

PROJECT MANUAL

for

Seaside New Middle School/ High School

Seaside School District
1801 S. Franklin Street, Seaside, OR 97138

Bid Package 1

April 5, 2018

SET # _____

PROJECT MANUAL

for

Seaside New Middle School/ High School

Seaside School District
1801 S. Franklin Street
Seaside, OR 97138

BRIC Architecture, Inc.
1233 NW Northrup Street, Suite 100
Portland, OR 97209 T 503 595 4900

April 5, 2018

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PART 1 GENERAL

1.01 EXISTING CONDITIONS

- A. Certain information relating to existing surface and subsurface conditions and structures is available to bidders but will not be part of the Contract Documents, as follows:
- B. Site and Utility Survey:
 - 1. A copy of a topographic survey with respect to the project site is included with the Drawings for information only and is not to be considered a part of the Contract Documents.
 - 2. This survey identifies grade elevations prepared primarily for the use of Architect in establishing new grades and identifying natural water shed.
 - 3. The Owner does not warrant the correctness of the topographic survey or of any interpretation, deduction, or conclusion given relative to the information contained therein.
 - 4. This survey identifies conditions of existing construction prepared primarily for the use of Architect in establishing the extent of the new versus existing work.
 - 5. The existence and location of underground and other utilities and construction indicated as existing are not guaranteed.
 - 6. Verify all information shown.
- C. Geotechnical Report:
 - 1. A copy of a geotechnical report with respect to the building site is available for information only and is not to be considered a part of the Contract Documents.
 - a. Title: Report of Geotechnical Engineering Services.
 - b. Date: November 20, 2017.
 - c. Prepared by: GeoDesign.
 - 2. This report identifies properties of below grade conditions and offers recommendations for the design of foundations, prepared primarily for the use of Architect.
 - 3. The recommendations described shall not be construed as a requirement of the Contract.
 - 4. This report, by its nature, cannot reveal all conditions that exist on the site. Should subsurface conditions be found to vary substantially from this report, changes in the design and construction of foundations will be made, with resulting credits or expenditures to the Contract Sum accruing to Owner.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF DOCUMENT

**DOCUMENT 00 72 00
GENERAL CONDITIONS**

FORM OF GENERAL CONDITIONS

1.01 THE GENERAL CONDITIONS APPLICABLE TO THIS CONTRACT IS ATTACHED FOLLOWING THIS PAGE.

1.02 RELATED REQUIREMENTS

A. Section 01 42 16 - Definitions.

END OF DOCUMENT

AIA[®] Document A201[™] – 2007

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

A new Seaside School District campus, which will include the following components, which are further:

- (1) Closing existing buildings that operate in the City of Seaside's tsunami zone;
- (2) Constructing a new facility on land donated by Weyerhaeuser Company, which will operate as Seaside High School and Broadway Middle School; and
- (3) Renovation and expansion of Seaside Heights Elementary School.

THE OWNER:

(Name and address)

SEASIDE SCHOOL DISTRICT 10
1801 SOUTH FRANKLIN STREET
SEASIDE, OREGON 97138

THE ARCHITECT:

(Name and address)

BRIC ARCHITECTURE, INC.
1233 NW NORTHRUP STREET, SUITE 100
PORTLAND, OREGON 97209

**THESE GENERAL CONDITIONS APPLY TO THE AGREEMENT
BETWEEN THE OWNER AND CONTRACTOR, AIA DOCUMENT
A133-2009, AS AMENDED, DATED JULY 3, 2017.**

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- 10 PROTECTION OF PERSONS AND PROPERTY

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 BASIC DEFINITIONS

§ 1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents are enumerated in the Agreement between the Owner and Contractor identified on page 1 of these General Conditions (hereinafter the "Agreement") and consist of the Agreement, Conditions of the Contract (these General Conditions and any Supplementary Conditions or other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding requirements.

§ 1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties and supersedes all prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants or (4) between any persons or entities other than the Owner and the Contractor. The Architect and the Contractor shall, however, be entitled to performance and enforcement of obligations of the other under the Contract intended to facilitate performance of their respective duties.

§ 1.1.3 THE WORK

The term "Work" means the construction and services required of the Contractor by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by separate contractors.

§ 1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

§ 1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 INSTRUMENTS OF SERVICE

Instruments of Service are representations, Drawings, Specifications, and other documents, including those in electronic form, of the tangible creative work performed by the Architect and the Architect's consultants for the Project under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 THE INDEMNITEES The "Indemnitees" are Owner and its officers, directors, volunteers, agents, representatives, and employees.

§ 1.1.9 AFFILIATED ENTITY OR AFFILIATED ENTITIES

The term "Affiliated Entity" shall mean the Contractor (if self-performing a portion of the Work), a parent, subsidiary, affiliate, or other entity having common ownership or management with the Contractor; any entity in which any stockholder in, or management employee of, the Contractor, or the Contractor itself, owns any interest in excess of ten percent (10%) in the aggregate; or any person or entity that has the right to control the business or

affairs of the Contractor. The term "Affiliated Entity" includes any member of the immediate family of any person identified above.

§ 1.1.10 CONSTRUCTION MANAGER/GENERAL CONTRACTOR

All references to the term "Contractor" in these General Conditions shall mean the Construction Manager/General Contractor identified in the Agreement.

§ 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.2 The terms of any document that forms the Contract are subject to the following order of precedence:

- .1 Modifications;
- .2 The Agreement;
- .3 These General Conditions and supplementary conditions;
- .4 Drawings, Specifications, and Addenda issued before execution of the Contract, subject to Section 1.2.4;
- .5 Other documents incorporated by the terms of the Contract Documents.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings. Dimensions not expressly provided in the Contract Documents are to be computed, rather than determined by scale or rule.

§ 1.2.4 If there is an inconsistency within or between (1) any Drawings, Specifications, or Addenda issued before execution of the Contract, or (2) any Drawings, Specifications, or Addenda and applicable standards, codes, and ordinances, and the inconsistency is not clarified by a Modification or by the Architect, then the Contractor shall provide the better quality or greater quantity of Work without requiring a change to the Contract Sum. The terms and conditions of this Section 1.2.4, however, shall not relieve the Contractor of any of the obligations set forth in Section 3.2.

§ 1.2.5 The organization of the Specifications into divisions, sections and articles, and the arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.3 CAPITALIZATION

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects, or substitute for those documents that may be used on the Project, or (4) the titles of or terms defined in the Owner's policies incorporated in these General Conditions.

§ 1.4 INTERPRETATION

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and

other reserved rights, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. The submittal or distribution of the Instruments of Service to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

ARTICLE 2 OWNER

§ 2.1 GENERAL

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 [Deleted]

§ 2.1.3 Notwithstanding anything to the contrary in any Contract Document, no officer, director, trustee, partner, authorized representative, employee, student, volunteer, agent, or other representative of the Owner shall have any personal liability to the Contractor or any other person or entity other than the Owner for any acts or omissions arising out of or relating to these General Conditions or the Agreement, whether based on tort, contract, statute, administrative laws, or otherwise.

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. Any request made after the commencement of the Work shall not serve as a basis for the Contractor to stop the Work.

§ 2.2.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.2.3 Except to the extent required for execution of the Work and requested by the Contractor in writing, the Owner shall not furnish surveys, studies, or reports regarding physical characteristics, legal limitations and utility locations for the site of the Project, but shall provide a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.4 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Owner or the Architect shall provide to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2. Additional copies may be purchased by the Contractor at the cost of reproduction and handling.

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

§ 2.3.1 If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

§ 2.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, commence and continue to carry out the Work, including without limitation the correction of any deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

§ 2.4.2 If the Contractor's default or neglect results in a hazard to the safety of persons or property, the Owner may immediately commence or continue to carry out any Work necessary to mitigate the hazard without prior notice to the Contractor.

§ 2.4.3 The Owner's right to carry out the Work in this Section 2.4 shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

§ 2.5 The Owner may notify the Contractor that it needs to exclude or remove from the Project site any or all employees, agents, suppliers, or representatives of the Contractor or its Subcontractors who threaten the safety of others or are disruptive to the Project or the Owner's operations and activities. The Contractor will supply replacement personnel promptly after receiving notice of the exclusion or removal. Each replacement must have qualifications and experience comparable to or better than the individual or entity being replaced and be reasonably acceptable to the Owner. Nothing in this Section requires the Contractor to take any particular employment or contract action with regard to an employee or Subcontractor.

§ 2.6 RIGHTS and REMEDIES

Consistent with Section 13.4, the rights described in Sections 2.3 through 2.5 shall be in addition to, and not in restriction of, the Owner's other rights or remedies.

ARTICLE 3 CONTRACTOR

§ 3.1 GENERAL

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.1.1 The Contractor and each of its Subcontractors must be licensed with the Oregon Construction Contractors Board at the time of solicitation of any work and throughout the entire course of the Work. The Contractor shall maintain all required bonding and insurance required by the State of Oregon and the Contract Documents throughout the entire course of the Work.

§ 3.1.1.2 The Contract is applicable to contractors who are owned or controlled by, or act as agents of, the Contractor for purposes of the Project.

§ 3.1.2 The Contractor shall supervise, coordinate, and perform the Work in accordance with the Contract Documents in a professional, safe, and workmanlike manner and in accordance with all laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and professional standards applicable to the industries and trades involved, including without limitation strict compliance with all applicable federal, state, and local laws and building codes and certification requirements applicable to the Work.

§ 3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Owner or the Architect in the administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.1.4 Unless otherwise directed by the Architect, the Contractor shall perform all Work in accordance with product manufacturers' recommendations or directions for best results. No preparatory step or installation procedure may be omitted unless specifically authorized by the Contract Documents or at the direction of the Architect. Conflicts among manufacturers' directions or the Contract Documents shall be resolved by the Architect.

§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents. In addition:

.1 The Contractor and each Subcontractor, as a condition precedent to commencement of the Work, shall:

- (a) become familiar with the location, condition, layout, and nature of the Project Site and surrounding areas and generally prevailing climate conditions;
- (b) review all analyses, studies, and test data available to the Contractor concerning the conditions of the Project site;
- (c) inspect the location of the Project site and satisfy themselves as to its condition, including all observable structural, surface, and subsurface conditions to the extent information is provided by the Architect and can be viewed;
- (d) evaluate the availability and cost of labor and trade Subcontractors and the availability and cost of materials, tools, and equipment; and
- (e) determine (i) that the Contract Sum and GMP are just and reasonable compensation for all the Work, including all foreseen and foreseeable construction risks, hazards, and difficulties for which the Contractor is responsible under the Contract Documents, (ii) that the Contract Time is adequate for the performance of the Work, and (iii) that the means and methods of performing the Work will not result in any lateral or vertical movement of any adjacent structure.

The Contractor or Subcontractor must notify the Owner in writing before commencing the Work if it determines that it cannot satisfy one or more of these conditions.

.2 The Owner shall not be required to make any adjustment in either the Contract Sum or the Contract Time in connection with any failure by the Contractor or any Subcontractor to have complied with the requirements of this Section 3.2.1.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner and, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect and the Owner any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Owner or the Architect may require. It is recognized that the

Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall:

- .1 promptly report to the Owner and the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require;
- .2 include within the Guaranteed Maximum Price all Costs of the Work that are necessary for the Project to comply with all applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.1 through 3.2.3, the Contractor shall make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.1 through 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations and could not have recognized the applicable error, inconsistency, omission, or difference in the exercise of normal diligence, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, recognized in the exercise of normal diligence.

§ 3.2.5 Unless otherwise specified in the Contract Documents, the Contractor shall confirm the location of each utility and shall excavate and dispose of each on-site utility. The Owner has made available to the Contractor, and the Contractor has studied, the results of such test borings and information that the Owner has concerning subsurface conditions and site geology. At the Owner's request, the Contractor will make available to the Owner the results of any other site investigation, analyses, studies, or other tests conducted by or that are in possession of the Contractor or any of its agents. The Contractor shall exercise special care in executing subsurface work in proximity of known subsurface utilities, improvements, and easements.

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise, coordinate, and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, all 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. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Owner or the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner or the Architect shall be responsible for any loss or damage arising from those Architect- or Owner-required means, methods, techniques, sequences or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.3.4 The Contractor must notify the Owner at least ten (10) days prior to the interruption of any utility or operating system, regardless of the area it services. The specific schedule for all interruptions in services must be coordinated through the Owner's Representative.

§ 3.3.5 The Contractor and its Subcontractors may not use the Owner's tools, equipment, or materials unless authorized in advance by the Owner's Representative.

§ 3.3.6 If the Contractor reasonably believes that suspension of the Work is warranted by reason of unforeseen circumstances that could adversely affect the quality of the Work if the Work were continued, the Contractor shall immediately notify the Owner and the Architect and describe with particularity the reasons therefor. Except as stated elsewhere in the Contract Documents or in an emergency, the Contractor shall not suspend the Work until it receives approval from the Owner.

§ 3.3.7 It is understood and agreed that the relationship of Contractor to Owner shall be that of an independent contractor under ORS 670.600. Nothing contained in this Agreement or inferable from this Agreement shall be deemed or construed to (a) make Contractor the agent, servant, or employee of the Owner; or (b) create any partnership, joint venture, or other association between Owner and Contractor. Any direction or instruction by Owner or any of its authorized representatives in respect to the Work shall relate to the results the Owner desires to obtain from the Work, and shall in no way affect Contractor's independent contractor status.

