of dirt and moisture.

I. Provide No. 12 AWG insulated conductor or suitable pull string in empty conduit, except sleeves and nipples.

J. Install expansion joints where conduit crosses building expansion or seismic joints.

**3.04 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.

B. Non Fire-Rated Walls: Silicone RTV foam membrane permitted.

**3.05 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. Flexible conduit may be fished in stud walls.

B. Provide separate ground conductor full length of flexible conduit or outside of conduit.

**3.06 RIGID STEEL OR INTERMEDIATE METAL CONDUIT**

A. Exposed indoor runs where subject to damage up to 8 feet above finished floor.

**3.07 ELECTRICAL METALLIC TUBING**

A. Dry locations where not subject to damage.

B. Concealed in non-masonry/concrete walls or ceiling.

C. Exposed runs above 8 feet in non-protected areas.

**END OF SECTION**

# SECTION 26 05 32

# OUTLET AND JUNCTION BOXES

## Part 1 - GENERAL

### 1.01 SECTION INCLUDES

A. Wall and ceiling outlet boxes.

B. Floor boxes.

C. Pull and junction boxes.

### 1.02 RELATED SECTIONS

A. Section 08305 - Access Doors: Wall and ceiling access doors.

B. Section 26 27 26 - Wiring Devices: Service fittings and fire-rated poke-through fittings for floor boxes.

C. Section 26 27 60 - Cabinets and Enclosures.

D. Section 26 27 80 - Equipment Wiring Systems.

### 1.03 PROJECT CONDITIONS

A. Verify Field measurements are as shown on drawings.

### 1.04 SUBMITTALS

A. Submit product data under provisions of Section 26 01 00.

B. Provide product data showing configurations, finishes, dimensions, and manufacturer's instructions.

## Part 2 - PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS - OUTLET BOXES

A. Bowers.

B. Raco/Bell.

C. Steel City.

D. Thomas and Betts

E. Substitutions: under provisions in Section 260100.

### 2.02 OUTLET BOXES

A. Sheet Metal Outlet Boxes: Galvanized steel

B. Cast Boxes: Aluminum or cast feralloy, deep type, gasketed cover, threaded hubs.

### 2.03 ACCEPTABLE MANUFACTURERS - PULL AND JUNCTION BOXES

A. Circle AW.

B. Hoffman.

C. Rittal.

D. Substitutions: under provisions of Section 26 01 00.

### 2.04 PULL AND JUNCTION BOXES

A. Sheet Metal Boxes: Galvanized steel.

B. Sheet Metal Boxes Larger Than 18 Inches in Any Dimension: Hinged enclosure.

## 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.

B. Electrical box locations shown on Contract Drawings are approximate unless dimensioned. Verify location of floor boxes and outlets in offices and work areas prior to rough-in.

C. Locate and install boxes to allow access. .

### 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.

B. Locate boxes in masonry walls to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat openings for boxes.

C. Provide knockout closures for unused openings.

D. Support boxes independently of conduit.

E. Support boxes above suspended ceilings from structure. Provide dedicated support wires for boxes as required by NEC 300

F. Use multiple-gang boxes where more than one device are mounted together: do not use sectional boxes. Provide barriers to separate wiring of different voltage systems.

G. Install boxes in walls without damaging wall insulation.

H. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes with architectural drawings.

I. Position outlets to locate luminaires as shown on reflected ceiling plans.

J. In inaccessible ceiling areas, position outlets and junction boxes within 6 inches of recessed luminaire, to be accessible through luminaire ceiling opening.

K. Provide recessed outlet boxes in finished areas: secure boxes to interior wall and partition studs, accurately positioning to allow for surface finish thickness. Use stamped steel stud bridges for flush outlets in hollow stud wall, and adjustable steel channel fasteners for flush ceiling outlet boxes.

L. Align wall-mounted outlet boxes for switches, thermostats, and similar devices.

**END OF SECTION**

# SECTION 26 05 53

# ELECTRICAL IDENTIFICATION

## Part 1 - GENERAL

### 1.01 SECTION INCLUDES

A. Nameplates.

B. Wire and cable markers.

C. Pull box and junction box identification.

D. Device plate identification.

### 1.02 RELATED SECTIONS

A. Section 26 27 26 - Wiring Devices.

## Part 2 - PRODUCTS

### 2.01 MATERIALS

A. Nameplates:
   1. Engraved three-layer laminated plastic.
   2. White letters.
   3. Black background.

B. Wire and Cable Markers:
   1. Heat shrink thermo-labels. Brady or Panduit.

C. Labels:
   1. Adhesive Film Labels: Machine printed, in black on clear background, by thermal transfer or equivalent process.

## Part 3 - EXECUTION

### 3.01 INSTALLATION

A. Degrease and clean surfaces to receive nameplates.

B. Install nameplates parallel to equipment lines.

C. Secure nameplates to equipment fronts using screws or drive rivets.
   1. Secure nameplate to inside face of recessed panelboard doors in finished locations.
   2. Secure nameplate to inside face of panelboard doors in unfinished locations.

D. Use stick-on characters for identification of individual wall switch and receptacle cover plates.

### 3.02 WIRE IDENTIFICATION

A. Provide wire markers on each conductor in panelboards pull boxes, and at load connection.

B. Identify with branch circuit or feeder number for power and lighting circuits.

C. Identify control wire number as indicated on equipment manufacturer's shop drawings.

## 3.03 NAMEPLATE ENGRAVING SCHEDULE

A. Identify all electrical distribution and control equipment and disconnect switches at loads served.

B. Letter Height:
   1. 1/8 inch for individual switches and loads served.
   2. 1/4 inch for distribution and control equipment identification.
   3. 1/8 inch identifying voltage rating and source.

C. Transformers:
   1. 1/4 inch; identifying equipment designation.
   2. 1/8 inch; identifying primary source, and secondary load and location.

## 3.04 PULL BOX AND JUNCTION BOX IDENTIFICATION

A. Identify each junction box with complete system description. Examples:
   1. Telephone.
   2. 208 V system.

B. Optional Methods:
   1. Neat hand lettering with permanent black marker.
   2. Engraved nameplates.
   3. Stick on labels.

C. Locations:
   1. On outside of box cover where concealed.
   2. In exposed box locations, locate on inside of box cover.
   3. Identify main pull boxes by number and indicate numbers on record drawings.

## 3.05 DEVICE PLATE IDENTIFICATION:

A. 1/8 inch letter height.

B. Black letter color.

C. Location:
   1. Bottom center of device plate for single gang and bottom center of device for multiple gang outlets.
      a. Provide branch circuit identification (such as "C-37" to indicate Panel “C” Circuit #37) at bottom center of device plate.

**END OF SECTION**

# SECTION 26 09 23

# LIGHTING CONTROL EQUIPMENT

## Part 1 - GENERAL

### 1.01 SECTION INCLUDES

A. Occupancy Sensors.

### 1.02 SUBMITTALS

A. Submit product data under provisions of Section 26 01 00.

B. Submit manufacturers' instructions under provisions of Section 26 01 00.

## Part 2 - PRODUCTS

### 2.01 OCCUPANCY SENSORS

A. Approved manufacturers:
   1. Wattstopper.
   2. System Sensor
   3. Approved substitution.

B. Compatible with electronic loads.

C. No minimum load requirement.

D. Wall mounted dual technology:
   1. 180 degree sensing
   2. 900 square foot coverage
   3. Adjustable sensitivity and time delay

E. Ceiling dual technology:
   1. 180 degree coverage
   2. Adjustable sensitivity and time delay
   3. Additional single pole, double throw isolated relay outputs

## Part 3 - EXECUTION

### 3.01 OCCUPANCY SENSORS

A. Interconnect sensors with power supplies using cable. Install cable open in concealed building spaces. Install cable in raceways when installed on building surfaces.

B. Install sensors and accessories per manufacturer’s recommendations.

C. Select and locate sensors to provide 100% area coverage.

D. Adjust sensor to turn off area lighting circuit(s) if unoccupied for a period of 15 minutes.

E. Provide conduit and wiring as required for circuiting area lighting circuit(s) to power pack.

**END OF SECTION**

SECTION 262416

PANELBOARDS

Part 1 - General

1.01 SECTION INCLUDES

A. Lighting and appliance branch circuit panelboards.

1.02 SUBMITTALS

A. Submit shop drawings for equipment and component devices under provisions of Section 260100.

B. Include:
1. Outline and support point dimensions.
2. Voltage.
3. Main horizontal and vertical bus ampacity and size.
4. Integrated short circuit ampere rating.
5. Circuit breaker arrangement and sizes.

1.03 SPARE PARTS

A. Keys: Furnish one each per panelboard to Owner.

Part 2 - Products

2.01 MANUFACTURERS

A. Eaton.

B. General Electric.

C. ITE.

D. Square D.

2.02 LIGHTING AND APPLIANCE PANELBOARDS

A. Enclosure:
1. Indoor: Type 1, unless otherwise noted.
2. Cabinet size: 6 inches deep, 20 inches wide unless otherwise noted.
3. Provide cabinet with concealed trim clamps, concealed hinge and flush lock all keyed alike. Finish in manufacturer's standard gray enamel.

B. Bussing:
1. Copper bus, ratings per one line diagram.
2. Provide copper ground bus in all panelboards.
3. Minimum Integrated Short Circuit Rating: 10000 amps AIC
4. Bussing shall be sized in accordance with UL 891 limited to a heat rise of 65° C.

C. Molded Case Circuit Breakers:
1. Bolt-on type thermal magnetic molded case with quick-make, quick-break action.
2. Common trip handle (no external brackets) for all poles with "ON," "OFF," and "TRIPPED" positions.
3. UL listed as Type SWD for lighting circuits.

Part 3 - Execution

3.01 INSTALLATION

A. Install panelboards plumb and flush with wall finishes, in conformance with NEMA PD 1.1.

B. Height: 6 ft. 6 inches to center of the grip of the operating handle of the highest switch or breaker.

C. Provide filler plates for unused spaces in panelboards.

D. Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads.

E. Stub 5 empty 3/4 inch conduits to accessible location above ceiling or below floor out of each recessed panelboard.

3.02 FIELD QUALITY CONTROL

A. Measure steady state load currents at each panelboard feeder. Should the difference at any panelboard between phases exceed 20 percent, rearrange circuits in the panelboard to balance the phase loads within 20 percent. Take care to maintain proper phasing for multi-wire branch circuits. Provide written verification to Engineer.

B. Visual and Mechanical Inspection:
   1. Inspect for physical damage, proper alignment, anchorage, and grounding.
   2. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.

END OF SECTION

# SECTION 26 27 26

# WIRING DEVICES

## Part 1 - GENERAL

### 1.01 SECTION INCLUDES

A. Wall switches.

B. Receptacles.

C. Device plates and box covers.

### 1.02 RELATED SECTIONS

A. Section 26 05 32 - Outlet, Pull and Junction Boxes.

B. Section 26 05 53 - Electrical Identification.

### 1.03 SUBMITTALS

A. Submit product data under provisions of Section 26 01 00.

B. Provide product data showing configurations, finishes, dimensions, and manufacturer's instructions.

### 1.04 SUBSTITUTIONS

A. Products specified herein are so specified to establish a minimum level of product quality as determined by the engineer. Except where indicated no substitutions are allowable, equivalent quality products may be submitted to the Architect for approval, under provisions of Section 26 01 00.

## Part 2 - PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS - WALL SWITCHES AND RECEPTACLES

A. Hubbell.

B. Leviton.

C. Arrow Hart..

### 2.02 WALL SWITCHES

A. AC general use quiet type switch with toggle handle. Gray.

B. 20 amp rating, 120-277 volts.

C. Self-grounding type

D. Hubbell 1221 Series.

### 2.03 RECEPTACLES

A. Convenience and straight blade receptacles.
   a. Isolated Ground Receptacles 125 volt, 20 amp, Hubbell IG 5362
   b. Gray

### 2.04 ACCEPTABLE MANUFACTURERS WALL PLATES

A. Hubbell.

B. Leviton.

C. P&S/LeGrand.

D. Substitution: under provisions of Section 26 01 00.

### 2.05 WALL PLATES

A. Decorative Cover Plate:
   1. Smooth stainless steel, 302 alloy with brushed finish.

## Part 3 - EXECUTION

### 3.01 INSTALLATION

A. Switches:
   1. Wall switches 48 inches above floor to top of box.
   2. OFF position down, unless otherwise noted.
   3. Derate ganged dimmer switches as instructed by manufacturer.
   4. Dimmer switches shall not use common neutral.