§ 3.4 LABOR AND MATERIALS

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the prior written consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them. The Contractor shall hire all personnel for the proper and diligent prosecution of the Work, and maintain labor peace for the duration of the Project. In the event of a labor dispute, the Contractor shall not be entitled to any increase in the Contract Sum.

§ 3.4.4 Including, but not limited to the specific requirements of Section 10.1.1, Contractor, its Subcontractors, and vendors shall bear responsibility for compliance with all federal and state laws, regulations, guidelines, and ordinances pertaining to worker safety and applicable to the Work. Contractor further recognizes that the Owner and Architect do not owe the Contractor any duty to supervise or direct Contractor's work so as to protect the Contractor from the consequences of Contractor's own conduct.

§ 3.5 WARRANTY

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect or the Owner, the Contractor shall furnish satisfactory evidence about the kind and quality of materials and equipment.

§ 3.5.2 **CORRECTION OF WORK** If, after 10 days' notice, the Contractor fails to proceed to cure any breach of this warranty, the Owner may have the defects corrected and the Contractor and its surety, if any, shall be liable for all expense incurred. In case of an emergency where, in the opinion of the Owner or the Architect, delay would cause serious loss or damage, if any, corrective work may be undertaken without advance notice to the Contractor, but the

Contractor and its surety shall remain liable for all expenses incurred. The remedies stated in this Section 3.5 are not exclusive, but are cumulative of any other Owner remedies.

§ 3.5.3 THIRD-PARTY WARRANTIES

- .1 The Contractor shall obtain from Subcontractors, manufacturers, and suppliers written guarantees and warranties consistent with any requirements of the Contract Documents. If the Contract Documents do not contain requirements for written guarantees or warranties, then the Contractor will obtain the optimum terms and longest periods reasonably obtainable. The documentation must also include all maintenance and operational documentation required to sustain the warranties.
- .2 All guarantees or warranties of third parties furnished to the Contractor or Subcontractor, including without limitation from any manufacturer or supplier, shall be deemed to run for the benefit of the Owner.
- .3 The Contractor shall deliver to the Owner via the Architect electronic or hard-copy versions of all as-built documents and guarantees and warranties on materials, systems, and equipment furnished by all manufacturers and suppliers to the Contractor and all its Subcontractors, with duly executed instruments properly assigning the guarantees and warranties to the Owner. These warranties in each bound volume shall be grouped together by trade and properly indexed. The Contractor shall assign and deliver to the Owner all manufacturers' warranties not later than the date of Substantial Completion.
- .4 **Until Substantial Completion, the Contractor shall perform and document all required maintenance of equipment and systems and maintain in force all warranties.**

§ 3.5.4 ASSIGNMENT OF WARRANTIES

The Contractor hereby assigns to the Owner all warranties and guarantees of all Subcontractors and Sub-subcontractors, but the assignment shall not relieve the Contractor of its warranty obligations to the Owner under these General Conditions and other Contract Documents.

§ 3.5.5 REMEDIES

Consistent with Section 13.4, the remedies stated in this Section 3.5 are not exclusive, but are cumulative of any other Owner remedies.

§ 3.6 TAXES

The Contractor shall pay all necessary local, county, and state taxes, income tax, compensation tax, social security, and withholding payments as required by law. Contractor hereby RELEASES, INDEMNIFIES, AND HOLDS HARMLESS Owner from any and all claims and demands made as a result of the failure of Contractor or any Subcontractor to comply with the provisions of any or all such laws and regulations.

§ 3.7 PERMITS, FEES, NOTICES, AND COMPLIANCE WITH LAWS

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Owner shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily

found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines, after considering Section 3.2, that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may proceed as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. For the purposes of these Contract Documents, the term "wetland" includes wetlands and water bodies subject to the federal Clean Water Act and parallel state and local rules, statutes, and regulations. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 ALLOWANCES

§ 3.8.1 The Contractor shall include in the Contract Sum 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, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 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 Sum and in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2. Savings realized on an allowance shall be returned to the Owner as a reduction in the Contract Sum.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner in sufficient time to avoid delay in the Work

§ 3.9 SUPERINTENDENT

§ 3.9.1 The Contractor shall continuously employ a competent superintendent, project manager, and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent and project manager shall represent the Contractor, and communications given to the project manager or superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The project manager and the superintendent shall be those persons named in the Contractor's proposal.

§ 3.9.3 So long as the project manager and the superintendent remain employed by the Contractor, the Contractor may not otherwise remove or replace the project manager, superintendent, or assistants, or cause them to leave the Project for any reason, including without limitation to work on other projects or take extended vacations, without 45 days' advance written notice to and the prior consent of the Owner. The Owner shall be consulted by the Contractor with respect to replacement personnel pursuant to the requirements of the Contract.

§ 3.9.4 New or replacement project managers, superintendents, and assistants must be qualified and must have adequate experience with similar projects. The Contractor shall deliver to the Owner résumés of proposed new or replacement project managers, superintendents, and assistants.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's approval a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work within the Contract Time.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

§ 3.11.1 The Contractor shall maintain at the site for the Owner one record as-built copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one record copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These as-built documents shall incorporate all changes and substitutions to the Work, including without limitation changes or substitutions arising from change orders, construction change directives, and details clarified by requests for information, supplemental instructions or approved shop drawings. The Contractor's as-built documentation shall be available to the Architect and the Owner during the course of the Project.

§ 3.11.2 The Contractor shall maintain all approved permit drawings in a manner that will make them accessible at the Project site to governmental inspectors and other authorized agencies. All approved drawings shall be wrapped, marked, and delivered to the Owner within 60 days of Substantial Completion.

§ 3.11.3 The Contractor must continuously maintain at the Project site all material safety data sheets, safety records, daily logs, and other Contract documentation necessary to immediately ascertain the safety of the Work and to establish compliance with life safety policies, hazardous materials requirements, and the Contract Documents.

§ 3.11.4 The Contractor, with its Subcontractors, will prepare draft record Contract Documents, showing all as-built conditions as required under Section 3.11.1, and submit them to Architect for review. Based on Architect's review and comments, if any, Contractor will prepare and deliver to Owner within 60 days of Substantial Completion, final, accurate, and complete record Contract Documents, including without limitation record Drawings and Specifications, showing the exact "as-built" conditions of the Work.

§ 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

§ 3.12.2 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.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence in order to cause no delay in the Work or in the activities of the Owner or of separate contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 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.

§ 3.12.8 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's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued 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's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, to the extent that the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.13 USE OF SITE

§ 3.13.1 The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.13.2 Prior to commencement of the Work, the Contractor shall review the Project site with the Owner in detail and identify the area of the Work, staging areas, connections or interfaces with existing structures and operations, and restrictions on the Project site area. The Contractor will ensure that all forces on the Project site are instructed about the acceptable working and staging areas and restrictions on use of the site. The Contractor, with advance consent of the Owner, will erect such barriers, signage, and devices as are necessary to restrict access to the Project site to approved personnel and to prevent unauthorized access by construction personnel to non-Work areas.

§ 3.13.3 The Contractor and its Subcontractors shall receive prior approval from the Owner before delivering or storing any materials or tools on the Owner's premises. Upon approval, materials and tools will be stored so that they do not hamper the operation of equipment or persons and do not present a fire or safety hazard.

§ 3.13.4 Contractor and its Subcontractors shall not erect on the Project site any signage intended to advertise or promote their business without the prior written consent of the Owner.

§ 3.13.5 If the Contractor removes the Owner's property, fixtures, materials, or other equipment to perform the Work, the Contractor shall be responsible for the safekeeping of all such property, fixtures, materials, or other equipment including without limitation assuring that such items are not lost, damaged, destroyed, and are upon the Owner's directive are either returned to their original location, reinstalled, replaced, or repaired as necessary.

§ 3.13.6 When all or a portion of the Work is suspended for any reason, the Contractor shall securely fasten down all coverings and protect the Work, as necessary, from damage by any cause.

§ 3.14 CUTTING AND PATCHING

§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

§ 3.15 CLEANING UP

§ 3.15.1 The Contractor shall, each work day, keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract.

§ 3.15.2 At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.3 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 ACCESS TO WORK

§ 3.16.1 The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

§ 3.16.2 Keys. The Contractor will be responsible for all keys issued to it or its Subcontractors for mechanical or other locked rooms. Keys will be obtained from the Owner and may not be copied, transferred, or used for any purpose other than prosecution of the Work. All keys will be returned to the Owner at the conclusion of the Work and as a condition precedent to final payment of the Contractor. If all keys are not returned and the Owner

determines, in its reasonable discretion, to rekey affected locks, the Contractor will pay the cost of rekeying all affected locks. This remedy is not exclusive of any other remedy of the Owner. The term "key" includes any device used to secure a room or areas in the Owner's premises, whether by mechanical, electronic, or other means.

§ 3.16.3 Identification. The Architect and its Consultants, the Contractor and its Subcontractors, and the employees and agents of any of them shall comply with the Owner's policies and requirements, if any, to obtain, display, and return identification badges at any time while they are present on the Owner's property.

§ 3.17 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Owner and the Architect.

§ 3.18 INDEMNIFICATION

§ 3.18.1 To the fullest extent permitted by law the Contractor shall indemnify, defend, and hold harmless the Owner and its agents, volunteers, representatives, students, and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' and experts' fees, arising out of or resulting from performance of the Work by the Contractor, a Subcontractor (of any tier), or anyone for whose acts they may be liable:

- .1 For death, personal injury (including without limitation sickness, disease, or bodily injury), or property damage to the extent caused by (a) the material breach of these General Conditions or the Contract Documents; (b) violation of laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities; or (c) any negligent or tortious acts or omissions of the Contractor, a Subcontractor (of any tier), or anyone for whose acts they may be liable; and
- .2 For claims for any violation of federal, state, or local laws or regulations relating to labor or employment, including without limitation wage-and-hour or benefit claims, asserted by or on behalf of an employee or employees of the Contractor, a Subcontractor (of any tier), or anyone for whose acts they may be liable.

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 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 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 3.18.1 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.

§ 3.18.3 Notwithstanding anything to the contrary in this Section 3.18, the Contractor is not required to indemnify the Owner or its agents and their respective volunteers, representatives, students, and employees for, from, and against liability for damage arising out of death or bodily injury to persons or damage to property caused in whole or in part by the negligence or willful misconduct of the Owner or its agents or their respective employees, but the Contractor is required to indemnify the Owner and its agents and their respective employees for, from, and against liability for damage arising out of death or bodily injury to persons or damage to property to the extent that the death or bodily injury to persons or damage to property arises out of the fault of the Contractor, or the fault of the Contractor's agents, representatives, or Subcontractors. The obligations of the Contractor under this Paragraph 3.18 shall not extend to the liability of the Architect, the Architect's consultants, and agents and employees of any of them arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications, or (2) the giving of or the failure to give directions or instructions by the Architect, the

Architect's consultants, and agents and employees of any of them provided that such giving or failure to give is the Architect's responsibility and the primary cause of the injury or damage.

ARTICLE 4 ARCHITECT

§ 4.1 GENERAL

§ 4.1.1 The Architect is the person lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

§ 4.1.3 If the employment of the Architect is terminated, the Owner may employ a successor architect as whom the Contractor has no reasonable objection. The Owner shall consider any reasonable objections of the Contractor, but the choice of the successor architect will solely that of the Owner.

§ 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate For Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, (1) to become familiar with the progress and quality of the portion of the Work completed, (2) to guard the Owner against defects and deficiencies in the Work, and (3) to determine if the Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) deviations and substitutions from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner. All communications involving a change in the cost of the Work must be copied to the Owner. Notwithstanding the above, the Owner may communicate directly with the Contractor.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work and documentation that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith

either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work. The Architect shall inform the Owner contemporaneously with any rejection of Work or documentation.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, in a manner not to cause delay in the Work while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals 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, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10 and Section 3.5; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 [Deleted] The Owner shall discuss matters related to the aesthetic intent and effect with the Architect and Contractor. The Architect may propose a solution, but the final decision shall be that of the Owner.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise in a manner not to cause delay in the Work. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 DEFINITIONS

§ 5.1.1 A Subcontractor is a person or entity who has a contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner and the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Owner or the Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect or the Owner requires additional time for review. Failure of the Owner or Architect to reply within the 14 day period shall constitute notice of no reasonable objection. Failure of the Owner to object to a Subcontractor does not imply approval of specific products or materials.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 Subcontractors shall be selected as provided in the Contract and the Guaranteed Maximum Price Amendment.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 SUBCONTRACTUAL RELATIONS

By appropriate written agreement, the Contractor shall require each subcontractor (a) to the extent of the Work to be performed by the subcontractor, to be bound to the Contractor by the scope of Work and requirements of the Contract Documents; (b) to assume toward the Contractor all duties, obligations, and conditions imposed by the terms and conditions of the Contract Documents that the Contractor assumes toward the Owner; and (c) to affirm the same representations to the Contractor that the Contractor makes to the Owner. The Contractor shall require each subcontractor to enter into similar agreements with sub-subcontractors of every tier. The Contractor shall make available to each proposed subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the subcontractor will be bound.

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 or stoppage of the Work by the Owner pursuant to Section 2.3.1; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

§ 5.5 DESIGN-BUILD SUBCONTRACTORS

The Contractor may retain various Subcontractors to perform design-build portions of the Project ("Design-Build Subcontractors"), which the Contractor shall identify in advance to the Owner before design-build

work commences. The Contractor assumes the obligation, as a contractual duty to the Owner, to deliver a completed and functioning Project in accordance with the Contract Documents, including without limitation all designs provided by the Design-Build Subcontractors. The Contractor is not itself a designer and does not independently approve the details of the designs of Design-Build Subcontractors. The Contractor shall place in its subcontracts with each of its Design-Build Subcontractors the following terms and conditions:

- .1 The Owner is an intended third-party beneficiary of the design-build subcontract and the Design-Build Subcontractor's services and Work. The Design-Build Subcontractor is not a third-party beneficiary of the Contract or any other agreement between the Contractor and the Owner, or between the Owner and the Architect or the Architect's consultants.
- .2 The Design-Build Subcontractor shall maintain through the Project, and for six (6) years after Substantial Completion of the Project, standard professional liability/errors-and-omissions insurance that is (a) in a form and with an insurance company satisfactory to the Contractor and the Owner, and (b) in compliance with the minimum insurance coverage requirements in Article 11 of these General Conditions.
- .3 The Design-Build Subcontractor's professional errors and omissions insurance will have the terms and limits as required in Section 11.1 of these General Conditions or as agreed in advance by the Owner and the Contractor.
- .4 The Design-Build Subcontractor shall notify the Contractor and the Owner no less than thirty (30) days before any cancellation, nonrenewal, or material modification of the professional errors and omissions insurance.
- .5 The Design-Build Subcontractor shall submit to the Owner and the Contractor proof of all such insurance before commencing Work on the Project.

The Contractor shall also ensure that the design-build subcontracts contain no limitation-of-liability clauses.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract.

§ 6.2 MUTUAL RESPONSIBILITY

§ 6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect and the Owner apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor to so report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except for defects not then reasonably discoverable.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a separate contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for unavoidable costs the Contractor incurs because of a separate contractor's delays, improperly timed activities, damage to the Work or defective construction. All construction costs resulting from Contractor's negligence, lack of oversight, inattention to detail, failure to investigate or failure to follow the Construction Documents or Contract Documents will be borne by the Contractor, subject to the terms and conditions of the Contract Documents and the Guaranteed Maximum Price Amendment.

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor causes to completed or partially completed construction or to property of the Owner, separate contractors as provided in Section 10.2.5. If a separate contractor initiates legal or any other proceedings against the Owner on account of any damage alleged to have been caused by the Contractor, the Owner shall notify the Contractor, who shall defend such proceedings and indemnify the Owner against any judgment or award, including without limitation costs and attorney fees. This Section 6.2.4 does not require the Contractor to indemnify the Owner against liability for damage arising out of death or bodily injury to persons or damage to property to the extent that the liability was caused by the negligence or intentional misconduct of the Owner.

§ 6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 OWNER'S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors and the Owner about the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 GENERAL

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order or Construction Change Directive, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order or Construction Change Directive.

§ 7.2 CHANGE ORDERS

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.2.2 Before approval of a Change Order and upon request of the Architect or the Owner, the Contractor will produce copies of all bids or other proposals, including those from Subcontractors and Sub-subcontractors, related to the Work proposed to be performed pursuant to the Change Order.

§ 7.2.3 Agreement on any Change Order shall constitute a final settlement of all matters relating to the changes in the Work that is the subject of the Change Order, including without limitation all direct and indirect costs associated with such change and any and all adjustments to the Contract Sum and the construction schedule.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

§ 7.3.1 A Construction Change Directive is a written order normally prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive may be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.7.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect and Owner of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Owner and the Architect shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in Section 7.5 of these General Conditions. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Owner and the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, reasonable expenditures for the purposes of this Section 7.3.7 shall be limited to the following:

- .1 Costs of labor, including social security, unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- .2 Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

- .4 permit fees, taxes, and increased costs of bonds and insurance (if such increases are necessitated by the Construction Change Directive related to the Work; and
- .5 Additional costs of supervision and field office personnel directly attributable to the change.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Owner and the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor will submit to Owner for approval a not-to-exceed price for performance of the Work required by the Construction Change Directive. The Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment, but the Owner is not obligated to make payments for Work completed under the Construction Change Directive until the parties agree on a not-to-exceed price. If the parties do not agree on a not-to-exceed price within 30 days after the Owner's issuance of the Construction Change Directive to the Contractor, then the Owner will make an interim determination on the amount owed to the Contractor for Work completed under the Construction Change Directive. The Owner's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 MINOR CHANGES IN THE WORK

The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. After the Architect communicates to the Owner that a minor change has been made, the change will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

§ 7.5 AGREED OVERHEAD AND PROFIT RATES

§ 7.5.1 For any adjustments to the Guaranteed Maximum Price that are based on other than the unit prices method, the Contractor will charge, and accept, as payment for overhead and profit, the following percentages of costs attributable to the change in the Work. The following overhead and profit rates shall also apply to adjustments to subcontracts that do not adjust the Guaranteed Maximum Price.

- .1 For work performed by the Construction Manager's own forces, the following markups shall apply:

Job Services for incidental pick up Work (by Hoffman Structures): For all job services related to incidental pick up Work performed by Hoffman Structures, Construction Manager will apply (i) an administrative fee equal to 3% of the actual costs for labor, labor burden, taxes, and fringes and (ii) a Construction Manager's fee, equaling 3.1% of the actual costs for labor, labor burden, taxes, and fringes.

Survey Services (by Ming Surveying): For all surveying services performed by Ming Surveying, Construction Manager will apply a Construction Manager's fee equaling 3.1% of the surveying costs. Construction Manager will bill surveying costs to Owner at a total rate of \$230 per hour through the end of the 2018 calendar year. The rate will be adjusted annually thereafter in accordance with the Consumer Price Index, subject to Owner's prior written approval. Construction Manager will also verify that Ming Survey's rate meets local market costs prior to commencing Work.

Hoffman Equipment Yard Rental: For equipment owned by Construction Manager or Affiliated Entities, Construction Manager will apply markup equaling 10% of the rental equipment cost. But the sum of (a) the rental equipment cost and (b) markup referenced in this paragraph may not exceed 75% of market rental rates. Construction Manager may, however, apply the Construction Manager's Fee to the rental equipment cost and markup even if application of the Construction Manager's Fee causes the total cost to exceed 75% of market rental rates.

Third Party Equipment Rentals: For equipment not owned by Construction Manager or Affiliated Entities, Construction Manager will apply (i) a yard overhead cost equaling 7% of the total cost of renting the equipment and (ii) a Construction Manager's fee, equaling 3.1% of the total cost of renting the equipment. The total cost of renting the equipment as referenced in this paragraph equals 100% of the cost incurred by Construction Manager to rent the equipment from the third party.

Permanently Installed Work (by Hoffman Mechanical, Hoffman Structures, etc.): For permanently installed Work that is competitively bid, such as concrete, mechanical or plumbing, Construction Manager will apply a fee equaling 3.1% of the cost of that permanently installed Work.

- .2 For Work performed by a Subcontractor, the Contractor may claim no more than the percentage applied to calculate the Contractor's Fee or five percent (5.0%) of the actual amount due to the Subcontractor for the Cost of the Work, whichever is less.
- .3 For Work performed by a Subcontractor or Sub-subcontractor, the Subcontractor or Sub-subcontractor may claim no more than ten percent (10.0%) of its actual Cost of the additional Work.
- .4 For Work performed by a Sub-subcontractor, its Subcontractor may claim a markup of no more than the percentage applied to calculate the Subcontractor's Fee or ten percent (10.0%) of the amount actually payable to the Sub-subcontractor for the Cost of the Work, whichever is less.
- .5 The Costs of the Work to which overhead and profit are to be applied at any tier are determined by Article 6 of the Agreement.
- .6 All cost proposals, except those so minor that their propriety can be readily determined, must be accompanied by a complete itemization of costs, including without limitation the costs of labor, materials, subcontracts, and sub-subcontracts. Subcontractor costs exceeding \$1,500 must be similarly itemized.
- .7 All general conditions or general requirements costs of the Contractor, Affiliated Entities, and all Subcontractors of any tier are not included in the markups listed in Section 7.5.1.1.
- .8 The Contractor bears the burden of establishing the reasonableness of any proposed increase in the Contract Sum or Contract Time.

§ 7.5.2 Overhead and profit adjustments for net decreases in the cost of any portion of the Work shall include a deduction of the overhead and profit, fee, and general conditions or general requirements costs that would be allowed for that Work by the terms of Section 7.5.1.

§ 7.5.3 Overtime, when specifically authorized by the Owner and not as an extraordinary measure, shall be paid for by the Owner on the basis of premium payment only, plus the cost of insurance and taxes based on the premium payment period. The Owner will not pay overhead and profit for overtime.

ARTICLE 8 TIME

§ 8.1 DEFINITIONS

§ 8.1.1 The Contract Time is the period of time from the date of commencement to Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 Substantial Completion is defined in Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 PROGRESS AND COMPLETION

§ 8.2.1 Time is of the essence of this Contract. Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 Consistent with Section 11.1.10, the date of commencement cannot occur before placement of insurance. The Contractor will not commence Work or enter the Project Site before placement of insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 If the Contractor is delayed at any time in progress of the Work by an act of negligence of the Owner or the Architect, or of an employee of either involved in the Project, or of a separate contractor employed by the Owner, or by changes ordered in the Work, or by occurrences beyond the control and without the fault or negligence of the Contractor or its Subcontractors and that by the exercise of reasonable diligence the Contractor is unable to prevent or provide against, including industry-wide labor disputes, fire, unusual and extended delays in deliveries, unavoidable casualties, adverse weather conditions not reasonably anticipated, or other occurrences that the Owner determines may justify delay, then the Contractor may obtain an extension of the Contract Time and adjustment to Contract Sum only upon satisfying the prerequisite conditions of (a) compliance with Subparagraph 15.1.3 of the General Conditions and (b) presentation to the Owner and the Architect of written notice of the request for an extension of the Contract Time as provided in Subparagraph 15.1.5.1. The Contract Time and Contract Sum may under these circumstances be adjusted by Change Order for the additional time actually and directly caused by the unforeseen occurrence. The extension will be net of any delays caused by or due to the fault or negligence of the Contractor and will also be net of any contingency or "float" time allowance included in the Project Schedule. In the event delays in the Work are encountered for any reason, the Owner and Contractor shall undertake reasonable steps to mitigate the effect of such delay.

§ 8.3.2 The Contract Time is set with reference to and knowledge of weather conditions usual to the area of the Project. To justify an excused delay in the Contract Time, adverse weather conditions not reasonably anticipated for purposes of Subparagraph 8.3.1 require the presence of abnormally severe or unsafe working conditions on the site that have a material, adverse effect on the scheduled Critical Path Work activities. As a minimum condition for a claim for additional time for abnormally severe weather, the Contractor must provide documentation from National Oceanic and Atmospheric Administration, or other comparable weather agency, that the conditions as the basis for the claim are more severe than for any comparable time period in the vicinity of the site within the past ten years.

§ 8.3.3 If the delay was caused by any public entity other than the Owner and not caused by the Owner, the Contractor, a Subcontractor of any tier, the Architect, or anyone acting on behalf of one or more of them, the Contractor is entitled only to an increase in the Contract Time (but not a change in the Contract Sum). If the delay was caused by the Contractor, a Subcontractor of any tier, or anyone acting on behalf of one or more of them, the Contractor is not entitled to an increase in the Contract Time or Contract Sum.

§ 8.3.4 [Deleted].

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents. The Owner will make progress payments to the Contractor no more than once each month based on a verified Application for Payment submitted by the Contractor and signed by the Owner.

§ 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect and the Owner, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect and the Owner may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2., for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.1.4 The Contractor shall submit its monthly Application for Payment to the Owner and the Architect (if required by the Owner), on AIA Document G702, supported by AIA Document G703, or an equivalent form approved by the Owner. Each Application for Payment shall be accompanied by the following, all in form and substance satisfactory to the Owner:

- .1 Description of the Work.
- .2 Detailed cost report and updated schedule of values.
- .3 Separate documentation and accounting for Work performed pursuant to Change Orders, Construction Change Directives, or minor changes in the Work; allowances; application of contingency; and payment for materials stored other than at the Project Site.
- .4 The Contractor's executed lien, bond, and claim releases ("Lien Releases") on forms acceptable to the Owner. Lien Releases shall provide a conditional release of liens, bonds, and claims for the Work that is subject to the current Application for Payment and an unconditional release for all Work performed through the date of all prior payment periods.
- .5 All other information and materials required to comply with the requirements of the Contract Documents.

The Owner may, at its option, request documentation from the Contractor evidencing that Subcontractors, Sub-subcontractors, and suppliers of every tier have provided the requisite conditional and unconditional releases and waivers of lien and bond rights to the Contractor for each Application of Payment.

§ 9.3.2 Unless otherwise expressly provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the Project site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants 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 have previously been 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.

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§ 9.3.4 Retainage will be withheld at a rate of five percent (5%) in accordance with ORS 279C.570.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor or Subcontractor to make payments to Subcontractors or Sub-subcontractors or for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a separate contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
- .7 failure to carry out the Work in accordance with the Contract Documents;
- .8 unsatisfactory Work progress;
- .9 disputed Work, materials, or products, not to exceed one hundred fifty percent (150%) of the amount in dispute;
- .10 failure to comply with other material provisions of the Contract Documents;
- .11 failure to maintain current safety and as-built documents as required by Section 3.11; or
- .12 failure to train personnel on the Project site in required safety procedures as required in the Contract Documents.