B. Receptacles:
   1. 18 inches above floor, unless otherwise noted.
   2. 6 inches above counters, unless otherwise noted.
   3. 3 inches above backsplash, unless otherwise noted.
   4. Grounding pole on bottom.
   5. Verify exact height and orientation of outlets with Architectural Details prior to rough-in.
   6. Provide 20 amp rated receptacles.

C. Plates:
   1. Decorative plates on switch, receptacle, and blank outlets in finished areas.
   2. Install device and wall plates flush and level.
   3. Where outlets are adjacent to each other at same mounting heights, install under common device plate, except when outlets are of different voltages, such as telephone and duplex receptacle, unless otherwise noted.

D. Communication Outlets:
   1. Provide mudring at each network faceplate and cable TV outlet locations.
   2. Stub ¾" conduit with bushings at both ends from mudring location to accessible ceiling space.
   3. Provide new J ring supports at locations shown on drawings for communication wiring.

**END OF SECTION**

# SECTION 26 50 00

# LIGHTING FIXTURES

## PART 1 GENERAL

### 1.01 WORK INCLUDED

A. Existing lighting will be reused, refed or relocated as indicated on drawings.

### 1.02 SECTION INCLUDES

A. Interior luminaires and accessories.

### 1.03 RELATED SECTIONS

A. Section 26 27 26- Wiring Devices.

B. Section 26 09 23 - Lighting Control Equipment.

### 1.04 JOB CONDITIONS

A. Existing Conditions:
   1. Verify finish material in locations where lighting fixtures are mounted.
   2. Verify conditions for mounting lighting fixtures and select proper mounting hardware.
   3. Verify fire rating of new and existing ceilings.

## Part 2 - PRODUCTS

### 2.01 NOT USED

## Part 3 - EXECUTION

### 3.01 INSTALLATION

A. Fixture Support:
   1. Light fixtures mounted in or on suspended ceilings shall be positively attached to the suspended ceiling system.

### 3.02 ADJUSTING AND CLEANING

A. Align luminaires and clean lenses and diffusers at completion of work. Clean paint splatters, dirt, and debris from installed luminaires.

B. Touch up luminaire finish at completion of work.

**END OF SECTION**

# SECTION 27 05 28

# COMMUNICATIONS PATHWAYS

## PART 1 GENERAL

### 1.01 WORK INCLUDED

A. This Section includes pathway requirements specifically applicable to the communications sections of this project.

B. Furnish and install communications conduit raceways, boxes, cable trays, innerduct and fittings including:
   1. Communications conduit systems.
   2. Wireway systems**.**
   3. Surface raceway systems.
   4. Telecommunications outlet boxes.
   5. Pull box enclosures.
   6. Cabinets.
   7. Pulltape and duct plugs.
   8. Raceway identification banding.

### 1.02 RELEVANT SECTIONS

A. 27 13 13 Telephone Backbone Cabling

B. 27 13 23 Optical Fiber Backbone Cabling

C. 27 13 33 Category 6A Backbone Cabling

D. 27 15 13 Category 5e Horizontal Cabling

E. 27 70 80 Cable Television Cabling

### 1.03 SUBMITTALS

A. Provide the manufacturer's cut sheets, clearly indicating specific products proposed for use, with the bid submission.

### 1.04 PROJECT RECORD DOCUMENTS

A. Plan drawings showing completions and as-built corrections which indicate type, size, placement, routing, and/or length for raceway and cable tray components; e.g., manholes, hand holes, conduit, wireway, boxes, enclosures, etc.

## PART 2 PRODUCTS

### 2.01 PRODUCT SUBSTITUTIONS

A. Equivalent product(s) may be considered for substitution for those products specified, however, the equivalent product(s) to be approved and show demonstrated and documented equivalence to the product(s) specified. Documentation to include, but is not limited to: product samples, data sheets, and actual test data. The request for product substitution, and supporting documentation, to be submitted, in writing, prior to submitting the bid. Written approval for product substitution to be submitted with the bid.

### 2.02 GENERAL

A. Raceways, Boxes, Enclosures, Cable Tray Materials and Equipment: Labeled and/or listed as acceptable to the authority having jurisdiction as suitable for the use intended.

B. The product identification codes used for the Communications Raceways and Boxes in Part 2,

Products, are summarized in Table 1.

Table 1 - Product Identification

| Product Designation | Product Type |
|---|---|
| RGS | Rigid galvanized steel |
| CRS | PVC externally coated RGS |
| EMT | Galvanized steel tubing |
| PVC | Polyvinylchloride conduit |
| ENT | Electrical nonmetallic tubing |
| LMC | Liquidtight metal conduit |
| LNC | Liquidtight nonmetal conduit |

**2.03 RIGID METAL CONDUIT AND FITTINGS**

A. Conduit:
   1. Type RGS: Rigid galvanized steel.
   2. Type CRS: PVC externally coated conduit; rigid steel conduit with external PVC coating and internal galvanized surface.

B. Fittings and Conduit Bodies: In-line straight-through, threaded, galvanized steel fittings and Type C conduit bodies only; do not use bends or tees, e.g., Lbs.

C. Bonding and Grounding Locknuts and Wedges: Malleable iron with set screws and lug screws.

D. Insulated Bushing: Malleable iron with integral insulated throat, rated for 150 degrees C.

E. Bonding and Grounding Bushing: Malleable iron with integral insulated throat, rated for 150 degrees C, with solder-less lugs or lug screws.

F. Sealing Fittings: Threaded type conduit seal fittings and sealing compound suitable for hazardous location installations in accordance with NEC:
   1. Crouse-Hinds retrofit sealing fitting EYSR.
   2. Crouse-Hind CHICO A sealing compound.

**2.04 ELECTRICAL METALLIC TUBING AND FITTINGS**

A. Type EMT: Electrogalvanized steel tubing.

B. Fittings and Conduit Bodies:
   1. General: in-line straight-through steel or malleable iron fittings and Type C conduit bodies only; do not use bends or tees, e.g. LBs.
   2. Wet Areas: steel compression-type couplings and nipples.
   3. Dry Areas: set screw-type couplings and nipples.

C. Bonding Locknuts: Malleable iron with set screws and lug screws.

D. Insulated Bushing: Malleable iron with integral insulated throat, rated for 150 degrees C.

E. Bonding and Grounding Bushing: Malleable iron with integral insulated throat, rated for 150 degrees C, with solderless lugs or lug screws.

**2.05 CONDUIT ACCESSORIES**

A. Duct Spacers: Nonmetallic base and intermediate duct spacers with locking keyways designed specifically for use with nonmetallic conduit; e.g., Carlon SNAP-LOC duct spacers for 4-inch (100 mm) diameter conduit with 1-1/2-inch (38 mm) separation.
   1. Base Spacer: S288NHN.

2. Intermediate Spacer: S289NHN.

B. Expansion/Deflection Fittings: Similar to Crouse-Hinds XD expansion/deflection coupling or Appleton DF Series deflection and expansion coupling.

C. Pulltape: Measuring and pulling tape constructed of synthetic fiber with plastic jacket, printed with accurate sequential footage marks; e.g., George-Ingraham 1/2-inch (13 mm) tape 9216-JK.

D. Duct Plugs:
1. Aboveground Conduit Openings: Tapered PVC plugs with tab for pulltape; e.g., Carlon 4-inch (100 mm) PVC plugs with pull tab, P258NT.
2. Underground or Underslab Conduit Openings: Removable screwtight compression type duct plugs with wing-nut and corrosion resistant hardware; e.g., Pacific Plastics No. 5900514, George-Ingraham 0605, or Vikimatic P4000WT.

## 2.06 RACEWAY COATING

A. Acceptable Manufacturers:
1. Koppers Bitumastic.
2. Scotchwrap.

B. Bitumastic material or plastic tape.

## 2.07 PENETRATION SEALING SYSTEMS

A. Firestopping: Provide fire barrier penetration sealing materials as specified in Firestopping section.

B. Duct Water Seal: Products suitable for closing underground and entrance duct openings, where innerduct or cable is installed, to prevent entry of gases, liquids, or rodents into the structure; e.g., SEMCO PR 851.

## 2.08 TELECOMMUNICATIONS OUTLET BOXES

A. Sheet Metal Outlet Boxes: Minimum 4-inch by 4-inch by 2-inch-deep (100 by 100 by 50 mm-deep) galvanized steel for use with single- and double-gang plaster rings.

B. Nonmetallic Outlet Boxes: Minimum 4-inch by 4-inch by 2-inch-deep (100 by 100 by 50 mm-deep). Provide gasketed, watertight cover.

C. Cast Boxes: 4-inch by 4-inch by 2-inch-deep (100 by 100 by 50 mm-deep) cast Feralloy, gasketed single- or double-gang cover, threaded hubs. For hazardous locations, provide boxes approved for applicable atmosphere classification.

D. Floor Boxes for Installation in Cast-In-Place Concrete Floors: Flush mounted and fully adjustable formed steel as shown on the Drawings.

E. Plaster Rings: Single or double gang as shown on the Drawings.

## 2.09 PULL BOXES

A. Construction: NEMA Standard No. 250.
1. Type 1 Steel: Galvanized steel enclosures designed for use as junction boxes and pull boxes with flat screw-applied covers, with or without knockouts, and gray enamel finish.

## 2.10 OUSIDE PLANT VAULTS/HANDHOLES

A. Preformed concrete with metal cover or cast iron manhole cover. Utility Vault company or equivalent.

## 2.11 INNERDUCT

A. Outdoor Innerduct: 1-inch (25 mm) and 1-1/4-inch (32 mm) inside diameter corrugated, ribbed, or smooth walled, semi rigid PVC or heavy-wall polyethylene tubing.

B. Indoor Innerduct: 1-inch (25 mm) and 1-1/4-inch (32 mm) inside diameter corrugated, ribbed, or smooth walled, semi rigid nonflammable PVC tubing, which meets UL94V-O vertical flame test for general applications.

C. Plenum-Listed Indoor Innerduct: 1-inch (25 mm) and 1-1/4-inch (32 mm) inside diameter corrugated walled innerduct for use in plenum air handling spaces.

### 2.12 INNERDUCT FITTINGS

A. Couplings: Metallic or nonmetallic quick-connect, reverse threaded, and Schedule 40 couplings for connecting sections of installed innerduct.

B. Conduit Plugs: Compression-type conduit plugs with locking nuts for sealing and securing the outside walls of one or more innerduct ends to the inside wall of 4-inch (100 mm) inside diameter conduits, e.g.:
   1. Four 1-inch (25 mm) innerduct configuration.
   2. Three 1-1/4-inch (32 mm) innerduct configuration.

C. Innerduct Plugs: 1-inch (25 mm) and 1-1/4-inch (32 mm) compression-type innerduct plugs for sealing innerducts, with wing nut for hand tightening and eyebolt for securing pulltape.

D. Innerduct Caps: Removable push-in caps for plugging 1-inch (25 mm) and 1-1/4-inch (32 mm) innerduct.

### 2.13 WIRE BASKET RUNWAY SYSTEMS

A. Manufacturers: Subject to compliance with these Specifications, install wire basket runway. Cablofil, FlexTray, GS Metals.

B. Cable Tray Sections and Components:
   1. General: Except as otherwise indicated, provide metal wire basket runways, of types, classes and sizes indicated; with splice plates, bolts, nuts and washers for connecting units. Construct units with rounded edges and smooth surfaces; in compliance with applicable standards; and with the following additional construction features.
   2. Materials and Finish: Continuous steel welded and formed wire mesh, electro zinc finish.