§ 9.5.2 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.3 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect. The Owner will notify the Contractor of a joint payment, and the Owner will receive credit against the Contract Sum for the joint payment.

§ 9.5.4 If the Contractor disputes any determination by the Architect with regard to any Certificate of Payment, the Contractor nevertheless shall expeditiously continue the Work.

§ 9.6 PROGRESS PAYMENTS

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor no later than seven days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.7 FAILURE OF PAYMENT

§ 9.7.1 If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.7.2 Failure of payment does not exist under Section 9.7.1 if the Owner exercises authority granted by the Contract documents to withhold payment notwithstanding certification by the Architect.

§ 9.8 SUBSTANTIAL COMPLETION

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when (1) the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use and (2) the Contractor, its Subcontractors of any tier, and its suppliers of any tier have completed or satisfied all conditions required of the Contractor for the issuance of a temporary or permanent certificate of occupancy.

- .1 As part of the final Application for Payment, the Contractor shall assemble for the Architect's approval within thirty (30) days of Substantial Completion three (3) complete bound copies of all operation, maintenance, and warranty data from all manufacturers whose equipment is installed in the Work. The final Certificate for Payment will not be issued by the Architect until all warranties and guaranties have been received and accepted by the Owner.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Owner or the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Owner or the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Owner's or Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Owner or the Architect. In such case, the Contractor shall then submit a request for another inspection by the Owner or the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list prepared under this Section 9.8. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Owner and the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect 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.

§ 9.9.3 Unless otherwise agreed upon, 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.

§ 9.9.4 The Contractor shall deliver to the Owner certificates of inspection, use, and occupancy upon completion of the Work in sufficient time for occupation of the Project in accordance with the approved schedule for the Work. The costs of such procurement, payment, and delivery shall be included within the Contract Sum.

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Owner and the Architect will promptly make such inspection and, when the Owner and the Architect find the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit 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 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.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

§ 9.10.4 In the event that final completion is not accomplished within 30 days after the date of Substantial Completion due to any fault of the Contractor, the Owner may withhold from any subsequent progress payments and from the final payment 150 percent of the reasonable cost of the unfinished Work necessary to attain final completion. Such funds are to be paid pro rata following successful completion of the unfinished Work if the Work is done by the Contractor. In the event that the Contractor fails to complete the Work necessary to attain final completion, the Owner may, without waiving any other remedies it may have, complete the Work and deduct the actual cost thereof from the funds withheld. The Owner shall not withhold any amount under this section relating to Work arising from Change Orders or Construction Change Directives issued following the date of Substantial Completion.

§ 9.10.5 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of warranties required by or included in the Contract Documents; or
- .4 the correction remedy allowed by Section 12.2.

§ 9.10.6 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.

§ 9.10.7 Requests for payment will not be considered if submitted (1) more than ninety (90) days following completion of the Work performed or (2) on or after the date of acceptance of final payment, whichever is earlier.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

§ 10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor acknowledges the unique safety risks associated with construction of school facilities in the presence of faculty, students, staff, and visitors.

§ 10.1.2 This Contract incorporates by this reference any Owner's safety policies current as of the date of commencement of the Work, which have been or will be made available to the Contractor. The Contractor, as a condition precedent to commencement of the Work, will instruct all personnel of the Contractor and its Subcontractors, prior to their performing any of the Work, of the elements of these policies with which the personnel will be required to comply. Notwithstanding any other provision of the Contract Documents, the Contractor's (or any Subcontractor's) failure to perform adequate safety training is grounds for the Owner's immediate suspension of the Work at the Contractor's sole expense and may result in cancellation of the Contract.

§ 10.1.3 In addition to the policies identified above, the Contractor shall review with all Subcontractors the methods, materials, tools, and equipment to be used to verify their compliance with all safety standards and laws and the Contractor shall be responsible for compliance with them, to ensure safe, hazard-free conditions for all persons visiting or working on the entire Project site and the Owner's adjoining facilities.

§ 10.1.4 The Contractor will develop a fire response plan consistent with that of the Owner, which will be strictly enforced by the Contractor's project safety officer and the Owner. The Contractor will supply fire extinguishers in sufficient size and quantity, distributed throughout the Project site, to maintain a safe working environment.

§ 10.1.5 The Contractor will ensure that all equipment furnished and installed as part of the Work is rated by Underwriters Laboratories or another method approved by the state testing laboratory or the Owner, as appropriate.

§ 10.1.6 Tobacco use is not permitted on any of the Owner's property. The Contractor will publish this standard to all personnel for whom it or its Subcontractors are responsible and will enforce it appropriately.

§ 10.2 SAFETY OF PERSONS AND PROPERTY

§ 10.2.1 The Contractor shall take all necessary reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

- .1 employees on the Work, the Owner's faculty, staff, students, and visitors and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors;
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction; and
- .4 adjoining operations of the Owner.

§ 10.2.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including installing fencing and posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities. The Contractor shall also be responsible, subject to the terms of the Contract, for all measures necessary to protect any property adjacent to the Project and improvements therein. Any damage to such property or improvements shall be promptly repaired by the Contractor. Contractor shall provide reasonable fall protection safeguards and provide approved fall protection safety equipment for use by all exposed Contractor employees.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel. The Contractor must obtain advance approval before proceeding with the storage or use of explosives or hazardous materials for performance of the Work.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 through 10.2.1.43 to the extent caused by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 through 10.2.1.4, but not to the extent of damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent or designated safety officer unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition. The Contractor will ensure that storage practices on the Project site will keep combustible load levels at a minimum and in approved containers that are clearly labeled. The Contractor will provide material safety data sheets to the Owner's Representative for all chemicals used on the Project site.

§ 10.2.8 INJURY OR DAMAGE TO PERSON OR PROPERTY

The Contractor will immediately report to the Owner by telephone or messenger whenever any person at the Project Site suffers injury or if there is property damage to the Owner's existing facilities or adjoining property. The notice shall provide sufficient detail to enable the other party to investigate the matter. The Contractor will promptly follow up the notice with a written report to the Owner.

§ 10.2.9 Without limiting any other requirement of this Section 10.2, the Contractor shall protect adjoining property and shall provide barricades, temporary fences, and covered walkways to protect the safety of passersby, as required by prudent construction practices, laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, or the Contract Documents. The Contractor shall be responsible for all measures necessary to protect any property adjacent to the Project and improvements thereon.

§ 10.2.10 Without limiting any other requirement of this Section 10.2, the Contractor shall, at its sole cost and expense, promptly repair any damage or disturbance to walls, utilities, sidewalks, curbs, adjoining property, and the property of third parties (including utility companies and governments) resulting from the performance of the Work, whether caused by the Contractor or by its Subcontractors of any tier. The Contractor shall maintain streets in good repair and traversable condition.

§ 10.2.11 The Contractor will ensure that storage practices on the Project site will keep combustible load levels to a minimum and in approved containers that are clearly labeled. The Contractor will provide material safety data sheets to the Owner for all chemicals used on the Project Site.

§ 10.2.12 Without limiting any other requirement of this Section 10.2, the Contractor shall maintain Work, materials, and apparatus free from damage from rain, wind, storms, frost, and heat. If adverse weather makes it impossible to continue operations safely in spite of weather precautions, the Contractor shall cease Work and notify the Owner and the Architect of the cessation.

§ 10.2.13 The Contractor shall not permit open fires on the Project Site.

§ 10.3 HAZARDOUS MATERIALS

§ 10.3.1 Hazardous Materials as that term is defined under Section 10.3.6. With respect to Hazardous Materials to be used during the course of the Work, the Contractor will implement and enforce a program to inventory and properly store and secure all Hazardous Materials that may be used or present on the Project site, maintain available for inspection at the Project site all material safety data sheets, and comply with all regulations required by law for the

storage, use, and disposal of Hazardous Materials. The program must provide for notification of all personnel of potential chemical hazards. Review of these hazards must be included in the Contractor's safety training program. The Contractor shall submit to the Owner a list of all Hazardous Materials to be brought by the Contractor or its Subcontractors onto the Owner's property, including the purpose for their use on the Project.

§ 10.3.2 In the event of a release or discovery of a preexisting release of Hazardous Materials, or if it is foreseeable that injury or death to persons may occur because of any material or substance (including without limitation Hazardous Materials) encountered on the Project site, the Contractor shall promptly (1) stop the Work or the portion of the Work affected, (2) notify the Owner and the Architect orally and in writing, and (3) protect against exposure of persons to the Hazardous Materials. The Contractor shall provide all written warnings, notices, reports, or postings required at law or by contract for the existence, use, release, or discovery of Hazardous Materials.

§ 10.3.3 With respect to any Hazardous Materials or other material or substance reported to the Owner under Section 10.3.2 that was not introduced to the Project site by the Contractor or its Subcontractors of any tier, the Owner shall obtain the services of a qualified environmental consultant to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to verify it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time may, subject to agreement by the Owner and the Contractor, be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up, which adjustments shall be accomplished as provided in Article 7.

§ 10.3.3.1 With respect to any Hazardous Materials or other material or substance reported to the Owner under Section 10.3.2 that was introduced to the Project site by the Contractor or its Subcontractors of any tier, the Contractor shall be responsible to carry out the duties of (1) proposing to the Owner and the Architect a qualified environmental consultant, (2) obtaining and paying for the services of the environmental consultant, and (3) verifying that the material is rendered harmless, as otherwise set forth in Section 10.3.3. The Contractor will not be entitled to an increase in the Contract Sum as stated in the last sentence of Section 10.3.3 if the Contractor or its Subcontractors of any tier are responsible for the condition requiring the testing of the material and the stoppage of the Work. Remediation work must be conducted by properly qualified contractors approved in advance by the Owner. Generally, the Owner may at its option contract directly with environmental consultants, and remediation contractors, regardless of whether the work will be performed at the Contractor's expense.

§ 10.3.4 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including without limitation attorney fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance was not introduced to the Project site by the Contractor or its Subcontractors of any tier, presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless.

No indemnification provided by the Owner under this Section 10.3.4 will be required to indemnify the Contractor, Subcontractors, or their employees or agents to the extent of liability for death or bodily injury to persons or damage to property caused in whole or in part by the Contractor's own negligence, but will require indemnity to the extent of the fault of the Owner or its agents or representatives.

§ 10.3.5 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, the Owner's Representatives, and employees of any of them from and against claims, damages, losses, and expenses, including without limitation to attorney fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance was introduced to the Project site by the Contractor or its Subcontractors of any tier, presents the risk of bodily injury or death, and has not been rendered harmless. No indemnification provided by the Contractor under this Section 10.3.5 will be required to indemnify the Owner or its

agents or representatives to the extent of liability for death or bodily injury to persons or damage to property caused in whole or in part by the Owner's own negligence, but will require indemnity to the extent of the fault of the Owner or its agents or representatives.

§ 10.3.6 "Hazardous Materials" are any substance defined or designated as being radioactive, infectious, hazardous, dangerous, or toxic by any federal, state, or local statute, regulation, or ordinance presently in effect or subsequently enacted. For purposes of Section 10.3, the term "introduce" means the physical placement or transportation of Hazardous Materials in or on the Project site regardless of whether the Hazardous Material was specified, required, or otherwise addressed in the Contract Documents.

§ 10.4 EMERGENCIES

In an emergency affecting safety of persons or property, the Contractor shall act to prevent threatened damage, injury or loss and immediately notify the Owner. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 Claims for damages insured by usual personal injury liability coverage and commercial general liability coverage (or its equivalent as approved in advance by the Owner);
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- .7 Claims for bodily injury or property damage arising out of completed operations;
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18;
- .9 claims for third-party injury and property damage (including without limitation clean-up costs) as a result of pollution conditions arising from the Contractor's operations or completed operations; and
- .10 claims involving the Contractor's professional liability, solely to the extent that the Contractor accepts design or design/build responsibilities under this Contract.

Contractor with prior approval from the Owner, may provide a Contractor Controlled Insurance Program (CCIP), which will include commercial general liability and excess liability and employers liability for the benefit of the Owner and all additional insureds required by Owner, however, nothing herein shall obligate Contractor to provide professional liability coverage under the CCIP or to provide coverage to the Owner, additional insureds, A/E, its subconsultants, or enrolled subcontractors of every tier who perform the Work at or from the designated Project site for claims arising from the design of the project which coverages are expressly excluded from the CCIP policies.

§ 11.1.2 CONTRACTOR PROVIDING INSURANCE

Without waiver of any other requirement of Section 11.1, the Contractor will pay for and maintain the following insurance at all times during the performance of the Work, without interruption until final acceptance of the Work or for such further duration as required below. All of the Contractor's insurance carriers shall be rated A VII or better by A.M. Best's rating service, unless otherwise approved by the Owner.

- .1 **Workers' Compensation.** The Contractor shall purchase and maintain workers' compensation coverage

sufficient to meet statutory liability limits.