C. Type of Runway System:
   1. Tray sizes have 4-inch side height.
   2. Supply all straight sections in standard 120 inches, except where shorter lengths are permitted to facilitate tray assembly lengths as shown on Drawings.
   3. Tray Widths: 12 inches, 18 inches, 24 inches.
   4. Make splice plates the fast splice type as indicated below for each tray type.
      a. Make splice plates of yellow zinc dichromate steel.
      b. Furnish splice plates with straight sections and fittings as required by manufacturer.
      c. Finish: Electro zinc.
   5. Wire Basket Runway Supports: Place so that the support spans do not exceed a maximum of 4 feet o.c.

D. Loading Capacities: Wire basket runways to meet NEMA Class Designations.

## PART 3 EXECUTION

### 3.01 WORKMANSHIP

A. Manufactured products, materials, equipment, and components to be provided, conditioned, applied, installed, connected, and tested in accordance with the manufacturer's specifications and printed instructions.

B. The installation of all system components to be carried out under the direction of qualified personnel. Appearance to be considered as important as mechanical and electrical efficiency. Workmanship to meet or exceed industry standards.

C. Place support for framing, raceways, cable trays, backboards, equipment racks, and cabinets.

**3.02 PROTECTION DURING CONSTRUCTION**

A. Protect products from the effects of moisture, corrosion, and physical damage during construction. Except during installation activity in a section, keep openings in conduit, tubing, and wireway capped with manufactured seals during construction.

**3.03 MINIMUM CONDUIT** SIZE

A. 1-inch (25 mm) for aboveground installations unless otherwise indicated on the Drawings.

B. 4-inch (100 mm) for underground applications unless otherwise indicated on the Drawings.

**3.04 CONDUIT TYPE TO BE USED**

A. Install the following types of circular communications raceway in the locations listed unless otherwise indicated on the Drawings.
   1. Interior Dry Locations, Exposed: EMT with set screw fittings.
   2. Interior Dry Locations, Concealed (Not Embedded in Concrete): EMT with set screw fittings.
   3. Interior Wet Locations: EMT with compression fittings.
   4. Exterior, Exposed Including Roof: Rigid steel conduit.
   5. Concrete-Encased or Buried Duct Banks:
      a. PVC Schedule 40 conduit.
      b. Rigid steel conduit when additional protection is required.
   6. Flexible Conduit (Interior Exposed):
      a. Liquidtight flexible metal conduit for use with copper cable.
      b. Liquidtight flexible nonmetallic conduit for use with fiber optic cable.
   7. Conduits that are to be used for service entrance conductors shall be either:
      a. Concrete encased PVC schedule 40 or
      b. Rigid or Intermediate metallic conduit (RMC or IMC)

**3.05 CONDUIT BENDS AND SWEEPS**

A. Make changes in direction of communications conduit runs with sweeps of the longest possible radius.

B. Make sweeps in parallel or banked runs of conduits, 2 inches (50 mm) and larger in diameter, from the same center or centerline so that sweeps are parallel and of neat appearance.

C. Field-Made Bends and Sweeps:
   1. Use an acceptable hickey or conduit-bending machine.
   2. Do not heat metal raceways to facilitate bending.
   3. Before installing 4-inch (100 mm) field-made sweeps in duct banks, pull a 3-1/2-inch (89 mm) diameter by 12-inch (300 mm) long mandrel through duct sections to verify circularity and sweep radius.

D. The angular sum of the bends between pull points and/or pull boxes to not exceed 180 degrees.

E. Minimum Inside Bend Radius for Communications Conduit Bends, Sweeps, Boxes, and Fittings:
   1. Underground or Underslab 4-inch (100 mm) Conduit: 60 inches. (1.5 m)
   2. Other Conduit Runs:
      a. One-inch (25 mm) conduit, 11 inches (275 mm).
      b. Two-inch (50 mm) conduit, 21 inches (525 mm).
      c. Three-inch (75 mm) conduit, 31 inches (775 mm).
      d. Four-inch (100 mm) conduit, 40 inches (1000 mm).
      e. Other sizes, 10 times the inside diameter of the conduit.

F. Do not install boxes, bends, elbows, tees, conduit bodies, and other conduit fittings, which do not provide for the minimum inside cable bend radius specified in paragraph E above.
   1. Conduit Bodies: in-line straight-through Type C condulet fittings can be used as pull boxes

for conduit up to a maximum of 2 inches (50 mm) ID. Other conduit fittings, which include direction changes such as E, L, LB, LR, LL, LRT, TA, TB, and X, are not allowed.

2. Refer any design or installation conflicts with these requirements to the Owner.

### 3.06 PENETRATIONS

A. Seal conduit entering structures at the first box or outlet to prevent the entrance of gases, liquids, or rodents into the structure.
   1. Empty Conduits: Removable screwtight duct plugs.
   2. Innerduct Installed: Suitable duct water seal between conduit and innerduct. Manufactured seals in empty innerduct.
   3. Cable Installed: Suitable duct water seal between conduit and cable, or between innerduct and cable.

B. Concrete Sleeves: Conduits routed perpendicular through floors, walls, or other concrete structures to pass through cast-in-place conduit sleeve openings wherever possible, or appropriate size holes to be bored to accommodate the installation of conduit sleeves. The size and location of the holes to not impair the structure's integrity.
   1. Concrete Boring: Bore a hole in the concrete with a diameter of 1/2 to 1 inch (13 to 25 mm) larger than the conduit sleeve to be installed. Grout around the conduit sleeve and finish to match existing surroundings.
   2. Conduits that rise vertically through a slab to be stubbed 6-inches (150 mm) above the floor and capped pending future use.

C. Drywall Sleeves: Install insulating throat bushings on both ends of conduit sleeves placed in fire-rated walls using drywall construction.

D. Where conduit enters a structure through a concrete roof or membrane waterproofed wall or floor:
   1. Provide a watertight seal.
   2. With Concrete Encasement: Install watertight entrance seal device on the accessible side.
   3. Securely anchor malleable iron body of watertight entrance seal device into construction with one or more integral flanges.
   4. Secure membrane waterproofing to watertight entrance seal device in a permanent, watertight manner.

E. Where raceways penetrate fire-rated walls, floors, or ceilings, fire stop openings around communications penetrations to maintain the fire-resistance rating as specified in Firestopping section.

### 3.07 ABOVE-GROUND CONDUIT INSTALLATION

A. Support conduit installed in aboveground interior and exterior locations at a maximum of 7 feet (2.1 m) on center.

B. Group conduit in parallel runs where practical and use conduit rack constructed of steel channel with conduit straps or clamps.

C. Securely attach aboveground conduit under the provisions of this Section.

D. Conceal conduit in finished areas, leave exposed in unfinished areas and where not possible to conceal. In finished areas, the Owner will make the final decision on conduit concealment.

E. Run exposed and concealed conduits parallel or perpendicular to walls, structural members, or intersections of vertical planes to maintain headroom and provide a neat appearance. Follow surface contours as much as possible.

F. No section of conduit located within buildings to exceed 100 feet (30 m) in length between pull points and/or pull boxes. Pull points in conduits 2" and larger shall not be conduit bodies, but rather boxes or wireway.

G. Expansion/Deflection Joints:

1. Where indicated on the Drawings, provide specific purpose expansion/deflection fittings for conduit crossing building expansion/deflection joints in structures or concrete slabs. Expansion fittings to have copper bonding jumper.
2. For PVC conduit, provide expansion/deflection joints for 25 degrees F maximum temperature variation. Install in accordance with manufacturer's instructions.
3. For rigid steel conduit located in exterior areas, provide expansion/deflection joints for maximum site temperature variation, installed in accordance with manufacturer's instructions.

H. Provide each conduit passing from a nonhazardous or noncorrosive area to a hazardous area and each conduit entering an enclosure within a hazardous area with a sealing fitting in accordance with NEC Article 500. The sealing fitting to be UL listed and to be filled with approved sealing compound of the same manufacture.

I. Hubs, Bushings, and Insulating Sleeves:
1. Interior Box and Cabinet Connections: Install insulating throat connectors wherever conduit terminates in boxes or cabinets. In addition, install bonding type locknuts at metallic conduit terminations.
2. Wet and Hazardous Box and Cabinet Connections: Use watertight threaded conduit sealing hubs with insulated throat and bonding type locknuts for fastening rigid steel conduit to cast or sheet metal pull boxes.
3. Exposed Conduit Terminations: Cap exposed steel communication conduit ends with bushings or smooth collars to protect cable sheath.

J. Flexible Conduit:
1. Make no bends in flexible conduit that exceed allowable bending radius of the cable to be installed or that significantly restricts the conduit's flexibility.
2. A flexible conduit section to be long enough to allow the item to which it is connected to be withdrawn or moved off its base.
3. For final connection to TO's or equipment, where flexible connection is required to minimize vibration or where required to facilitate removal or adjustment of equipment, provide 12-foot (3600 mm) minimum lengths of flexible conduit or as indicated on the Drawings.

### 3.08 PULLTAPE AND DUCT PLUGS

A. Following conduit installation, install pulltape (muletape) with preprinted foot markers in each empty conduit containing a bend or over 10 feet (3000 mm) in length, except sleeves, nipples, and runs with openings in cleanroom areas. Tie the pulltapes securely to duct plug or wall racking at each end.

B. Immediately after pulltape installation, for conduit openings on conduits underground, install screwtight, removable, watertight, and dust-tight duct plugs in conduit ends.

C. Verify lengths at the time of installation and provide as-built documentation.

### 3.09 WIREWAY TYPE TO BE USED

A. Install the following types of wireway in the locations listed unless otherwise indicated on the Drawings:
1. Interior, Exposed: steel.
2. Interior, Concealed: not approved.
3. Exterior, Exposed: steel or nonmetallic.

### 3.10 WIREWAY INSTALLATION

A. Install wireway, as indicated on the Drawings.

B. Securely support wireways at intervals not to exceed 5 feet (1500 mm) and at each end or joint for individual sections.

C. Attach wireways and related materials under the provisions of this Section.

D. Run exposed wireways parallel or perpendicular to walls, structural members, or intersections of vertical planes to maintain headroom and provide a neat appearance.

E. Close dead ends of wireway with fittings by the same manufacturer.

F. Gasket each joint in oiltight gutter.

G. Mount raintight gutter in horizontal position only.

H. Maintain grounding continuity between raceway components to provide a continuous grounding path.

### 3.11 TELECOMMUNICATIONS OUTLET BOX INSTALLATION

A. Provide 4-inch by 4-inch by 2-inch (100 mm by 100 mm by 50 mm) deep outlet boxes for mounting telecommunications outlets with single- or double-gang plaster rings as required, or as indicated on the Drawings.

B. Do not install outlet boxes back to back in walls. Provide minimum 6-inch (150 mm) separation, except provide minimum 24-inch (600 mm) separation in acoustic-rated walls.

C. Locate outlet boxes in masonry walls to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat openings for outlet boxes. Use boxes with sufficient depth to permit conduit hubs to be located in masonry void spaces.

D. Provide knockout closures for unused openings.

E. Support telecommunications outlet boxes independently of conduit.

F. Use multiple-gang boxes where more than one device is mounted together; do not use sectional outlet boxes.

G. Install outlet boxes in walls without damaging wall insulation.

H. Coordinate mounting heights and locations of outlet boxes mounted above counters, benches, and backsplashes.

I. Provide recessed outlet boxes in finished areas; secure boxes to interior wall and partition studs, accurately positioning to allow for surface finish thickness. Use stamped steel stud bridges for flush outlet boxes in hollow stud wall.

J. Provide cast outlet boxes in exterior and wet locations.

### 3.12 RACEWAY IDENTIFICATION BANDING

A. Degrease and clean surfaces to receive tape labels.

B. Exposed conduits and wireway, including raceways above lay-in or accessible ceilings, together with associated pull boxes to be banded at intervals of not over 10 feet (2500 mm) and at direction changes. Two-band identification to be different contrasting colors as follows:

| Raceway Use | Color |
|---|---|
| Grounding | Green |
| Building fire alarm system/voice evacuation | Red |
| Telecom/data | Yellow |
| Facility management system (FMS) and general control circuitry | Blue and black |
| CCTV | White |
| Building monitoring and security | Gray |
| Controls (non-FMS) | Brown and white |

### 3.13 GENERAL CABLE TRAY INSTALLATION METHODS

A. Cut standard straight sections of materials to length in the field.

B. Deburr and file rough cable tray edges and any cut sections.

C. Cable tray locations shown on the Drawings are approximate unless dimensioned.

D. Install cable tray as shown on the Drawings and securely attach under the provisions of this Section.

E. All cable tray ladder or trough to be accessible.

F. Maintain minimum 6-inch (150 mm) clearance between cable tray and piping. Locate cable tray at least 12 inches (300 mm) away from heat sources such as parallel runs of flues, steam or hot water pipes, and heating appliances.

G. Run exposed and concealed cable tray parallel or perpendicular to walls, structural members, or intersections of vertical planes to maintain headroom and provide a neat appearance.

H. Passageways to not be obstructed.

I. Cable tray routed at the ceiling to be routed within the assigned communications utility space.

J. Install appropriate cable tray bends, dropouts, and other accessories to protect minimum cable bend radius and provide adequate support at locations where cable direction changes occur.

### 3.14 PENETRATIONS

A. Provide firestopping per code requirements at all fire wall penetrations.

### 3.15 INNERDUCT TYPE TO BE USED

A. Underslab and Underground Conduit Installation: Outdoor or indoor innerduct.

B. Aboveground, Exterior, and Interior Conduit Installations: Indoor innerduct.

C. Interior Exposed Locations Including Cable Tray Installations:
   1. Nonplenum Areas: Indoor innerduct.
   2. Plenum Areas: Plenum-listed innerduct.

### 3.16 INNERDUCT INSTALLATION

A. Pull innerduct through conduit and wireways, or place innerduct in cable trays using continuous unspliced lengths of innerduct between pull boxes, and/or section termination points as indicated on the Drawings.

B. Cut innerduct square. Deburr cut ends.

C. Bring innerduct to the shoulder of fittings and couplings and fasten securely.

D. Wipe innerduct and fittings clean and dry before joining. Apply full, even coat of cement to entire area that will be inserted into fitting. Let joint cure for 20 minutes minimum.

E. Provide suitable innerduct slack in pull boxes, and at turns to ensure that there is no kinking or binding of the tubing.

F. Make changes in direction of communications innerduct runs with sweeps of the longest possible radius and at least 10 times the inside diameter of the innerduct.

G. During innerduct pulling, care to be taken to avoid excessive tension, which can cause deformation of the innerduct. Inspect innerduct following placement and replace any damaged sections.

H. Indoor Conduit Installation:
   1. Arrange innerduct neatly, cut to proper length, and remove surplus. Provide trained and

bundled innerduct pigtails extending at least 18 inches (450 mm) beyond exposed conduit openings.

2. At locations where the ends of innerduct sections appear in a pull box, join the pulltape and then splice innerduct sections together using couplers which do not reduce the inside diameter of the innerduct.

I. Cable Tray Installation: Tie wrap innerduct to one side of vertical ladder rack every 2 feet (600 mm) minimum, and to one side of horizontal ladder-type cable tray every 5 feet (1500 mm) minimum.

J. Following installation, visually inspect innerduct, remove any burrs at openings, and, if necessary, clean innerduct interior.

### 3.17 PULLTAPE AND INSTALLATION

A. All conduit runs longer than 10ft shall have pulltape with pre-printed footage markers installed.

B. Following conduit or innerduct installation, install pulltape (muletape) with preprinted foot markers in all sections longer than 10ft, except runs with openings serving cleanroom areas. Tie the pulltape securely to wall racking at each location.

C. Verify lengths at the time of installation and provide as-built documentation.

### 3.18 GROUNDING

A. Provide ground connections and bonding continuity between raceway and cable tray sections, boxes, enclosures, cabinets, and fittings as required.

**END OF SECTION**

# SECTION 27 13 13

# TELEPHONE BACKBONE CABLING

## PART 1 GENERAL

### 1.01 WORK INCLUDED

A. Furnish and install all labor and materials required for the installation of a voice backbone cabling distribution system. This system is intended to provide for distribution of traditional analog and digital dial tone. Owner will provide all patch cords, cross connects, networking equipment, telephone and monitoring equipment. Close coordination with the owner will be required.

### 1.02 RELEVANT SECTIONS

A. 27 05 28 Telecommunications Pathways

B. 27 13 23 Optical Fiber Backbone Cabling

C. 27 13 33 Category 6A Backbone Cabling

D. 27 15 13 Category 5e Horizontal Cabling

E. 27 70 80 Cable Television Cabling

### 1.03 QUALITY ASSURANCE

A. Do all work in accordance with the guidelines published in EIA/TIA standard 568 and 569. Where conflicts exist, the plans and specifications shall take precedence. All manufacturer installation instructions shall be followed.

B. All workers involved in the installation and termination of cable shall have at least one year of experience. No less than 33% of the workmen on the job shall have attended a vendor sponsored training program covering installation and termination of cable.

### 1.04 SUBMITTALS

A. Submit five sets of shop drawings and product data (or a greater number if specified in Division 1 “Submittals” Section). Submittals will be required for the following items.
   1. Product data for all products being proposed.
   2. Backboard layout for voice backboard in the telecommunications room/Intermediate Distribution Facility (IDF).

### 1.05 GUARANTEE

A. Guarantee all work against faulty and improper material and workmanship for a minimum period of 1 year from the date of final written acceptance by Owner, except where guarantee or warranties for longer terms are specified herein.

B. Upon notification of a problem, the warranty provider shall furnish within 48 hours and at no cost to the owner, such labor and materials as are needed to restore the system to proper operation.

## PART 2 PRODUCTS

### 2.01 PRODUCTS

A. Outdoor telephone backbone
   1. Backbone cable: any 24 AWG REA PE89 or PE39 cable, pair count as specified on drawings.
   2. Termination: Circa Enterprises 1880 ECA, sized to match pair count of cable, fully populated with Circa 3B1FS 5-pin protector modules.

B. Indoor telephone backbone

1. Backbone cable: Any ARMM type shielded twisted pair, pair count as specified on drawings.
2. Termination: 110 blocks with legs with C5 block connectors, sized appropriately to accommodate specified pair count.
3. 110 wire management: Jumper troughs installed between each 300 pair of 110 blocks.

## PART 3 EXECUTION

### 3.01 GENERAL INSTALLATION

A. The Contractor shall furnish and install all cabling in accordance with these specifications, and as indicated on the cable schedules and drawings. Manufacturer installation specifications shall take precedence if there is a conflict with this section.

B. Install each cable as an uninterrupted conductor section between the designated termination points, unless otherwise directed by the cable installation specifications. There shall be no splices or mechanical coupler installed between the cable points of origin and termination except as shown on drawings and or specifications.

C. Contractor is responsible for insuring that cable jacket is suitable for the environment in which it is placed i.e.: CM, CMR, CMP rated. Unless otherwise noted on the drawings, all cable should be assumed to be rated CMR.

D. All cable shown on drawings to be routed in conduit and cable tray system, where provided.

E. At the same time cable is pulled into a cable pathway, also install a mule tape of appropriate size to facilitate future cable pulls along those pathways.

F. Surface mounted raceway or exposed cable not specifically designated require written approval of the architect.

G. Provide fire stopping at all locations where cables penetrate fire rated surfaces. Materials and methods used shall be acceptable to the code authority having jurisdiction and shall maintain the fire integrity of the wall, floor, or ceiling.

H. Contractor shall closely coordinate and work with the owner on the construction of racking and panels and termination and routing of the cabling in the telecommunications room, overhead basket tray, and into the open relay racks.

### 3.02 TELEPHONE BACKBONE INSTALLATION

A. Follow manufacturer instructions when installing and terminating cable.

B. When breaking out cables with more than one 25-pair binder group, each binder group must be identified with a cable tie of appropriate color at the point of fan out.

C. Outdoor telephone backbone cable:
   1. Terminate cable in lighting protection units on both ends of the cable.
   2. Install shield bond connectors at each end of each cable. Bond this connector to the bonding point inside the lightning protection unit.
   3. Bond the lightning protection unit to the telecommunications grounding busbar.

D. Indoor telephone backbone cable:
   1. Terminate cable onto wall mounted 110 blocks. The location of this telephone backbone cabling block shall be coordinated with the work specified in the horizontal cabling section. The telephone backbone cabling block shall be placed under any 110 blocks installed as part of the work specified by the horizontal cabling specification.
   2. Install shield bond connectors at each end of each cable. Bond this connector to the telecommunications grounding busbar.

E. Lightning protection, backbone 110 blocks, and special dial tone 110 blocks shall be organized into a logical and easy to use cross connect field, with suitable wire management for cross

connects between blocks, both vertically and horizontally. The scope of this work does not include installation of the special dial tone 110 blocks, however, it does include coordination with this work to provide a logical and easy to use cross connect field complete with cable management for routing of cross connect jumpers.

### 3.03 IDENTIFICATION

A. Telephone Backbone Cable Identification
   1. Each telephone backbone cable shall be assigned a unique identifier consisting of the following components:
      a. Abbreviation for the originating telecommunications room. Typical originating telecommunications room is MDF.
      b. Abbreviation for the terminating telecommunications room. Typical terminating telecommunications room will be IDF-B, IDF-C, etc.
      c. Pair count.
   2. The unique cable ID shall be constructed from these 3 components. For example, if you were labeling a 25 pair cable that is run from the MDF room to IDF D, your cable label would be MDF-IDF-D-25.
   3. Cable shall be labeled at each telecommunication room, near the location that the cable enters the telephone punch blocks.
   4. Cable shall be labeled every 50’ along the length of the cable in open trays, and on each side of all wall penetrations.
   5. Cable routed in conduit systems shall be labeled at each pull point. This includes the every time cable enters or exits a conduit, j-box, or pull vault.
   6. Labels shall consist of permanent typewritten label systems. Hand written labels are not acceptable.

### 3.04 IDF AND SERVICE ENTRANCE ROOMS

A. Construction of the backboards, overhead ladder racking, and open relay racks is specified in other sections and is not included in work specified in this section.

B. Telephone backbone cable shall be routed onto overhead ladder racking systems and around the room to the backboard location indicated for termination of telephone backbone cabling.

### 3.05 TERMINATION HARDWARE

A. Quantities of termination blocks, racks, splice enclosures, and patch panels, etc. shown on drawings are illustrative only and are meant to indicate the general configuration of the work. The Contractor is responsible for providing the correct quantities of termination hardware required to terminate the volume of cable described herein and shown on the drawings.

### 3.06 CROSS-CONNECT

A. The owner will perform all cross-connects and patching unless otherwise noted.

### 3.07 GROUNDING

A. This specification does not include a grounding system. Grounding is specified elsewhere. That work will install a ground busbar mounted on the backboard in the IDF.

B. A 6AWG insulated conductor shall be run from the telecommunications grounding busbar to the shield of the indoor cable or to the ground point of the outdoor lightning protection.

C. All grounding shall be in compliance with the NEC code Article 800, Article 250, well as EIA/TIA standard 607.

### 3.08 CABLE TESTING

A. General
   1. Provide 48 hour advance notice of testing.

2. Visually inspect all cables, cable reels, and shipping cartons to detect cable damage incurred during shipping and transport. Return visibly damaged items to the manufacturer.
3. Conduct cable testing as described below upon completion of installation. Test fully completed systems only.
4. Remove all defective cables from pathways system. Do not abandon cables in place.
5. The Engineer reserves the right to observe the conduct of any or all portions of the testing process.
6. The Engineer further reserves the right to conduct, using Contractor equipment and labor, a random re-test of up to five percent (5%) of the cable plant to confirm documented test results.
7. All test results and corrective procedures are to be documented and submitted with the as-built drawings.

B. Telephone backbone testing
   1. All telephone backbone twisted pair cabling shall be tested for grounds, shorts, continuity of conductors and shields, reversals, and transpositions. The contractor shall guarantee 99% good pairs on all backbone cable with no more than one bad pair in any binder group.