- .2 **Employer's Liability.** The Contractor shall purchase and maintain employer's liability insurance in addition to its workers' compensation coverage with at least the minimum limits listed in Section 11.1.3 of these General Conditions.
- .3 **Commercial General Liability.** The Contractor shall purchase and maintain commercial general liability ("CGL") insurance on an occurrence basis, written on ISO Form CG 00 01 (12 04 or later) or an equivalent form approved in advance by the Owner. CGL coverage shall include all major coverage categories, including bodily injury, property damage, and products/completed operations coverage maintained for at least six (6) years following Final Payment. The CGL insurance must also include the following: (1) separation of insureds and (2) per-project aggregate.
- .4 **Professional Liability.** To the extent that the Contract Documents require the Contractor to provide professional design services or certifications related to systems, materials, or equipment, the Contractor shall (1) purchase and maintain professional liability/errors-and-omissions insurance and (2) cause those Subcontractors providing professional design services or certifications related to systems, materials, or equipment to do so under the requirements of Sections 5.5 and 11.1.3.
- .5 **Automobile Liability.** The Contractor shall purchase and maintain automobile liability insurance with coverage for owned, hired, and nonowned vehicles on ISO Form CA 00 01 or an equivalent form approved in advance by the Owner. The automobile liability insurance shall include pollution liability coverage with vehicle overturn and collision.
- .6 **Pollution Liability.** If the Owner designates the Project as having a known pollution exposure, the Contractor shall purchase Contractors Pollution Liability ("CPL") insurance. If the CPL insurance is written on a claims-made basis rather than an occurrence basis, then coverage must be maintained for at least six (6) years following final payment. Coverage is to include third-party claims for bodily injury, property damage, and environmental damage resulting from pollution conditions caused during the performance of covered operations both on site and migrating from the jobsite. Coverage is also to include pollution conditions arising from covered operations, including work performed by the Contractor's Subcontractors and third-party claims against the Contractor alleging improper supervision of the Subcontractors. The Contractor shall arrange for, and be responsible for, the selection of Subcontractors used to transport all Hazardous Materials that leave the Project site.
- .7 **Commercial Umbrella/Excess Coverage.** The Contractor shall purchase or maintain commercial umbrella or excess liability insurance to meet the minimum limits as described below in Section 11.1.3. Commercial umbrella/excess liability coverage includes: (1) "Pay on behalf of" wording; (2) concurrency of effective dates with primary coverage; (3) punitive damages coverage (if not prohibited by law); (4) application of aggregate (when applicable) in primary coverage; and (5) drop-down feature. The third-party liability insurance shall be scheduled to the umbrella/excess coverage.

§ 11.1.3 Limits. The insurance required by Section 11.1 shall be written for at least the limits of liability specified in this Section or required by law, whichever is greatest.

- .1 **Workers' Compensation.** Statutory Limits
- .2 **Employer's Liability.**
 - Each Accident: \$ 1,000,000
 - Each Bodily Injury Disease: \$ 1,000,000
 - Aggregate Bodily Injury Disease: \$ 1,000,000
- .3 **Commercial General Liability.**
 - Each Occurrence: \$ 2,000,000
 - General Aggregate: \$ 3,000,000
 - Product/Completed Operations: \$ 3,000,000
 - Personal & Advertising Injury: \$ 2,000,000

.4 Professional Liability/E&O.

Each Claim/Aggregate: \$ 2,000,000

.5 Automobile Liability.

Combined Single Limit: \$ 1,000,000

.6 Pollution Liability.

Single Limit: \$ 50,000,000

Aggregate: \$ 50,000,000

.7 Commercial Umbrella/Excess Coverage.

Each Occurrence: \$ 20,000,000

§ 11.1.4 Additional Insureds. The Contractor's third-party liability insurance policies shall include the Owner and its officers, employees, agents, volunteers, partners, successors, and assigns as additional insureds. The policy endorsement must extend premise operations and products/completed operations to the additional insureds. The additional insured endorsement for the Commercial General Liability must be written on ISO Form CG 2010 (11/85), a CG 2037 (07/04) together with CG 2033 (07/04), or the equivalent; but shall not use the following forms: CG 2010 (10/93) or CG 2010 (03/94).

§ 11.1.5 Joint Venture. If the Contractor is a joint venture, the joint venture shall be a *named* insured for the liability insurance policies.

§ 11.1.6 Primary Coverage. The Contractor's insurance identified in Section 11.1 shall be primary insurance coverage and may not seek contribution from any insurance or self-insurance carried by the Owner including any property damage coverage carried by the Owner. Contractor's insurance shall apply separately to each insured against whom a claim is made or suit is brought. The Contractor's insurance shall not include any cross-suit exclusion or preclude an additional insured party from asserting a claim as a third party. The Contractor waives all rights of subrogation against the Owner and coverage that the Owner maintains.

§ 11.1.7 Contractor's Failure to Maintain Insurance. If the Contractor for any reason fails to maintain required insurance coverage, such failure shall be deemed a material breach of the Contract and the Owner, at its sole discretion, may suspend or terminate the Contract pursuant to Section 14.2. The Owner may, but has no obligation to, purchase such required insurance and without further notice to the Contractor, the Owner may deduct from the Contract Sum any premium costs advanced by the Owner for such insurance. Failure to maintain the insurance coverage required by this Section 11.1 shall not waive the Contractor's obligations to the Owner.

- .1 The Contractor shall notify the Owner in writing at least thirty (30) days before any cancellation, lapse, or expiration of any insurance required by this Article 11.
- .2 The Contractor shall notify the Owner in writing of any reduction in available insurance coverage, including without limitation revised coverage limits or claims paid under the general aggregate, or both, that would cause the insurance available to the Owner to fall below or outside the requirements set forth in this Article 11 or by law.

§ 11.1.8 Certificates of Insurance. Before commencing the Work, the Contractor shall supply to the Owner certificates of insurance for the insurance policies described in this Section 11.1 prior to the commencement of the Work and before bringing any equipment or construction personnel onto the Project site.

- .1 **Additional Certificates.** To the extent that the Contractor's insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Section 9.10.2. Information concerning reduction of coverage on account of revised limits or claims paid under the general aggregate, or both, shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.
- .2 **Prohibition Until Certificates Received.** The Owner may, but is not obligated to, prohibit the Contractor and its Subcontractors from entering the Project site until the required insurance

certificates and all required attachments have been received and approved by the Owner. The Contractor may not enter the Project site or commence the Work until the Contractor places for the Work all coverages required under Section 11.1.2.

§ 11.1.9 Subcontractor Insurance. The Contractor shall cause each Subcontractor to purchase and maintain in full force and effect policies of insurance as specified in this Section 11.1, except for coverage limits, which will be agreed upon between the Owner and the Contractor. The Contractor will be responsible for the Subcontractors' coverage if the Subcontractors fail to purchase and maintain the required insurance. When requested by the Owner, the Contractor will furnish copies of certificates of insurance establishing coverage for each Subcontractor.

§ 11.1.10 Limitations on Coverage.

- .1 No insurance provided by the Contractor under this Section 11.1 will be required to indemnify the Owner, the Architect, or their employees or agents to the extent of liability for death or bodily injury to persons or damage to property caused in whole or in part by their own negligence, but will require indemnity to the extent of the fault of the Contractor or its agents, representatives, or Subcontractors.
- .2 The obligations of the Contractor under this Section 11.1 shall not extend to the liability of the Architect or its consultants for (1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs, or specifications, or (2) the giving or failure to give directions or instructions, to the extent that the directions, or failure to provide directions, are the cause of the injury or damage.
- .3 By requiring insurance, the Owner does not represent that coverage and limits will necessarily be adequate to protect the Contractor. Insurance in effect or procured by the Contractor will not reduce or limit the Contractor's contractual obligations to indemnify and defend the Owner for claims or suits that result from or are connected with the performance of the Contract.

§ 11.1.11 DEDUCTIBLES/SELF-INSURED RETENTIONS Payment of deductibles or self-insured retentions is not a Cost of the Work within the Contract Sum or the Guaranteed Maximum Price and does not justify a Change Order. Satisfaction of all self-insured retentions or deductibles is the sole responsibility of the Contractor.

§ 11.2 OWNER'S LIABILITY INSURANCE

The Owner shall be responsible for maintaining the Owner's usual liability insurance.

§ 11.3 PROPERTY INSURANCE

§ 11.3.1 Unless otherwise provided, the Contractor shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earth movement, flood, windstorm, falsehood, testing and startup, temporary buildings and debris removal including demolition occasioned by

enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's, Owner's, and Contractor's services and expenses required as a result of such insured loss.

§ 11.3.1.2

§ 11.3.1.3 If the property insurance requires deductibles, the Contractor shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.2 BOILER AND MACHINERY INSURANCE

The Owner shall maintain boiler and machinery insurance.

§ 11.3.3 [Deleted]

(Paragraph Deleted)

§ 11.3.4 [Deleted]

§ 11.3.5 [Deleted]

§ 11.3.6

[Deleted]

§ 11.3.7 [Deleted]

(Paragraph Deleted)

§ 11.3.8 A loss insured under the Contractor's property insurance shall be adjusted by the Contractor and made payable to the Contractor for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. 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.

§ 11.3.9 If required in writing by a party in interest, the Contractor shall, upon occurrence of an insured loss, give bond for proper performance of the Contractor's duties. The cost of required bonds shall be charged against proceeds received. The Contractor shall deposit in a separate account proceeds so received, which the Contractor shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Contractor shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Contractor's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Contractor shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Guaranteed Maximum Price Amendment or Early Work Amendment, if any, as required by the Contract.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.4.3 The Contractor may require one or more Subcontractor(s) to furnish payment and performance bonds covering the faithful performance of the particular subcontract, purchase order or similar agreement and the payment of obligations arising there under. In the event such bonds are furnished pursuant to this Subparagraph, the Owner shall pay the Contractor the cost of such bonds as part of the Cost of the Work, subject to the Guaranteed Maximum Price. Upon written approval from the Owner, Contractor may elect to provide Subcontractor default insurance (SDI) in lieu of performance and payment bonds for Subcontractors. Such subcontractor default insurance (SDI) shall provide coverage against losses directly caused by the default of performance or payment of a subcontractor under the terms and conditions of its subcontract. SDI shall be considered as part of the Cost of the Work, subject to the Guaranteed Maximum Price.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 UNCOVERING OF WORK

§ 12.1.1 If a portion of the Work is covered contrary to the Owner's or the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Owner or the Architect, be uncovered for examination by the Owner, the Architect, or any governmental authority and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Owner and the Architect or any governmental authority has not specifically requested to examine prior to its being covered, the Owner or the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of uncovering and correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

The Contractor shall promptly correct Work rejected by the Owner, the Architect, or any governmental authority or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Owner's and the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 AFTER SUBSTANTIAL COMPLETION

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly for no additional compensation after notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor, at its expense, shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 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.

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK

If the Owner prefers to accept Work that 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 Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located.

§ 13.2 SUCCESSORS AND ASSIGNS

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole or in part without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 13.3 WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach there under, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and

approvals by public agencies or by independent testing laboratories, as may be required by the Owner or the permitting jurisdiction. The Owner shall retain and pay for any private inspectors or testing laboratories that are required. The costs of such private inspections and tests shall not be included in the Contract Sum. The Contractor shall forward to the Architect and the Owner copies of all inspections, results, test results, orders, permits, and other directives or correspondence received by the Contractor from any inspector, testing laboratory, or agency with jurisdiction over the Work. The Contractor shall give the Owner and the Architect timely notice of when and where tests and inspections are to be made so that the Owner and the Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Owner and the Architect of when and where tests and inspections are to be made so that the Owner and the Architect may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Owner's and the Architect's services and expenses shall be at the Contractor's expense, including without limitation the cost of retesting for verification of compliance, if necessary, until the Architect certifies that the Work in question does comply with the requirements of the Contract Documents.

§ 13.5.4 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 Architect.

§ 13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5.7 No inspection performed or failed to be performed by the Owner shall waive any of the Contractor's obligations or be construed as an approval or acceptance of the Work or any part thereof.

§ 13.6 INTEREST

Payments due and unpaid under the Contract Documents shall bear interest at an annual rate of one percent (1.0%) over the prime lending rate published by the *Wall Street Journal*.

§ 13.7 TIME LIMITS ON CLAIMS

The Owner and Contractor shall commence all claims and causes of action, whether based on contract, tort, breach of warranty, statute, or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 TERMINATION BY THE CONTRACTOR

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency that requires all Work to be stopped;

- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, (1) repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less, and (2) none of the repeated suspensions, delays, or interruptions of the entire Work are caused by act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or any of their respective agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority;
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents; or
- .5 fails to observe the training, safety, and other precautions required in Article 10, including the Contractor's own safety policies for the Project.

§ 14.2.2 When any of the above reasons exist, the Owner may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate the Contract and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Owner's and the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner.. This obligation for payment shall survive termination of the Contract.

§ 14.2.5 If termination for cause is determined later to have been wrongful or without justification, then the termination will be considered to have been termination for convenience.

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent:

- .1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of termination for the Owner's convenience, the Contractor shall:

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work executed. The Contractor hereby waives and forfeits all other claims for payment and damages, including without limitation anticipated profits.

§ 14.4.4 The Owner may terminate a portion of the Work for the Owner's convenience and without cause, in which case the provisions of this Section 14.4 shall apply only to the portion of the Work terminated and the Contractor shall continue with performance of the remaining Work that is not terminated.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 CLAIMS

§ 15.1.1 DEFINITION

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 15.1.2 NOTICE OF CLAIMS

Claims by either the Owner or Contractor must be made by written notice to the other party and the Architect. Claims by either party must be made within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later, and must identify the known bases for each Claim and the nature and amount of the relief sought.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4 CLAIMS FOR ADDITIONAL COST

If the Contractor wishes to make a Claim for an increase in the Contract Sum or Guaranteed Maximum Price, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4. Failure to provide timely notice in accordance with Section 15.1.2 constitutes waiver of the Claim.