### 3.09 ACCEPTANCE

A. Upon receipt of the Contractor's documentation of cable testing, the Engineer will review the installation and may request a test in his presence, of up to 1% of the cables/wires installed.

### 3.10 AS-BUILT DOCUMENTATION

A. As built documentation shall include 3 copies of the following:
   1. Annotated CAD prints and disks of the electrical set of prints indicating routes of installed cables, slack loop locations, and termination points.
   2. All test results both in machine readable format as well as printed neatly bound and organized. Each test shall clearly indicate cable and pair designations

**END OF SECTION**

# SECTION 27 13 23

# OPTICAL FIBER BACKBONE CABLING

## PART 1 GENERAL

### 1.01 WORK INCLUDED

A. Furnish and install all labor and materials required for the installation of a Corning fiber cable system.

B. Owner will provide all patch cords, cross connects, networking equipment, telephone and monitoring equipment. Close coordination with the owner will be required.

C. The scope of this work includes coordination with the division 28 access control and CCTV security contractors who may need to place UTP cable and patch panels in open relay racks in the IDF.

### 1.02 RELEVANT SECTIONS

A. 27 05 28 Telecommunications Pathways

B. 27 13 13 Telephone Backbone Cabling

C. 27 13 33 Category 6A Backbone Cabling

D. 27 15 13 Category 5e Horizontal Cabling

E. 27 70 80 Cable Television Cabling

### 1.03 QUALITY ASSURANCE

A. Do all work in accordance with the guidelines published in EIA/TIA standard 568 and 569. Where conflicts exist, the plans and specifications shall take precedence. All manufacturer installation instructions shall be followed. Where conflicts exist between manufacturer instructions and these plans and specifications, the manufacturer instructions shall take precedence.

B. The installed system shall be covered by the Corning Cable Systems Corning Extended Warranty Program.

### 1.04 SUBMITTALS

A. Submit five sets of shop drawings and product data (or a greater number if specified in Division 1 “Submittals” Section). Submittals will be required for the following items.
   1. Evidence that installing contractor is certified by Corning
   2. All product data.
   3. Rack layouts, including panels and wire management for all racks and cabinets.

### 1.05 GUARANTEE

A. The installed optical fiber cable system shall be covered by the Corning LANscape Extended Warranty Program. This warranty must cover each product component installed as well as the total performance of the optical fiber cable system. Corning Cable Systems shall guarantee to repair or replace defective products free of charge after installation.

## PART 2 PRODUCTS

### 2.01 PRODUCTS

A. Fiber optic distribution units shall be sized according to total number of fiber panels or modules installed:
   1. 1 to 4 panels/modules: Corning CCS-03U with integrated spice housing
   2. 4 to 12 panels/modules: Corning CCH-04U

3. Above 12 panels/modules: provide as many Corning CCH-04U as are required to accommodate the panels/modules.

B. Rack Mount Fiber Optic Splice Housing shall be sized according to the number of splice trays required.
   1. 1 to 2 splice trays: no dedicated splice housing required if using Corning CCS-03U
   2. 1 to 12 splice trays: Corning CSH-03U
   3. 12 to 22 splice trays: Corning CSH-05U

C. All fiber cables shall be of an all dielectric construction

D. Outdoor Fiber Cable Package
   1. Cable must be warranted by the Corning for use in outdoor applications and listed for use in applications requiring a UL listing of CMR or OFNR.
   2. Cable must utilize loose buffer tube construction with no more than 12 fibers per buffer tube.
   3. Cable must be water blocked, either with construction flooded or gel free with water swellable yarns and tapes.

E. Indoor Fiber Cable Package
   1. Cable must fire rated for use in the space it is installed.
   2. Individual fiber subunits shall consist of 900 micron tight buffer.

F. Multi Mode Fiber
   1. 62.5 micro multi mode fiber cable: Corning 62.5µm/125µm. Attenuation: 3.0 dB/km @ 850 nm; 1.5 dB/km @ 1300 nm. Minimum effective modal bandwidth: 200/500 Mhz/km.
   2. Multi mode ST fiber panels: Corning CCH-CP06-15T 6-fiber ST Panels
   3. Multi mode ST connectors: Corning 95-101-52-SP 62.5 micron anaerobic-cure connectors

G. Single Mode Fiber
   1. Cable: Corning SMF28 single mode fiber.
   2. 6-Fiber Single mode SC fiber modules pre-loaded with six factory SC/UPC pigtails: Corning CCH-CP06-3C-P03RH
   3. 12-Fiber Single mode SC fiber modules pre-loaded with twelve factory SC/UPS pigtails: Corning CCH-RM12-39-P03RH.
   4. Splice Trays: Corning M67-048 tray for 12 single fiber heat shrink fusion splices.

H. Racking and Cabinets:
   1. All racking will be provided by work in other sections. No racking is specified in this section.

## PART 3 EXECUTION

### 3.01 GENERAL INSTALLATION

A. The Contractor shall furnish and install all cabling in accordance with these specifications, and as indicated on the cable schedules and drawings. Corning installation specifications shall take precedence if there is a conflict with this section.

B. Install each cable as an uninterrupted conductor section between the designated termination points, unless otherwise directed by the cable installation specifications. There shall be no splices or mechanical coupler installed between the cable points of origin and termination except as shown on drawings and or specifications.

C. Contractor is responsible for insuring that cable jacket is suitable for the environment in which it is placed i.e.: OFNR, OFNP rated. Unless otherwise noted on the drawings, all cable should be assumed to be rated OFNR.

D. All cable shown on drawings to be routed in conduit and cable tray system.

E. At the same time cable is pulled into a cable pathway, also install a mule tape of appropriate size to facilitate future cable pulls along those pathways.

F. Surface mounted raceway or exposed cable not specifically designated require written approval of the architect.

G. Provide fire stopping at all locations where cables penetrate fire rated surfaces. Materials and methods used shall be acceptable to the code authority having jurisdiction and shall maintain the fire integrity of the wall, floor, or ceiling.

H. Contractor shall closely coordinate and work with the owner on the construction of racking and panels and termination and routing of the cabling in the telecommunications room, overhead basket tray, and into the open relay racks and cabinets.

**3.02 FIBER OPTIC CABLE INSTALLATION**

A. Manufacturer instructions shall be carefully followed during the installation of fiber optic cable. Particular attention should be paid to pulling tension and bend radius.

B. At least 30ft of slack cable shall be coiled neatly and mounted to the telecommunications backboards using Velcro tie wraps in at each termination point.

C. Each cable shall be individually attached to the respective fiber enclosure by mechanical means. The cables strength member shall be securely attached the cable strain relief bracket in the enclosure.

D. Fiber optic splicing/distribution shall be placed at the top of the left-most rack or cabinet in the IDF when viewed from the front of the rack or cabinet unless otherwise noted on the drawings or in this specification.

E. Indoor Fiber Cable
   1. Where routed through tray system, all indoor fiber cable shall be installed in plenum rated inner duct.
   2. Inner duct is not required where cable is installed in conduit and that conduit does not contain any other than fiber optic cables. In conduits that are populated with other cabling, inner duct shall be provided and installed.

F. Outdoor Fiber Cable
   1. Each intermediate vault shall have 80ft of slack cable coiled and stored neatly.
   2. Fanout kits shall be installed on all buffer tubes containing multi mode fiber.
   3. Fanout kits are not required for single mode fiber.

G. Multi Mode Fiber Cable
   1. Multi mode fiber cable shall be terminated with ST anaerobic-cure connectors.
   2. Fiber shall be hand or machine polished according to Corning instructions.
   3. Terminated fiber shall be mounted in standard color code order into ST bulkhead panels mounted in the fiber optic enclosures.

H. Single Mode Fiber Cable
   1. Single mode fiber cable shall be terminated by fusion splicing factory SC/UPC pigtails modules onto the backbone cabling.
   2. The fiber count in the SC/UPC pigtail modules shall be matched to the fiber count in the cabling being terminated.
      a. If a cable has 6 single mode fibers, then a 6-fiber pigtail module shall be used to terminate that cable.
      b. If a cable has 12 or multiples of 12 single mode fibers, then 12-fiber pigtail modules shall be used to terminate that cable.
   3. Fiber slack of buffer tubes or indoor fiber sub-units shall be neatly coiled within the fiber splice enclosure. No slack loops of buffer tubes shall be allowed in the cabinet or on the relay rack.
   4. Each fiber cable shall be stripped to expose the 6 or 12-fiber sub units or buffer tubes upon entering the fiber splice enclosure and the sub units or buffer tubes routed to the splice tray.

5. A maximum of 12 strands of fiber shall be spliced in each tray and no more than one cable shall be spliced in a tray, which means that some trays will only contain 6 splices.

**3.03 IDENTIFICATION**

A. Fiber Optic Backbone Cable Identification
   1. Each fiber optic cable shall be assigned a unique identifier consisting of the following components:
      a. Abbreviation for the originating telecommunications room. Typical originating telecommunications room is Core1 or Core 2.
      b. Abbreviation for the terminating telecommunications room. Typical terminating telecommunications room will be MDF, IDF-B, IDF-C, Warehouse IDF, etc.
      c. Fiber type: MM for multi-mode, SM for single-mode, or HY for a hybrid multi and single mode cable.
      d. Strand count. If cable is a hybrid multi and single mode cable, the multi mode strand count should be indicated first, followed by the character slash "/" followed by the single mode strand count.
   2. The unique cable ID shall be constructed from these 4 components. For example, if you were labeling a hybrid 24 multi mode, 12 single mode fiber cable run from the MDF to IDF B, your cable label would be MDF-IDFB-HY-24/12.
   3. Cable shall be labeled at each telecommunication room, near the location that the cable enters the fiber optic panels or splice enclosures.
   4. Each splice tray shall be clearly labeled with cable ID and specific strand counts in that tray.
   5. Cable shall be labeled every 50' along the length of the cable in open trays, and on each side of all wall penetrations.
   6. Cable routed in conduit systems shall be labeled at each pull point. This includes the every time cable enters or exits a conduit, j-box, or pull vault.
   7. Fiber optic panels shall be labeled with the destination of the fiber cable, the fiber type, the strand number within the cable.

**3.04 IDF ROOMS**

A. Construction of the backboards, overhead ladder racking, open relay racks, and server cabinets is specified in other sections and is not included in work specified in this section.

B. In all IDFs, the fiber optic cable shall be routed onto overhead ladder racking systems. The installation shall be coordinated with work by others.

C. Fiber optic slack loops shall be placed in out of the way locations on the walls. Slack loops shall not be placed on the overhead ladder racking, open relay racks, or server cabinets.

D. The sections that specify the work of installing the open relay racks in IDF rooms has stipulated that space at the top of the left most rack is to be reserved for fiber optic enclosures that will be installed as work specified in this section. Close coordination with the contractor installing the open relay racks is required.

**3.05 TERMINATION HARDWARE**

A. Quantities of termination blocks, racks, splice enclosures, and patch panels, etc. shown on drawings are illustrative only and are meant to indicate the general configuration of the work. The Contractor is responsible for providing the correct quantities of termination hardware required to terminate the volume of cable described herein and shown on the drawings.

**3.06 CROSS-CONNECT**

A. The owner will perform all cross-connects and patching unless otherwise noted.

**3.07 CABLE TESTING**

A. General

1. Provide 48 hour advance notice of testing.
2. Visually inspect all cables, cable reels, and shipping cartons to detect cable damage incurred during shipping and transport. Return visibly damaged items to the manufacturer.
3. Conduct cable testing as described below upon completion of installation. Test fully completed systems only.
4. Remove all defective cables from pathways system. Do not abandon cables in place.
5. The Engineer reserves the right to observe the conduct of any or all portions of the testing process.
6. The Engineer further reserves the right to conduct, using Contractor equipment and labor, a random re-test of up to five percent (5%) of the cable plant to confirm documented test results.
7. All test results and corrective procedures are to be documented and submitted with the as-built drawings.

B. Fiber Optic Cable Testing
   1. After all terminations have been completed, tests will be conducted using an OTDR prior to loss testing. Contractor will OTDR all fibers in both directions. OTDR testing will verify proper installation of the cable, splices, and connectors and will establish the length of the cable to be used during acceptance.
   2. After OTDR testing on a span is complete, contractor shall then perform loss testing at two wavelengths specified below. Loss tests shall be recorded for each fiber for each wavelength. These values shall be used to perform acceptance calculations described below.
      a. Multi Mode fiber wavelength testing shall be at 850nm and 1310nm.
      b. Single Mode fiber wavelength testing shall be at 1310nm and 1550nm.
   3. Contractor shall perform span loss calculations to compute the maximum allowed loss for each span at each wavelength. These span loss calculations shall be compared to measured performance. Span loss shall be calculated based on manufacturer guaranteed performance at the measured wavelength adjusted by the length of the cable. To that figure, span loss shall add .5dB for each mated connector and .25dB for each fusion splice. This figure is the maximum loss at that wavelength that is allowed for the cable span.
   4. A fiber cable is accepted when the measured loss in all fiber strands in the cable less than the calculated span loss.
   5. Cables that are not accepted will be removed and replaced at the contractors expense.

### 3.08 ACCEPTANCE

A. Upon receipt of the Contractor's documentation of cable testing, the Engineer will review the installation and may request a test in his presence, of up to 1% of the cables/wires installed.

### 3.09 AS-BUILT DOCUMENTATION

A. As built documentation shall include 3 copies of the following:
   1. Annotated CAD prints and disks of the electrical set of prints indicating routes of installed cables, slack loop locations, and termination points.
   2. All test results both in machine readable format as well as printed neatly bound and organized. Each test shall clearly indicate cable and fiber strand designations.

**END OF SECTION**

# SECTION 27 13 33

# CATEGORY 6A BACKBONE CABLING

## PART 1 GENERAL

### 1.01 WORK INCLUDED

A. Furnish and install all labor and materials required for the installation of PANDUIT® Augmented Category 6 cabling shown on the drawings. This backbone cabling system will provide connectivity from the MDF to individual IDFs.

B. Unless otherwise noted, owner will provide all patch cords, cross connects, networking equipment, telephone and monitoring equipment. Close coordination with the owner will be required.

C. The scope of this work includes coordination with the division 28 access control and CCTV security contractors who may need to place UTP cable and patch panels in open relay racks in the IDF.

### 1.02 RELEVANT SECTIONS

A. 27 05 28 Telecommunications Pathways

B. 27 13 13 Telephone Backbone Cabling

C. 27 13 23 Optical Fiber Backbone Cabling

D. 27 70 80 Cable Television Cabling

### 1.03 QUALITY ASSURANCE

A. Do all work in accordance with the guidelines published in EIA/TIA standard 568 and 569. Where conflicts exist, the plans and specifications shall take precedence. All manufacturer installation instructions shall be followed.

B. Horizontal cabling system shall be provided with a one year system warranty to guarantee end-to-end high performance cabling systems that meet application requirements. The guarantee shall include cable and connectivity components and have one point of contact for all cabling system issues. The system shall be warranted for a period of at least 1 year and will include all labor and materials to correct any defect during the warranty period.

C. The contractor shall have completed Panduit product and installation training.

### 1.04 SUBMITTALS

A. Submit five sets of shop drawings and product data (or a greater number if specified in Division 1 “Submittals” Section). Submittals will be required for the following items.
   1. All product data.
   2. Backboard layout for voice/data backboard in the telecommunications room/Intermediate Distribution Facility (IDF).
   3. Rack layouts, including panels and wire management for all racks.

### 1.05 GUARANTEE

A. The Category 6A Backbone Cabling system shall be provided with a one year system warranty to guarantee end-to-end high performance cabling systems that meet application requirements. The guarantee shall include cable and connectivity components and have one point of contact for all cabling system issues. The system shall be warranted for a period of at least 1 year and will include all labor and materials to correct any defect during the warranty period.

## PART 2 PRODUCTS

### 2.01 PRODUCTS

A. Category 6A unshielded twisted pair cable: any cable warranted by Panduit to support 10 Gigabit applications.

B. Category 6A patch panels: Panduit CPPL24WBLY mini-com 24 port patch panels loaded with mini-com TX6A 10Gig jacks, black in color.

C. Relay rack horizontal wire management: Panduit WMPF2E 2 position wire management panel.

## PART 3 EXECUTION

### 3.01 GENERAL CABLE INSTALLATION

A. The Contractor shall furnish and install all cabling in accordance with these specifications, and as indicated on the cable schedules and drawings.

B. Install each cable as an uninterrupted conductor section between the designated termination points, unless otherwise directed by the cable installation specifications. There shall be no splices or mechanical coupler installed between the cable points of origin and termination except as shown on drawings and or specifications.

C. Contractor is responsible for insuring that cable jacket is suitable for the environment in which it is placed i.e.: CM, CMR, CMP rated.

D. All cable shown on drawings to be routed in conduit and cable tray system, where provided.

E. At the same time cable is pulled into a cable pathway, also install a pull string of appropriate size to facilitate future cable pulls along those pathways.

F. Surface mounted raceway or exposed cable not specifically designated require written approval of the architect.

G. Provide fire stopping at all locations where cables penetrate fire rated surfaces. Materials and methods used shall be acceptable to the code authority having jurisdiction and shall maintain the fire integrity of the wall, floor, or ceiling.

H. Contractor shall closely coordinate and work with the owner on the construction of racking and panels and termination and routing of the cabling in the telecommunications room, overhead basket tray, and into the open relay racks.

I. Unless otherwise specified in the drawings, each IDF shall be served by 12 category 6A cables from the MDF.

J. No installed category 6A cable shall exceed 90 meters in length.

K. The contractor will be responsible for the installation of all "J-hooks" for horizontal cable support. Coordinate location of support hardware to avoid conflicts with other trades. All support hardware shall be category 5e compliant, which means that D-rings and bridle rings are not allowed.

L. Cabling shall be secured to the “J-hooks” and cable basket tray using Velcro wraps. The Velcro wraps will be cinched snug enough around the cable bundle to keep them uniform and routed neatly through the hooks or basket tray, but not so tight as to damage the cables themselves.

M. Where conduit is not provided, cable shall be bundled neatly and attached securely to building structure at intervals not to exceed 5 feet. Cable shall not be attached to conduit, ducting, or piping. It shall not be allowed to drape over building elements.

N. The category 6A cabling in the racks shall be installed with sufficient and appropriate rear mounting clips, brackets, and rear cable management to provide a secure and maintainable system.

O. Unless otherwise noted below, the category 6A cabling shall be terminated in category 5e jacks that are mounted into category 6A patch panels.

P. Horizontal front facing wire management panels are to be two position finger duct. A single wire management panel must be installed facing the front of the racks at the top position in the rack and under each patch panel. Thus, there is to be one more wire management panel than patch panel.

Q. In each IDF, space at the top of the left most rack shall be reserved for a fiber optic enclosure that will be installed under work specified in other sections.

R. The category 6A backbone cable shall be installed into patch panels that are installed under the fiber optic enclosure referenced in the above item.

S. Only category 6A backbone cabling shall be installed in the category 6A backbone patch panels. These panels shall be dedicated to backbone cabling use and not used for category 5e horizontal cabling.

T. Unless specifically directed by the owner, relay racks shall be filled from top to bottom, left to right. No IDF relay rack shall be filled with more than 22 RU of patch panels and wire management. The bottom 20RU of each IDF rack is reserved for use by the owner.

### 3.02 IDENTIFICATION

A. Category 6A backbone cable identification:
   1. Each category 6A backbone cable shall be assigned a unique cable ID that is constructed out of the following components:
      a. The IDF identification that the cable terminates in (IDF-B, IDF-C, etc.).
      b. A 3-digit cable number. Each category 6A cable pulled to an IDF shall be number sequentially starting at 001 and increasing for each cable pulled to that IDF.
   2. For example, the label for the 12th cable run to from the MDF to IDF B shall have cable ID IDF-B-012.
   3. Each cable shall be identified with a typewritten cable tag containing the cable ID that shall be shall be placed on both ends of all cables, 6 inches from the connector and /or termination blocks. Each label shall be created using a label maker appropriate for cable installation. Hand written cable labels are not acceptable.

B. Patch Panel Identification
   1. Above each set of jacks shall be a label indicating where the cabling runs to. If the cabling is run from the MDF to IDF-B, then the patch panel in the MDF shall be labeled “To IDF-B” and in IDF-B, the panel shall be labeled “To MDF”
   2. Below each jack in every patch panel, the 3-digit cable number representing that jack. All cable numbers in all patch panels must be sequential.
   3. Label shall be typewritten label tape, 3/8 inch wide with industrial strength adhesive.

### 3.03 TERMINATION HARDWARE

A. Quantities of termination blocks, racks, splice enclosures, and patch panels, etc. shown on drawings are illustrative only and are meant to indicate the general configuration of the work. The Contractor is responsible for providing the correct quantities of termination hardware required to terminate the volume of cable described herein and shown on the drawings.

### 3.04 CROSS-CONNECT

A. The owner will perform all cross-connects and patching unless otherwise noted.

### 3.05 CABLE TESTING

A. General
   1. Provide 48 hour advance notice of testing.
   2. Visually inspect all cables, cable reels, and shipping cartons to detect cable damage incurred during shipping and transport. Return visibly damaged items to the manufacturer.
   3. Conduct cable testing as described below upon completion of installation. Test fully completed systems only.
   4. Remove all defective cables from pathways system. Do not abandon cables in place.
   5. The Engineer reserves the right to observe the conduct of any or all portions of the testing process.
   6. The Engineer further reserves the right to conduct, using Contractor equipment and labor, a random re-test of up to five percent (5%) of the cable plant to confirm documented test results.
   7. All test results and corrective procedures are to be documented and submitted with the as-built drawings.

B. Category 6A cable:
   1. Visually inspect all cables, cable reels, and shipping cartons to detect cable damage incurred during shipping and transport. Return visibly damaged items to the manufacturer.
   2. All category 6A cables shall be tested and certified to support 10GbaseT Gigabit Ethernet.

### 3.06 ACCEPTANCE

A. Upon receipt of the Contractor's documentation of cable testing, the Engineer will review the installation and may request a test in his presence, of up to 1% of the cables installed.

### 3.07 AS-BUILT DOCUMENTATION

A. The contractor shall provide CAD prints and disks of the electrical set of prints indicating final faceplate location, faceplate designations, rack designations, as well as major conduit, cable tray, and installed cable routes.

B. The contractor shall include machine readable results of all test results neatly bound and organized. Each test shall clearly indicate jack and/or cable designations.

**END OF SECTION**

# SECTION 27 15 13

# CATEGORY 5E HORIZONTAL CABLING

## PART 1 GENERAL

### 1.01 WORK INCLUDED

A. Furnish and install all labor and materials required for the installation of a PANDUIT® category 5e cabling system. This horizontal cabling system will provide connectivity from each IDF to indicated station outlets, and provide and install all open relay racks and overhead ladder racking in the IDFs.

B. Work described in this section includes all open relay racks in all IDF rooms, all overhead ladder racking for cable routing and support inside all IDF rooms.

C. Unless otherwise noted, owner will provide all patch cords, cross connects, networking equipment, telephone and monitoring equipment. Close coordination with the owner will be required.

D. The scope of this work includes coordination with the division 28 access control and CCTV security contractors who may need to place UTP cable and patch panels in open relay racks in the IDF.

### 1.02 RELEVANT SECTIONS

A. 27 05 28 Telecommunications Pathways

B. 27 13 13 Telephone Backbone Cabling

C. 27 13 23 Optical Fiber Backbone Cabling

D. 27 13 33 Category 6A Backbone Cabling

E. 27 70 80 Cable Television Cabling

### 1.03 QUALITY ASSURANCE

A. Do all work in accordance with the guidelines published in EIA/TIA standard 568 and 569. Where conflicts exist, the plans and specifications shall take precedence. All manufacturer installation instructions shall be followed.