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary. Claims for additional time are governed by Section 8.3. Failure to provide timely notice in accordance with Section 15.1.2 constitutes waiver of the Claim.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.6 [Deleted]

(Paragraph Deleted)

§ 15.2 INITIAL RESOLUTION

§ 15.2.1 To facilitate the resolution of Claims between the Contractor and the Owner, the parties shall attempt in good faith first to resolve Claims that are made before Final Payment by the following dispute-resolution process. The parties agree not to proceed to arbitration until the following process has been attempted. Neither party's rights, defenses, Claims, and remedies shall be considered waived, released, or adversely affected by its participation in this process, but this process shall not toll any applicable statutory periods of limitation, duration, or ultimate repose except to the extent that the parties separately agree in writing to toll those periods.

(Paragraph Deleted)

.1 All reasonable efforts will be made by the Owner's Representative and the Contractor's project manager to resolve any Claims that arise during the Work in a prompt and equitable manner. If they fail to reach an equitable agreement to resolve a Claim, either party may notify the other party in writing to identify the Claim with known specificity and request a meeting between the Owner's senior executive responsible for the Project and the Contractor's senior executive responsible for the Project.

.2 The parties' senior executives shall meet at a mutually agreed time and place within ten (10) days of receipt of the written notice and attempt in good faith to negotiate a resolution of the Claim. If within ten (10) days after the meeting the parties have not succeeded in negotiating an agreed-upon resolution of the Claim, then either party may pursue any and all rights and remedies available to it in the Agreement.

.3 The parties may at any time mutually agree to submit any dispute between them to voluntary mediation or to arbitration under Section 15.4.

§ 15.2.2 [Deleted].

§ 15.2.3 [Deleted].

§ 15.2.4 [Deleted].

§ 15.2.5 [Deleted].

§ 15.2.6

[Deleted]

§ 15.2.6.1 [Deleted]

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a materialman's lien or construction lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 MEDIATION

§ 15.3.1 [Deleted]

§ 15.3.2 The parties may agree to engage in mediation to resolve their Claims.

§ 15.3.3 [Deleted]

§ 15.4 ARBITRATION

§ 15.4.1 Every Claim shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the Arbitration Service of Portland, Inc., in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the Arbitration Service of Portland, Inc., unless the parties elect another person or entity to administer arbitration proceedings. Exclusive venue for arbitration shall be Clatsop County, Oregon.

§ 15.4.1.1 A demand for arbitration shall be delivered in writing to the other party within a reasonable time after the claim, dispute or other matters in question have arisen, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations or repose purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 CONSOLIDATION OR JOINDER

§ 15.4.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitrations to be consolidated substantially involve common questions of law or fact, and (2) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.

§ 15.4.4.4. Prior to allowing any subcontractor or other party retained by the Contractor to commence work on the Project, the Contractor shall require such third party to consent in writing to arbitration if requested by the Owner or the Contractor.

END OF THE GENERAL CONDITIONS

Additions and Deletions Report for AIA® Document A201™ – 2007

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for the following PROJECT:

...

A new Seaside School District campus, which will include the following components, which are further:

(1) Closing existing buildings that operate in the City of Seaside's tsunami zone;

(2) Constructing a new facility on land donated by Weyerhaeuser Company, which will operate as Seaside High School and Broadway Middle School; and

(3) Renovation and expansion of Seaside Heights Elementary School.

...

~~(Name, legal status (Name and address))~~

...

SEASIDE SCHOOL DISTRICT 10
1801 SOUTH FRANKLIN STREET
SEASIDE, OREGON 97138

...

~~(Name, legal status (Name and address))~~

...

BRIC ARCHITECTURE, INC.
1233 NW NORTHRUP STREET, SUITE 100
PORTLAND, OREGON 97209

...

**THESE GENERAL CONDITIONS APPLY TO THE AGREEMENT BETWEEN
THE OWNER AND CONTRACTOR, AIA DOCUMENT A133-2009, AS
AMENDED, DATED JULY 3, 2017.**

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(Topics and numbers in bold are section headings.)(Numbers and Topics in Bold are Section Headings)

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The Contract Documents are enumerated in the Agreement between the Owner and Contractor (~~hereinafter the Agreement~~) identified on page 1 of these General Conditions (~~hereinafter the "Agreement"~~) and consist of the Agreement, Conditions of the Contract (~~General, Supplementary and (these General Conditions and any Supplementary Conditions or other Conditions)~~), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding requirements.

...

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties ~~hereto~~ and supersedes all prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants or (4) between any persons or entities other than the Owner and the Contractor. The Architect and the Contractor shall, however, be entitled to performance and enforcement of obligations of the other under the Contract intended to facilitate performance of ~~the Architect's~~ their respective duties.

...

The term "Work" means the construction and services required of the Contractor by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

...

~~Instruments~~ Instruments of Service are representations, Drawings, Specifications, and other documents, including those in electronic form, of the tangible creative work performed by the Architect and the Architect's consultants for the Project under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

...

§ 1.1.8 THE INDEMNITEES The "Indemnitees" are Owner and its officers, directors, volunteers, agents, representatives, and employees.

...

§ 1.1.9 AFFILIATED ENTITY OR AFFILIATED ENTITIES

of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials. The term "Affiliated Entity" shall mean the Contractor (if self-performing a portion of the Work), a parent, subsidiary, affiliate, or other entity having common

ownership or management with the Contractor; any entity in which any stockholder in, or management employee of, the Contractor, or the Contractor itself, owns any interest in excess of ten percent (10%) in the aggregate; or any person or entity that has the right to control the business or affairs of the Contractor. The term "Affiliated Entity" includes any member of the immediate family of any person identified above.

...

§ 1.1.8 INITIAL DECISION MAKER 1.1.10 CONSTRUCTION MANAGER/GENERAL CONTRACTOR

...

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2. All references to the term "Contractor" in these General Conditions shall mean the Construction Manager/General Contractor identified in the Agreement.

...

§ 1.2.2 Organization of the Specifications into divisions, sections. The terms of any document that forms the Contract are subject to the following order of precedence:

...

.1 Modifications;

...

.2 The Agreement;

...

~~and articles,~~ .3 These General Conditions and supplementary conditions;

...

~~and arrangement of Drawings shall not control the Contractor in dividing~~ .4 Drawings, Specifications, and Addenda issued before execution of the Contract, subject to Section 1.2.4;

...

~~the Work among Subcontractors or in establishing the extent of Work to be performed by any trade,~~ .5 Other documents incorporated by the terms of the Contract Documents.

...

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings. Dimensions not expressly provided in the Contract Documents are to be computed, rather than determined by scale or rule.

...

§ 1.2.4 If there is an inconsistency within or between (1) any Drawings, Specifications, or Addenda issued before execution of the Contract, or (2) any Drawings, Specifications, or Addenda and applicable standards, codes, and ordinances, and the inconsistency is not clarified by a Modification or by the Architect, then the Contractor shall provide the better quality or greater quantity of Work without requiring a change to the Contract Sum. The terms and conditions of this Section 1.2.4, however, shall not relieve the Contractor of any of the obligations set forth in Section 3.2.

...

§ 1.2.5 The organization of the Specifications into divisions, sections and articles, and the arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

...

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects, ~~Architects~~, or substitute for those documents that may be used on the Project, or (4) the titles of or terms defined in the Owner's policies incorporated in these General Conditions.

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§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution. The submittal or distribution of the Instruments of Service to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

...

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.

...

§ 2.1.2 The [Deleted]

...

Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein. § 2.1.3 Notwithstanding anything to the contrary in any Contract Document, no officer, director, trustee, partner, authorized representative, employee, student, volunteer, agent, or other representative of the Owner shall have any personal liability to the Contractor or any other person or entity

other than the Owner for any acts or omissions arising out of or relating to these General Conditions or the Agreement, whether based on tort, contract, statute, administrative laws, or otherwise.

...

§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. ~~The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor. Any request made after the commencement of the Work shall not serve as a basis for the Contractor to stop the Work.~~

...

§ 2.2.3 ~~The Owner shall furnish surveys describing~~ Except to the extent required for execution of the Work and requested by the Contractor in writing, the Owner shall not furnish surveys, studies, or reports regarding physical characteristics, legal limitations and utility locations for the site of the Project, ~~and but shall provide~~ a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

...

§ 2.2.4 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. ~~The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.~~

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§ 2.2.5 Unless otherwise provided in the Contract Documents, the Owner ~~shall furnish or the~~ Architect shall provide to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2. Additional copies may be purchased by the Contractor at the cost of reproduction and handling.

...

§ 2.3.1 If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 ~~or repeatedly fails to carry out Work in accordance with the Contract Documents~~, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

...

§ 2.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, ~~correct such commence and continue to carry out the Work, including without limitation the correction of any deficiencies.~~ In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. ~~Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If~~

payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

...

§ 2.4.2 If the Contractor's default or neglect results in a hazard to the safety of persons or property, the Owner may immediately commence or continue to carry out any Work necessary to mitigate the hazard without prior notice to the Contractor.

...

§ 2.4.3 The Owner's right to carry out the Work in this Section 2.4 shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

...

§ 2.5 The Owner may notify the Contractor that it needs to exclude or remove from the Project site any or all employees, agents, suppliers, or representatives of the Contractor or its Subcontractors who threaten the safety of others or are disruptive to the Project or the Owner's operations and activities. The Contractor will supply replacement personnel promptly after receiving notice of the exclusion or removal. Each replacement must have qualifications and experience comparable to or better than the individual or entity being replaced and be reasonably acceptable to the Owner. Nothing in this Section requires the Contractor to take any particular employment or contract action with regard to an employee or Subcontractor.

...

§ 2.6 RIGHTS and REMEDIES

...

Consistent with Section 13.4, the rights described in Sections 2.3 through 2.5 shall be in addition to, and not in restriction of, the Owner's other rights or remedies.

...

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. ~~The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located.~~ The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

...

§ 3.1.1.1 The Contractor and each of its Subcontractors must be licensed with the Oregon Construction Contractors Board at the time of solicitation of any work and throughout the entire course of the Work. The Contractor shall maintain all required bonding and insurance required by the State of Oregon and the Contract Documents throughout the entire course of the Work.

...

§ 3.1.1.2 The Contract is applicable to contractors who are owned or controlled by, or act as agents of, the Contractor for purposes of the Project.

§ 3.1.2 The Contractor shall supervise, coordinate, and perform the Work in accordance with the Contract Documents. Documents in a professional, safe, and workmanlike manner and in accordance with all laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and professional standards applicable to the industries and trades involved, including without limitation strict compliance with all applicable federal, state, and local laws and building codes and certification requirements applicable to the Work.

...

§ 3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Owner or the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

...

§ 3.1.4 Unless otherwise directed by the Architect, the Contractor shall perform all Work in accordance with product manufacturers' recommendations or directions for best results. No preparatory step or installation procedure may be omitted unless specifically authorized by the Contract Documents or at the direction of the Architect. Conflicts among manufacturers' directions or the Contract Documents shall be resolved by the Architect.

...

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents. In addition:

...

.1 The Contractor and each Subcontractor, as a condition precedent to commencement of the Work, shall:

...

(a) become familiar with the location, condition, layout, and nature of the Project Site and surrounding areas and generally prevailing climate conditions;

...

(b) review all analyses, studies, and test data available to the Contractor concerning the conditions of the Project site;

...

(c) inspect the location of the Project site and satisfy themselves as to its condition, including all observable structural, surface, and subsurface conditions to the extent information is provided by the Architect and can be viewed;

...

(d) evaluate the availability and cost of labor and trade Subcontractors and the availability and cost of materials, tools, and equipment; and

...

(e) determine (i) that the Contract Sum and GMP are just and reasonable compensation for all the Work, including all foreseen and foreseeable construction risks, hazards, and difficulties for which the Contractor is responsible under the Contract Documents, (ii) that the Contract Time is adequate for the performance of the Work, and (iii) that the means and methods of performing the Work will not result in any lateral or vertical movement of any adjacent structure.

...

The Contractor or Subcontractor must notify the Owner in writing before commencing the Work if it determines that it cannot satisfy one or more of these conditions.

...

- .2 The Owner shall not be required to make any adjustment in either the Contract Sum or the Contract Time in connection with any failure by the Contractor or any Subcontractor to have complied with the requirements of this Section 3.2.1.

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§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner ~~pursuant to Section 2.2.3, and,~~ shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect and the Owner any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Owner or the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

...

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall shall:

...

- .1 promptly report to the Owner and the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may ~~require~~ require;

...

- .2 include within the Guaranteed Maximum Price all Costs of the Work that are necessary for the Project to comply with all applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities.

...

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections ~~3.2.2 or~~ 3.2.1 through 3.2.3, the Contractor shall make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections ~~3.2.2 or~~ 3.2.1 through 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, ~~obligations and could not have recognized the applicable error, inconsistency, omission, or difference in the exercise of normal diligence,~~ the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public ~~authorities~~ authorities, recognized in the exercise of normal diligence.

...

§ 3.2.5 Unless otherwise specified in the Contract Documents, the Contractor shall confirm the location of each utility and shall excavate and dispose of each on-site utility. The Owner has made available to the Contractor, and the Contractor has studied, the results of such test borings and information that the Owner has concerning subsurface conditions and site geology. At the Owner's request, the Contractor will make available to the Owner the results of any other site investigation, analyses, studies, or other tests conducted by or that are in possession of the Contractor or any of its agents. The Contractor shall exercise special care in executing subsurface work in proximity of known subsurface utilities, improvements, and easements.

...

§ 3.3.1 The Contractor shall ~~supervise~~ supervise, coordinate, and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, all 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. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Owner or the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner or the Architect shall be ~~solely~~ responsible for any loss or damage arising ~~solely~~ from those Architect- or Owner-required means, methods, techniques, sequences or procedures.

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§ 3.3.4 The Contractor must notify the Owner at least ten (10) days prior to the interruption of any utility or operating system, regardless of the area it services. The specific schedule for all interruptions in services must be coordinated through the Owner's Representative.

...

§ 3.3.5 The Contractor and its Subcontractors may not use the Owner's tools, equipment, or materials unless authorized in advance by the Owner's Representative.

§ 3.3.6 If the Contractor reasonably believes that suspension of the Work is warranted by reason of unforeseen circumstances that could adversely affect the quality of the Work if the Work were continued, the Contractor shall immediately notify the Owner and the Architect and describe with particularity the reasons therefor. Except as stated elsewhere in the Contract Documents or in an emergency, the Contractor shall not suspend the Work until it receives approval from the Owner.

...

§ 3.3.7 It is understood and agreed that the relationship of Contractor to Owner shall be that of an independent contractor under ORS 670.600. Nothing contained in this Agreement or inferable from this Agreement shall be deemed or construed to (a) make Contractor the agent, servant, or employee of the Owner; or (b) create any partnership, joint venture, or other association between Owner and Contractor. Any direction or instruction by Owner or any of its authorized representatives in respect to the Work shall relate to the results the Owner desires to obtain from the Work, and shall in no way affect Contractor's independent contractor status.

...

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

...

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the prior written consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

...

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them. The Contractor shall hire all personnel for the proper and diligent prosecution of the Work, and maintain labor peace for the duration of the Project. In the event of a labor dispute, the Contractor shall not be entitled to any increase in the Contract Sum.

...

§ 3.4.4 Including, but not limited to the specific requirements of Section 10.1.1, Contractor, its Subcontractors, and vendors shall bear responsibility for compliance with all federal and state laws, regulations, guidelines, and ordinances pertaining to worker safety and applicable to the Work. Contractor further recognizes that the Owner and Architect do not owe the Contractor any duty to supervise or direct Contractor's work so as to protect the Contractor from the consequences of Contractor's own conduct.

...

§ 3.5 WARRANTY

...

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit.

Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the ~~Architect~~, Architect or the Owner, the Contractor shall furnish satisfactory evidence ~~as to~~ about the kind and quality of materials and equipment.

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§ 3.6 TAXES
3.5.2 CORRECTION OF WORK If, after 10 days' notice, the Contractor fails to proceed to cure any breach of this warranty, the Owner may have the defects corrected and the Contractor and its surety, if any, shall be liable for all expense incurred. In case of an emergency where, in the opinion of the Owner or the Architect, delay would cause serious loss or damage, if any, corrective work may be undertaken without advance notice to the Contractor, but the Contractor and its surety shall remain liable for all expenses incurred. The remedies stated in this Section 3.5 are not exclusive, but are cumulative of any other Owner remedies.

...

§ 3.5.3 THIRD-PARTY WARRANTIES

...

~~The Contractor shall pay sales, consumer, use and similar taxes.~~ **1** The Contractor shall obtain from Subcontractors, manufacturers, and suppliers written guarantees and warranties consistent with any requirements of the Contract Documents. If the Contract Documents do not contain requirements for written guarantees or warranties, then the Contractor will obtain the optimum terms and longest periods reasonably obtainable. The documentation must also include all maintenance and operational documentation required to sustain the warranties.

...

~~for the Work provided.~~ **2** All guarantees or warranties of third parties furnished to the Contractor or Subcontractor, including without limitation from any manufacturer or supplier, shall be deemed to run for the benefit of the Owner.

...

3 The Contractor shall deliver to the Owner via the Architect electronic or hard-copy versions of all as-built documents and guarantees and warranties on materials, systems, and equipment furnished by the Contractor that all manufacturers and suppliers to the Contractor and all its Subcontractors, with duly executed instruments properly assigning the guarantees and warranties to the Owner. These warranties in each bound volume shall be grouped together by trade and properly indexed. The Contractor shall assign and deliver to the Owner all manufacturers' warranties not later than the date of Substantial Completion.

...

4 Until Substantial Completion, the Contractor shall perform and document all required maintenance of equipment and systems and maintain in force all warranties.

...

§ 3.5.4 ASSIGNMENT OF WARRANTIES

...

The Contractor hereby assigns to the Owner all warranties and guarantees of all Subcontractors and Sub-subcontractors, but the assignment shall not relieve the Contractor of its warranty obligations to the Owner under these General Conditions and other Contract Documents.

...

§ 3.5.5 REMEDIES

...

are legally enacted when bids are received. Consistent with Section 13.4, the remedies stated in this Section 3.5 are not exclusive, but are cumulative of any other Owner remedies.

...

§ 3.6 TAXES

...

or negotiations concluded, whether or not yet effective or merely scheduled to go into effect. The Contractor shall pay all necessary local, county, and state taxes, income tax, compensation tax, social security, and withholding payments as required by law. Contractor hereby RELEASES, INDEMNIFIES, AND HOLDS HARMLESS Owner from any and all claims and demands made as a result of the failure of Contractor or any Subcontractor to comply with the provisions of any or all such laws and regulations.

...

§ 3.7 PERMITS, FEES, NOTICES, AND COMPLIANCE WITH LAWS

...

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

PAGE 19

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect ~~determines~~ determines, after considering Section 3.2, that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may proceed as provided in Article 15.

...

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. For the purposes of these Contract Documents, the term "wetland" includes wetlands and water bodies subject to the federal Clean Water Act and parallel state and local rules, statutes, and regulations. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

...

.1 ~~Allowances~~ allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

...

.2 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 Sum ~~but not and~~ in the allowances; and

...

.3 ~~Whenever~~ whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2. Savings realized on an allowance shall be returned to the Owner as a reduction in the Contract Sum.

...

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner ~~with reasonable promptness in~~ sufficient time to avoid delay in the Work

...

§ 3.9.1 The Contractor shall ~~employ a competent superintendent continuously~~ employ a competent superintendent, project manager, and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent and project manager shall represent the Contractor, and communications given to the project manager or superintendent shall be as binding as if given to the Contractor.

...

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through project manager and the superintendent shall be those persons named in the Contractor's proposal.

...

~~the Architect the name and qualifications of a proposed superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. Failure of the Architect to reply within the 14 day period shall constitute notice of no reasonable objection.~~ § 3.9.3 So long as the project manager and the superintendent remain employed by the Contractor, the Contractor may not otherwise remove or replace the project manager, superintendent, or assistants, or cause them to leave the Project for any reason, including without

limitation to work on other projects or take extended vacations, without 45 days' advance written notice to and the prior consent of the Owner. The Owner shall be consulted by the Contractor with respect to replacement personnel pursuant to the requirements of the Contract.

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§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed. 3.9.4 New or replacement project managers, superintendents, and assistants must be qualified and must have adequate experience with similar projects. The Contractor shall deliver to the Owner résumés of proposed new or replacement project managers, superintendents, and assistants.

...

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information approval a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work. Work within the Contract Time.

...

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

...

§ 3.11.1 The Contractor shall maintain at the site for the Owner one record as-built copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one record copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These as-built documents shall incorporate all changes and substitutions to the Work, including without limitation changes or substitutions arising from change orders, construction change directives, and details clarified by requests for information, supplemental instructions or approved shop drawings. The Contractor's as-built documentation shall be available to the Architect and the Owner during the course of the Project.

...

§ 3.11.2 The Contractor shall maintain all approved permit drawings in a manner that will make them accessible at the Project site to governmental inspectors and other authorized agencies. All approved drawings shall be delivered to the Architect for submittal wrapped, marked, and delivered to the Owner within 60 days of Substantial Completion.

...

to the Owner upon completion of the Work § 3.11.3 The Contractor must continuously maintain at the Project site all material safety data sheets, safety records, daily logs, and other Contract documentation necessary to immediately ascertain the safety of the Work and to establish compliance with life safety policies, hazardous materials requirements, and the Contract Documents.

...

as a record of the Work as constructed. § 3.11.4 The Contractor, with its Subcontractors, will prepare draft record Contract Documents, showing all as-built conditions as required under Section 3.11.1, and submit them to Architect for review. Based on Architect's review and comments, if any, Contractor will prepare and deliver to Owner within 60 days of Substantial Completion, final, accurate, and complete record Contract Documents, including without limitation record Drawings and Specifications, showing the exact "as-built" conditions of the Work.

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§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as in order to cause no delay in the Work or in the activities of the Owner or of separate contractors.

...

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided to the extent that the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

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§ 3.13.1 The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

...

§ 3.13.2 Prior to commencement of the Work, the Contractor shall review the Project site with the Owner in detail and identify the area of the Work, staging areas, connections or interfaces with existing structures and operations, and restrictions on the Project site area. The Contractor will ensure that all forces on the Project site are instructed about the acceptable working and staging areas and restrictions on use of the site. The Contractor, with advance consent of the Owner, will erect such barriers, signage, and devices as are necessary to restrict access to the Project site to approved personnel and to prevent unauthorized access by construction personnel to non-Work areas.

...

§ 3.13.3 The Contractor and its Subcontractors shall receive prior approval from the Owner before delivering or storing any materials or tools on the Owner's premises. Upon approval, materials and tools will be stored so that they do not hamper the operation of equipment or persons and do not present a fire or safety hazard.

...

§ 3.13.4 Contractor and its Subcontractors shall not erect on the Project site any signage intended to advertise or promote their business without the prior written consent of the Owner.

...

§ 3.13.5 If the Contractor removes the Owner's property, fixtures, materials, or other equipment to perform the Work, the Contractor shall be responsible for the safekeeping of all such property, fixtures, materials, or other equipment including without limitation assuring that such items are not lost, damaged, destroyed, and are upon the Owner's directive are either returned to their original location, reinstalled, replaced, or repaired as necessary.

...

§ 3.13.6 When all or a portion of the Work is suspended for any reason, the Contractor shall securely fasten down all coverings and protect the Work, as necessary, from damage by any cause.

...

§ 3.15.1 The Contractor shall shall, each work day, keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract-Contract.

...

§ 3.15.2 At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery-machinery, and surplus materials from and about the Project.

...

§ 3.15.2 3.15.3 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and Owner shall be entitled to reimbursement from the Contractor.

...

§ 3.16.1 The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

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§ 3.16.2 Keys. The Contractor will be responsible for all keys issued to it or its Subcontractors for mechanical or other locked rooms. Keys will be obtained from the Owner and may not be copied, transferred, or used for any purpose other than prosecution of the Work. All keys will be returned to the Owner at the conclusion of the Work and as a condition precedent to final payment of the Contractor. If all keys are not returned and the Owner determines, in its reasonable discretion, to rekey affected locks, the Contractor will pay the cost of rekeying all affected locks. This remedy is not exclusive of any other remedy of the Owner. The term "key" includes any device used to secure a room or areas in the Owner's premises, whether by mechanical, electronic, or other means.

...

§ 3.16.3 Identification. The Architect and its Consultants, the Contractor and its Subcontractors, and the employees and agents of any of them shall comply with the Owner's policies and requirements, if any, to obtain, display, and return identification badges at any time while they are present on the Owner's property.

...

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Owner and the Architect.

...

§ 3.18.1 To the fullest extent permitted by law the Contractor shall ~~indemnify~~ indemnify, defend, and hold harmless the Owner, Architect, Architect's consultants, and agents Owner and its agents, volunteers, representatives, students, and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' and experts' fees, arising out of or resulting from performance of the Work, ~~provided that such claim, damage, loss or expense is attributable to bodily injury, Work by the Contractor, a Subcontractor (of any tier), or anyone for whose acts they may be liable:~~

...

~~sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent,~~ 1 For death, personal injury (including without limitation sickness, disease, or bodily injury), or property damage to the extent caused by (a) the material breach of these General Conditions or the Contract Documents; (b) violation of laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities; or (c) any negligent or tortious acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them Subcontractor (of any tier), or anyone for whose acts they may be liable, regardless liable; and

...

~~of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder.~~ 2 For claims for any violation of federal, state, or local laws or regulations relating to labor or employment, including without limitation wage-and-hour or benefit claims, asserted by or on behalf of an employee or employees of the Contractor, a Subcontractor (of any tier), or anyone for whose acts they may be liable.

...

Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity ~~that~~ which would otherwise exist as to a party or person described in this Section 3.18.

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§ 3.18.3 Notwithstanding anything to the contrary in this Section 3.18, the Contractor is not required to indemnify the Owner or its agents and their respective volunteers, representatives, students, and employees for, from, and

against liability for damage arising out of death or bodily injury to persons or damage to property caused in whole or in part by the negligence or willful misconduct of the Owner or its agents or their respective employees, but the Contractor is required to indemnify the Owner and its agents and their respective employees for, from, and against liability for damage arising out of death or bodily injury to persons or damage to property to the extent that the death or bodily injury to persons or damage to property arises out of the fault of the Contractor, or the fault of the Contractor's agents, representatives, or Subcontractors. The obligations of the Contractor under this Paragraph 3.18 shall not extend to the liability of the Architect, the Architect's consultants, and agents and employees of any of them arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications, or (2) the giving of or the failure to give directions or instructions by the Architect, the Architect's consultants, and agents and employees of any of them provided that such giving or failure to give is the Architect's responsibility and the primary cause of the injury or damage.