B. Horizontal cabling system shall be provided with a one year system warranty to guarantee end-to-end high performance cabling systems that meet application requirements. The guarantee shall include cable and connectivity components and have one point of contact for all cabling system issues. The system shall be warranted for a period of at least 1 year and will include all labor and materials to correct any defect during the warranty period.

C. The contractor shall have completed Panduit product and installation training.

### 1.04 SUBMITTALS

A. Submit five sets of shop drawings and product data (or a greater number if specified in Division 1 “Submittals” Section). Submittals will be required for the following items.
   1. All product data.
   2. Backboard layout for voice/data backboard in the telecommunications room/Intermediate Distribution Facility (IDF).
   3. Rack layouts, including panels and wire management for all racks.

### 1.05 GUARANTEE

A. Horizontal cabling system shall be provided with a one year system warranty to guarantee end-to-end high performance cabling systems that meet application requirements. The guarantee shall include cable and connectivity components and have one point of contact for all cabling

system issues. The system shall be warranted for a period of at least 1 year and will include all labor and materials to correct any defect during the warranty period.

## PART 2 PRODUCTS

### 2.01 PRODUCTS

A. Horizontal Cabling:
   1. Category 5e unshielded twisted pair cable: any manufacturer extra headroom (300+ Mhz) category 5e cable.
   2. Category 5e Station Jacks: Panduit mini-com TX5e jacks CJ5E88TGXX, color to match electrical outlet color.
   3. Single gang device plates: Panduit mini-com CFPnXX classic series device plates or CFPnSY for stainless steel device plates, number of jack positions as required. Match color and style of electrical trim.
   4. Modular Furniture device plates: Panduit mini-com appropriate for modular furniture yet to be selected. This is a coordination issue. Bid shall include modular furniture device plates.
   5. Category 5e patch panels: Panduit CPPL48WBLY mini-com 48 port patch panels loaded with mini-com TX5e jacks, black in color.
   6. Special alarm and emergency dial tone IDF termination hardware: 110 blocks with legs, terminations with C4 block connectors

B. Wireless Access Point Horizontal Cabling:
   1. See above horizontal cabling for materials with the following exception:
      a. Station termination: Panduit 2-port surface mount housing for above ceiling applications and 2-port single gang device plate for terminations in finished walls.
      b. Category 5e Station Jacks: Panduit mini-com TX5e jacks.

C. IDF Racks and Ladder Rack:
   1. Relay Racks: Chatsworth/CPI 55053-703 7ft relay racks
   2. Vertical Wire Management Panels: Chatsworth/CPI 40093-703 MCS-EFX Vertical Wire Management.
   3. Relay rack horizontal wire management: Panduit WMPF2E 2 position wire management panel.
   4. Overhead ladder racking: Chatsworth/CPI 10250-718 18” wide rack, and Chatsworth/CPI 10250-724 24” wide rack.
   5. Cable Runway Radius Drop: Chatsworth/CPI 12100-7XX cross member runway radius drop and Chatsworth/CPI 12101-701 string runway radius drop.
   6. Cable Retaining Post: Chatsworth/CPI 10596-706 6” retaining post and 10596-708 8” retaining Post
   7. Mounting hardware, splices, grounding kits, and support brackets: Chatsworth/CPI

## PART 3 EXECUTION

### 3.01 GENERAL CABLE INSTALLATION

A. The Contractor shall furnish and install all cabling in accordance with these specifications, and as indicated on the cable schedules and drawings.

B. Install each cable as an uninterrupted conductor section between the designated termination points, unless otherwise directed by the cable installation specifications. There shall be no splices or mechanical coupler installed between the cable points of origin and termination except as shown on drawings and or specifications.

C. Contractor is responsible for insuring that cable jacket is suitable for the environment in which it is placed i.e.: CM, CMR, CMP rated.

D. All cable shown on drawings to be routed in conduit and cable tray system, where provided.

E. At the same time cable is pulled into a cable pathway, also install a pull string of appropriate size to facilitate future cable pulls along those pathways.

F. Surface mounted raceway or exposed cable not specifically designated require written approval of the architect.

G. Provide fire stopping at all locations where cables penetrate fire rated surfaces. Materials and methods used shall be acceptable to the code authority having jurisdiction and shall maintain the fire integrity of the wall, floor, or ceiling.

H. Contractor shall closely coordinate and work with the owner on the construction of racking and panels and termination and routing of the cabling in the telecommunications room, overhead basket tray, and into the open relay racks.

**3.02 HORIZONTAL CATEGORY 5E CABLE INSTALLATION**

A. Unless otherwise specified, each station outlet shall consist of four (4) category 5e cables. Four port device plates shall be loaded with four jacks.

B. No installed category 5e cable shall exceed 90 meters in length.

C. The contractor will be responsible for the installation of all "J-hooks" for horizontal cable support. Coordinate location of support hardware to avoid conflicts with other trades. All support hardware shall be category 5e compliant, which means that D-rings and bridle rings are not allowed.

D. Cabling shall be secured to the “J-hooks” and cable basket tray using Velcro wraps. The Velcro wraps will be cinched snug enough around the cable bundle to keep them uniform and routed neatly through the hooks or basket tray, but not so tight as to damage the cables themselves.

E. Where conduit is not provided, cable shall be bundled neatly and attached securely to building structure at intervals not to exceed 5 feet. Cable shall not be attached to conduit, ducting, or piping. It shall not be allowed to drape over building elements.

F. Cabling shall be installed with a 15ft slack loop placed as near to the station outlet as possible. Often this slack loop will be in the cable tray or above a drop ceiling where conduit is stubbed from the outlet box.

G. The scope of this work includes Installation of workstation cables into modular furniture systems. These systems have not yet been specified, so bid should be based on quantities of jacks shown on drawings. The actual installation shall be coordinated with the modular furniture system contractor. This includes assisting in planning cable routes into the furniture systems, selecting appropriate device plates for the furniture system, selecting appropriate outlet locations, and installing the cabling into the furniture systems at the appropriate time during the furniture system installation. Prior to the furniture system installation, the workstation cables will be pulled near the entrances to the furniture systems. The cabling shall be pulled with sufficient slack to reach the outlet location. This slack left coiled in a location where it will not be susceptible to damage. After the modular furniture systems are installed, the contractor will pull cable to the outlet locations and complete the cable installation. As of the date of the bid set of construction drawings, the modular furniture plan is not complete. Drawings are representative only and should be used to bid quantities of cabling and outlets. The drawings do not reflect actual outlet locations.

H. Installation of communications cabling into floor boxes shall be coordinated with the electrical sub contractor. Provide and install appropriate device plates for mounting the jacks in the electrical contractor installed floor boxes.

I. Installation and termination of communications cabling will require coordination with the cable television cabling work specified in 27 70 80. Coordinate cable pulls and communications device plates with this work.

J. The category 5e cabling in the racks shall be installed with sufficient and appropriate rear mounting clips, brackets, and rear cable management to provide a secure and maintainable system.

K. Unless otherwise noted below, the category 5e cabling shall be terminated in category 5e jacks that are mounted into category 5e patch panels. All cables run to a single station device plate shall be terminated on sequential jacks in the patch panels.

L. Horizontal front facing wire management panels are to be two position finger duct. A single wire management panel must be installed facing the front of the racks at the top position in the rack and under each patch panel. Thus, there is to be one more wire management panel than patch panel.

M. In each IDF, space at the top of the left most rack shall be reserved for a fiber optic enclosure that will be installed under work specified in other sections. Rack layout shall be coordinated with this work.

N. Unless specifically directed by the owner, relay racks shall be filled from top to bottom, left to right. No IDF relay rack shall be filled with more than 22 RU of patch panels and wire management. The bottom 20RU of each IDF rack is reserved for use by the owner.

O. Wall phone wiring: All outlets for wall phones are to meet ADA height and location requirements for handicapped access. For specifically identified wall phone locations, a single voice outlet shall be installed to provide voice-only communication. Two category 5e cables shall be pulled to each location. At the station end, one cable shall be tagged and coiled for future use and the other cable shall be terminated in a single category 5e jack and the jack mounted into a stainless steel wall phone plate. Both of the category 5e cables pulled to a wall phone location shall be terminated on the IDF end in the category 5e patch panel system.

P. Pay Phone wiring: All outlets for pay phones are to meet “American Disabilities Act” (ADA) height and location requirements for handicapped access. A single voice outlet shall be installed to provide voice-only communication. Two category 5e cables shall be pulled to each location. All pay phone cabling shall be terminated at the station end in a duplex device plate with jacks blue and gray in and in the IDF end on wall-mount 110-style punch blocks.

Q. Elevator wiring: For each elevator location, a duplex outlet shall be installed to provide voice-only communication. Two category 5e cables shall be pulled to each location. All elevator cabling shall be terminated in the IDF on wall-mount 110-style punch blocks. Installation of elevator system jacks shall be coordinated with the elevator installer. Provide cross connects to extend elevator dial tone from the telephone service entrance blocks to telephone backbone cabling, and then onto to this cabling.

R. Fire and Security Alarm wiring: For each alarm location, a duplex outlet shall be installed to provide voice-only communication. Two category 5e cables shall be pulled to each location. All elevator cabling shall be terminated in the IDF on wall-mount 110-style punch blocks. Installation of alarm system jacks shall be coordinated with the alarm installer. Provide cross connects to extend elevator dial tone from the telephone service entrance blocks to telephone backbone cabling, and then onto to this cabling.

S. The scope of this work includes coordination with the contractor installing the cable TV system. This coordination requires coordination of cable pulls and device plates where TV outlets share conduit and/or device plates with cable TV.

### 3.03 WIRELESS ACCESS POINT CATEGORY 5E CABLE INSTALLATION

A. Please refer to specifications outlined in the above Horizontal category 5e cable installation section.

B. Unless otherwise specified, each wireless access station outlet shall consist of two (2) category 5e cables.

C. Where the wireless access point station termination point is above the drop ceiling, the station outlet shall be terminated in a two port surface housing that is attached to the building structure or basket tray.

D. Where the wireless access point station termination is on a wall, it shall be mounted in a standard two port single gang device plate.

E. The wireless access point category 5e cabling shall be terminated on the category 5e patch panel system.

### 3.04 IDENTIFICATION

A. Horizontal cable identification:
   1. Each category 5e cable shall be assigned a unique cable ID that is constructed out of the following components:
      a. The three digit building number.
      b. The IDF identification that the cable terminates in.
      c. A 4-digit cable number. Each cable pulled to an IDF shall be number sequentially starting at 001 and increasing for each cable pulled to that IDF.
   2. For example, the label for the 92nd cable run to IDF B in building 16 shall have cable ID 016B0092.
   3. Each cable shall be identified with a typewritten cable tag containing the cable ID that shall be shall be placed on both ends of all cables, 6 inches from the connector and /or termination blocks. Each label shall be created using a label maker appropriate for cable installation. Hand written cable labels are not acceptable.

B. Device Plate identification
   1. Each device plate shall be labeled as follows:
      a. At the top of the device plate, the building number and IDF letter (for example, every device plate with conductors run to IDF B in building 16 shall have 016B at the top of the device plate).
      b. Under each individual jack, the 4-digit cable number.
   2. All jacks in a single device plate much have sequential cable numbers.
   3. Device plate labeling shall be typewritten label tape with industrial strength adhesive.

C. Patch Panel Identification
   1. Each group of four sequential jacks representing a typical device plate in the category 5e panels must be labeled with the room number of that the device plate resides in. This room number must be the permanent room numbers assigned by the owner, not the construction room numbers. The room designation shall be placed above the jacks in the panel.
   2. Below each jack in every patch panel, the 4-digit cable number representing that jack. All cable numbers in all patch panels must be sequential.
   3. Label shall be typewritten label tape, 3/8 inch wide with industrial strength adhesive.

D. 110-Block Identification
   1. Each 4-pair position on the special horizontal cable 110 blocks shall be labeled with the cable ID and the function (elevator, fire alarm, etc) on the 110 designation strip.

### 3.05 IDF AND SERVICE ENTRANCE ROOMS

A. Backboards are specified in other sections and will be provided and installed by others.

B. Drawings indicate number of racks to install in each IDF and provide a diagrammatic view of the overhead ladder racking. The drawings are diagrammatic only and are not necessarily indicative of the amount of overhead ladder racking that will be required to support the cabling from where it enters the room and is routed to the open relay racks. The scope of this work includes installing any and all overhead ladder racking to support all voice/data cabling that is routed inside of each IDF.

C. Contractor is responsible for providing earthquake bracing and support for all racks installed in telecommunications rooms.

D. Each relay rack must have front facing vertical wire management chases installed on each side of the rack.

E. Racks shall be firmly fastened to the floor and have overhead ladder rack run from the top of the each rack to the wall at the rear of the rack.

F. Each IDF shall have space reserved in the top left most rack for fiber optic enclosures that are specified in other sections.

G. Relay racks shall be filled from top to bottom, left to right. No IDF relay rack shall be filled with more than 22 RU of patch panels and wire management. The bottom 20RU of each IDF rack is reserved for use by the owner.

H. Contractor shall install overhead ladder racking to provide bracing as well as pathway to support and route all cabling to racks in low voltage and telecommunication rooms. The overhead ladder racking shown on drawings is illustrative only and is meant to indicate the general configuration of the work. The Contractor is responsible for providing the correct quantities of ladder racking hardware required to support the cabling described herein and shown on the drawings.

I. Overhead ladder racking must be installed to provide sufficient pathways to route limited energy cabling in the IDF rooms. Drawings are schematic design only and do not necessarily indicate the size, routing, or amount of ladder racking required to support all installed cabling. Size as needed; minimum size 18 inches. Category 5e bend radius shall be maintained by avoiding sharp corners where tray joins together at right angles as well as routing cable properly out of the tray and onto the relay racks using radius runway drops. Cable retaining posts shall be installed where needed to dress cable to the overhead ladder racking. When used, posts shall be installed with spacing no greater than 18”.

### 3.06 TERMINATION HARDWARE

A. Quantities of termination blocks, racks, splice enclosures, and patch panels, etc. shown on drawings are illustrative only and are meant to indicate the general configuration of the work. The Contractor is responsible for providing the correct quantities of termination hardware required to terminate the volume of cable described herein and shown on the drawings.

### 3.07 CROSS-CONNECT

A. The owner will perform all cross-connects and patching unless otherwise noted.

### 3.08 GROUNDING

A. Furnish and install a telecommunications grounding system. This grounding system shall consist of a main ground busbar in the service entrance location and a ground busbar installed in each of the telecommunications rooms in the project.

B. The ground busbar shall be mounted on the IDF backboard.

C. A 2AWG insulated conductor shall be run from the main grounding busbar to each of the ground busbars in each telecommunications room. Conductor insulation shall be green in color.

D. All metallic cable tray, ladder rack, raceways, cable sheath/armor, enclosures, and equipment racks and other conductive surfaces shall be properly bonded with 5eWG insulated conductors to the grounding system. All paint and other coatings shall be removed at all contact surfaces to ensure proper ground.

E. All grounding shall be in compliance with the NEC code Article 800, Article 250, well as EIA/TIA standard 607.

### 3.09 CABLE TESTING

A. General
   1. Provide 48 hour advance notice of testing.
   2. Visually inspect all cables, cable reels, and shipping cartons to detect cable damage incurred during shipping and transport. Return visibly damaged items to the manufacturer.
   3. Conduct cable testing as described below upon completion of installation. Test fully completed systems only.
   4. Remove all defective cables from pathways system. Do not abandon cables in place.
   5. The Engineer reserves the right to observe the conduct of any or all portions of the testing process.
   6. The Engineer further reserves the right to conduct, using Contractor equipment and labor, a random re-test of up to five percent (5%) of the cable plant to confirm documented test results.
   7. All test results and corrective procedures are to be documented and submitted with the as-built drawings.

B. Category 5e cable:
   1. Visually inspect all cables, cable reels, and shipping cartons to detect cable damage incurred during shipping and transport. Return visibly damaged items to the manufacturer.
   2. All category 5e cables shall be tested and certified to support 1000baseT Gigabit Ethernet.

### 3.10 ACCEPTANCE

A. Upon receipt of the Contractor's documentation of cable testing, the Engineer will review the installation and may request a test in his presence, of up to 1% of the cables installed.

### 3.11 AS-BUILT DOCUMENTATION

A. The contractor shall provide CAD prints and disks of the electrical set of prints indicating final faceplate location, faceplate designations, rack designations, as well as major conduit, cable tray, and installed cable routes.

B. The contractor shall provide 3 copies of all test results neatly bound and organized. Each test shall clearly indicate jack and/or cable designations.

**END OF SECTION**

# SECTION 27 70 80

# CABLE TELEVISION CABLING

## PART 1 GENERAL

### 1.01 WORK INCLUDED

A. Furnish and install all labor and materials required for the installation of cabling that will support an OFOI cable TV distribution system. This work is to provide a "pull only" and termination of the station outlets for the system.

B. Owner will provide all amplifiers, splitters, taps, and IDF closet terminations. Others will provide televisions, video sources (VCR/DVD/etc), and all in-room drop cords. Close coordination with the owner will be required.

### 1.02 RELEVANT SECTIONS

A. 27 05 28 Telecommunications pathways

B. 27 13 13 Telephone Backbone Cabling

C. 27 13 23 Optical Fiber Backbone Cabling

D. 27 13 33 Category 6A Backbone Cabling

E. 27 15 13 Category 5E Horizontal Cabling

### 1.03 QUALITY ASSURANCE

A. Do all work in accordance with the guidelines published in EIA/TIA standard 568 and 569. Where conflicts exist, the plans and specifications shall take precedence. All manufacturer installation instructions shall be followed.

B. All workers involved in the installation and termination of cable shall have at least one year of experience. No less than 33% of the workmen on the job shall have attended a vendor sponsored training program covering installation of cable TV systems.

### 1.04 SUBMITTALS

A. Submit five sets of product data. Submittals will be required for the following items.
   1. Cut sheets for all products used.

### 1.05 GUARANTEE

A. Guarantee all work against faulty and improper material and workmanship for a minimum period of one (1) year from the date of final written acceptance by Owner, except where guarantee or warranties for longer terms are specified herein.

B. Upon notification of a problem, the warranty provider shall furnish within 48 hours and at no cost to the owner, such labor and materials as are needed to restore the system to proper operation.

## PART 2 PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS

A. Amplifiers: by owner

B. RG6 drop cable: quad-shield Commscope, Belden

C. Cable TV Backbone Cable: Commscope PIII-625

D. Splitters/taps: by owner.

E. F-connectors: any manufacturer compression type F connectors similar to Thomas and Betts snap-n-seal product

F. Station device plates: Panduit device plates with mini-com CMFSRIxx self terminating F connector.

### 2.02 CABLE TV DISTRIBUTION

A. All cable TV drop cable shall be CATV/CL2 or CATVP/CL2P rated quad-shield RG6.

B. Cable TV backbone cable shall be run from the service entrance room location to each of the telecommunication rooms. Cable TV backbone cable shall be of .625" rigid construction.

C. The actual cable TV distribution system itself will be provided by others. This work is to install horizontal and backbone cabling and station termination of horizontal cable.

## PART 3 EXECUTION

### 3.01 INSTALLATION

A. The Contractor shall furnish and install all cabling in accordance with these specifications, and as indicated on the cable schedules and drawings.

B. Install each cable TV drop as an uninterrupted conductor section between the IDF location and the station outlet. There shall be no splices or mechanical coupler installed between the cable points of origin and termination except as shown on drawings and or specifications. Daisy chaining of station outlets is not acceptable.

C. At the IDF location, all cable TV RG6 drop cabling shall be installed to an owner-specified area of the communications backboards, identified, and coiled for finish work by others.

D. The station end of the drop cable must be terminated with a compression F connector and installed into a self terminating F connector bulkhead mounted in a communications device plate.

E. There are locations where the station end device plate will be shared with the existing augmented category 5e cabling. Coordination with the 271513 sub-contractor will be required to coordinate the provisioning of communications device plates. It is in the scope of this work to coordinate the device plate and cable installation in these shared locations.

F. Backbone cable TV cabling shall be installed as shown on the drawings. This cable shall be identified and coiled on the owner-specified area of the communications backboards.

G. Cable pulling shall be coordinated with other limited energy cabling installation contractors to eliminate any possibility of damaged cabling.

H. The cable TV cabling in the IDF shall be installed with sufficient and appropriate mounting clips, brackets, and cable management to provide a neat, secure, and maintainable system.

I. Contractor is responsible for insuring that cable jacket is suitable for the environment in which it is placed (i.e., CATV/CL2, CATVP/CL2P rated).

J. All cable shall be routed through the building cable tray/conduit system, where available.

K. Where cable tray or conduit is not available, cable bundled neatly and shall be attached to building structure at intervals not to exceed 5 feet.

L. At the same time cable is pulled into a cable pathway, also install a pull string of appropriate size to facilitate future cable pulls along those pathways.

M. The contractor will be responsible for the installation of all "J-hooks" for horizontal cable support. Coordinate location of support hardware to avoid conflicts with other trades.

N. At no point will any station cable be tie wrapped or fastened to the cable tray. After cables have exited the cable tray they will be tie wrapped to the "J-hooks". The tie wraps will be cinched

snug enough around the cable bundle to keep them uniform and in the hooks, but not so tight as to damage the construction of the cables themselves.

O. Provide fire stopping at all locations where cables penetrate fire rated surfaces. Materials and methods used shall be acceptable to the code authority having jurisdiction and shall maintain the fire integrity of the wall, floor, or ceiling.

P. Contractor shall closely coordinate and work with the owner and engineer on the construction, termination and routing of the cabling in the IDFs, overhead ladder racking, and backboard space allocation.

**3.02 IDENTIFICATION**

A. Cable tags containing a unique cable ID designator shall be placed on both ends of all cables, 6 inches from the connector. Each label shall be typewritten with permanent ink with the appropriate cable number as indicated. Hand written cable labels are not acceptable

B. Individual cable sheaths and station end faceplates shall be labeled with the designator of the specific cable. Cable designation shall consist of the IDF letter designation and the individual cable number. Cable sheaths shall be labeled on each end. Station device plates shall be permanently labeled in typewritten ink with the letter of the IDF the cable is run followed by the 3 digit cable number. Cables shall be numbered sequentially, starting from 1. Each IDF termination shall be labeled with cable number and permanent (not construction) room designation

**3.03 TERMINATION HARDWARE**

A. All terminations of cable TV RG6 shall be via compression F connectors.

**3.04 SYSTEM TESTING**

A. Visually inspect all cables, cable reels, and shipping cartons to detect cable damage incurred during shipping and transport. Return visibly damaged items to the manufacturer.

B. Conduct cable testing as described below upon completion of installation. Test fully completed systems only. Piecemeal testing is not acceptable, except by prior written approval from the Architect.

C. Remove all defective cables from pathways system. Do not abandon cables in place.

D. Testing shall involve continuity testing to verify that the installed cabling has not be cut or shorted during the installation process.

E. The owner further reserves the right to conduct, using Contractor equipment and labor, a random re-test of up to five percent (5%) of the cable plant to confirm documented test results.

F. All test results and corrective procedures are to be documented and submitted to the Owner within fourteen (14) working days of test completion.

**3.05 ACCEPTANCE**

A. Upon receipt of the Contractor's documentation of cable testing, the Architect will review the installation and may request a test in his presence, of up to 1% of the cable drops installed.

B. The contractor shall provide the owner with hands-on training for the use and operation of the system.

**3.06 AS-BUILT DOCUMENTATION**

A. The contractor shall provide CAD prints and disks of the electrical set of prints indicating final faceplate location, faceplate designations, as well as major conduit, cable tray, and installed cable routes.

B. The contractor shall provide CAD prints of the one-line diagram of the system showing signal levels at every device, including every outlet in the system.

C. The contractor shall provide 3 copies of all test results neatly bound and organized. Each test shall clearly indicate cable designations.

**END OF SECTION**