...

§ 4.1.1 ~~The Owner shall retain an architect~~ Architect is the person lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

...

§ 4.1.3 ~~If the employment of the Architect is terminated, the Owner shall may employ a successor architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect objection.~~ The Owner shall consider any reasonable objections of the Contractor, but the choice of the successor architect will solely that of the Owner.

...

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate ~~for~~ For Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

...

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, (1) to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed (2) to guard the Owner against defects and deficiencies in the Work, and (3) to determine if the Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

...

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner ~~(1) known deviations and substitutions from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work.~~ The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

...

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner. All communications involving a change in the cost of the Work must be copied to the Owner. Notwithstanding the above, the Owner may communicate directly with the Contractor.

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§ 4.2.6 The Architect has authority to reject Work and documentation that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work. The Architect shall inform the Owner contemporaneously with any rejection of Work or documentation.

...

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, ~~with reasonable promptness in a manner not to cause delay in the Work~~ while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals 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, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

...

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; ~~9.10 and Section 3.5;~~ and issue a final Certificate for Payment pursuant to Section 9.10.

...

§ 4.2.13 ~~The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.~~ ~~[Deleted]~~ The Owner shall discuss matters related to the aesthetic intent and effect with the Architect and Contractor. The Architect may propose a solution, but the final decision shall be that of the Owner.

...

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with

reasonable promptness, in a manner not to cause delay in the Work. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

...

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

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§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner ~~through and~~ the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Owner or the Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect or the Owner requires additional time for review. Failure of the Owner or Architect to reply within the ~~14 day~~ 14 day period shall constitute notice of no reasonable objection. Failure of the Owner to object to a Subcontractor does not imply approval of specific products or materials.

...

§ 5.2.3 ~~If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required. Subcontractors shall be selected as provided in the Contract and the~~

...

Guaranteed Maximum Price Amendment.

...

By appropriate agreement, ~~written where legally required for validity, written agreement,~~ the Contractor shall require each Subcontractor, subcontractor (a) to the extent of the Work to be performed by the Subcontractor, subcontractor, to be bound to the Contractor by ~~terms of the Contract Documents, and the scope of Work and requirements of the Contract Documents;~~ (b) to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. ~~Where appropriate, the Contractor shall require each Subcontractor duties, obligations, and conditions imposed by the terms and conditions of the Contract Documents that the Contractor assumes toward the Owner; and (c) to affirm the same representations to the Contractor that the Contractor makes to the Owner. The Contractor shall require each subcontractor to enter into similar agreements with Sub-subcontractors, sub-subcontractors of every tier. The Contractor shall make available to each proposed Subcontractor, subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of~~

applicable portions of such documents available to their respective proposed Sub-subcontractors. subcontractor will be bound.

...

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; or stoppage of the Work by the Owner pursuant to Section 2.3.1; and

...

§ 5.5 DESIGN-BUILD SUBCONTRACTORS

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The Contractor may retain various Subcontractors to perform design-build portions of the Project ("Design-Build Subcontractors"), which the Contractor shall identify in advance to the Owner before design-build work commences. The Contractor assumes the obligation, as a contractual duty to the Owner, to deliver a completed and functioning Project in accordance with the Contract Documents, including without limitation all designs provided by the Design-Build Subcontractors. The Contractor is not itself a designer and does not independently approve the details of the designs of Design-Build Subcontractors. The Contractor shall place in its subcontracts with each of its Design-Build Subcontractors the following terms and conditions:

...

- .1 The Owner is an intended third-party beneficiary of the design-build subcontract and the Design-Build Subcontractor's services and Work. The Design-Build Subcontractor is not a third-party beneficiary of the Contract or any other agreement between the Contractor and the Owner, or between the Owner and the Architect or the Architect's consultants.

...

- .2 The Design-Build Subcontractor shall maintain through the Project, and for six (6) years after Substantial Completion of the Project, standard professional liability/errors-and-omissions insurance that is (a) in a form and with an insurance company satisfactory to the Contractor and the Owner, and (b) in compliance with the minimum insurance coverage requirements in Article 11 of these General Conditions.

...

- .3 The Design-Build Subcontractor's professional errors and omissions insurance will have the terms and limits as required in Section 11.1 of these General Conditions or as agreed in advance by the Owner and the Contractor.

...

- .4 The Design-Build Subcontractor shall notify the Contractor and the Owner no less than thirty (30) days before any cancellation, nonrenewal, or material modification of the professional errors and omissions insurance.

...

.5 The Design-Build Subcontractor shall submit to the Owner and the Contractor proof of all such insurance before commencing Work on the Project.

...

The Contractor shall also ensure that the design-build subcontracts contain no limitation-of-liability

...

ARTICLE clauses.

...

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

...

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site ~~under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation site.~~ If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

...

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the ~~Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.~~ Contract.

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§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect and the Owner apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor ~~to so to~~ report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except ~~as to~~ for defects not then reasonably discoverable.

...

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a separate contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for unavoidable costs the Contractor incurs because of a separate contractor's delays, improperly timed activities, damage to the Work or defective construction. All construction costs resulting from Contractor's negligence, lack of oversight, inattention to detail, failure to investigate or failure to follow the Construction Documents or Contract Documents will be borne by the Contractor, subject to the terms and conditions of the Contract Documents and the Guaranteed Maximum Price Amendment.

...

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor ~~wrongfully~~ causes to completed or partially completed construction or to property of the ~~Owner or Owner~~, separate contractors as provided in Section 10.2.5. If a separate contractor initiates legal or any other proceedings against the Owner on account of any damage alleged to have been caused by the Contractor, the Owner shall notify the Contractor, who shall defend such proceedings and indemnify the Owner against any judgment or award, including without limitation costs and attorney fees. This Section 6.2.4 does not require the Contractor to indemnify the Owner against liability for damage arising out of death or bodily injury to persons or damage to property to the extent that the liability was caused by the negligence or intentional misconduct of the Owner.

...

If a dispute arises among the Contractor, separate contractors and the Owner ~~as to~~ about the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

...

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, ~~Construction Change Directive or order for a minor change in the Work, Order or Construction Change Directive~~, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

...

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; ~~an order for a minor change in the Work may be issued by the Architect alone.~~ Contractor.

...

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, ~~Construction Change Directive or order for a minor change in the Work.~~ Order or Construction Change Directive.

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§ 7.2.2 Before approval of a Change Order and upon request of the Architect or the Owner, the Contractor will produce copies of all bids or other proposals, including those from Subcontractors and Sub-subcontractors, related to the Work proposed to be performed pursuant to the Change Order.

...

§ 7.2.3 Agreement on any Change Order shall constitute a final settlement of all matters relating to the changes in the Work that is the subject of the Change Order, including without limitation all direct and indirect costs associated with such change and any and all adjustments to the Contract Sum and the construction schedule.

...

§ 7.3.1 A Construction Change Directive is a written order normally prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

...

§ 7.3.2 A Construction Change Directive shall may be used in the absence of total agreement on the terms of a Change Order.

...

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect and Owner of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

...

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Owner and the Architect shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. Section 7.5 of these General Conditions. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Owner and the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, ~~costs~~ reasonable expenditures for the purposes of this Section 7.3.7 shall be limited to the following:

...

- .1 Costs of labor, including social security, ~~old age and~~ unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;

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- .4 ~~Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes permit fees, taxes, and increased costs of bonds and insurance (if such increases are necessitated by the Construction Change Directive related to the Work; and~~

...

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Owner and the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

...

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor will submit to Owner for approval a not-to-exceed price for performance of the Work required by the Construction Change Directive. The Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's Payment, but the Owner is not obligated to make payments for Work completed under the Construction Change Directive until the parties agree on a not-to-exceed price. If the parties do not agree on a not-to-exceed price within 30 days after the Owner's issuance of the Construction Change Directive to the Contractor, then the Owner will make an interim determination on the amount owed to the Contractor for Work completed under the Construction Change Directive. The Owner's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

...

The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes After the Architect communicates to the Owner that a minor change has been made, the change will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

...

§ 7.5 AGREED OVERHEAD AND PROFIT RATES

...

§ 7.5.1 For any adjustments to the Guaranteed Maximum Price that are based on other than the unit prices method, the Contractor will charge, and accept, as payment for overhead and profit, the following percentages of costs attributable to the change in the Work. The following overhead and profit rates shall also apply to adjustments to subcontracts that do not adjust the Guaranteed Maximum Price.

...

.1 For work performed by the Construction Manager's own forces, the following markups shall apply:

...

Job Services for incidental pick up Work (by Hoffman Structures): For all job services related to incidental pick up Work performed by Hoffman Structures, Construction Manager will apply (i) an administrative fee equal to 3% of the actual costs for labor, labor burden, taxes, and fringes and (ii) a Construction Manager's fee, equaling 3.1% of the actual costs for labor, labor burden, taxes, and fringes.

...

Survey Services (by Ming Surveying): For all surveying services performed by Ming Surveying, Construction Manager will apply a Construction Manager's fee equaling 3.1% of the surveying costs. Construction Manager will bill surveying costs to Owner at a total rate of \$230 per hour through the end of the 2018 calendar year. The rate will be adjusted annually thereafter in accordance with the Consumer Price Index, subject to Owner's prior written approval. Construction Manager will also verify that Ming Survey's rate meets local market costs prior to commencing Work.

...

Hoffman Equipment Yard Rental: For equipment owned by Construction Manager or Affiliated Entities, Construction Manager will apply markup equaling 10% of the rental equipment cost. But the sum of (a) the rental equipment cost and (b) markup referenced in this paragraph may not exceed 75% of market rental rates. Construction Manager may, however, apply the Construction Manager's Fee to the rental equipment cost and markup even if application of the Construction Manager's Fee causes the total cost to exceed 75% of market rental rates.

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Third Party Equipment Rentals: For equipment not owned by Construction Manager or Affiliated Entities, Construction Manager will apply (i) a yard overhead cost equaling 7% of the total cost of renting the equipment and (ii) a Construction Manager's fee, equaling 3.1% of the total cost of renting

the equipment. The total cost of renting the equipment as referenced in this paragraph equals 100% of the cost incurred by Construction Manager to rent the equipment from the third party.

...

Permanently Installed Work (by Hoffman Mechanical, Hoffman Structures, etc.): For permanently installed Work that is competitively bid, such as concrete, mechanical or plumbing, Construction Manager will apply a fee equaling 3.1% of the cost of that permanently installed Work.

...

.2 For Work performed by a Subcontractor, the Contractor may claim no more than the percentage applied to calculate the Contractor's Fee or five percent (5.0%) of the actual amount due to the Subcontractor for the Cost of the Work, whichever is less.

...

.3 For Work performed by a Subcontractor or Sub-subcontractor, the Subcontractor or Sub-subcontractor may claim no more than ten percent (10.0%) of its actual Cost of the additional Work.

...

.4 For Work performed by a Sub-subcontractor, its Subcontractor may claim a markup of no more than the percentage applied to calculate the Subcontractor's Fee or ten percent (10.0%) of the amount actually payable to the Sub-subcontractor for the Cost of the Work, whichever is less.

...

.5 The Costs of the Work to which overhead and profit are to be applied at any tier are determined by Article 6 of the Agreement.

...

.6 All cost proposals, except those so minor that their propriety can be readily determined, must be accompanied by a complete itemization of costs, including without limitation the costs of labor, materials, subcontracts, and sub-subcontracts. Subcontractor costs exceeding \$1,500 must be similarly itemized.

...

.7 All general conditions or general requirements costs of the Contractor, Affiliated Entities, and all Subcontractors of any tier are not included in the markups listed in Section 7.5.1.1.

...

.8 The Contractor bears the burden of establishing the reasonableness of any proposed increase in the Contract Sum or Contract Time.

...

§ 7.5.2 Overhead and profit adjustments for net decreases in the cost of any portion of the Work shall include a deduction of the overhead and profit, fee, and general conditions or general requirements costs that would be allowed for that Work by the terms of Section 7.5.1.

...

§ 7.5.3 Overtime, when specifically authorized by the Owner and not as an extraordinary measure, shall be paid for by the Owner on the basis of premium payment only, plus the cost of insurance and taxes based on the premium payment period. The Owner will not pay overhead and profit for overtime.

...

§ 8.1.1 Unless otherwise provided, The Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for time from the date of commencement to Substantial Completion of the Work.

...

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Substantial Completion is defined in Section 9.8.

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§ 8.2.1 Time is of the essence of this Contract. Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

...

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such Consistent with Section 11.1.10, the date of commencement cannot occur before placement of insurance. The Contractor will not commence Work or enter the Project Site before placement of insurance.

...

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of negligence of the Owner or the Architect, or of an employee of either, either involved in the Project, or of a separate contractor employed by the Owner; Owner, or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the Owner pending mediation and arbitration; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine. Work, or by occurrences beyond the control and without the fault or negligence of the Contractor or its Subcontractors and that by the exercise of reasonable diligence the Contractor is unable to prevent or provide against, including industry-wide labor disputes, fire, unusual and extended delays in deliveries, unavoidable casualties, adverse weather conditions not reasonably anticipated, or other occurrences that the Owner determines may justify delay, then the Contractor may obtain an extension of the Contract Time and adjustment to Contract Sum only upon satisfying the prerequisite conditions of (a) compliance with Subparagraph 15.1.3 of the General Conditions and (b) presentation to the Owner and the Architect of written notice of the request for an extension of the Contract Time as provided in Subparagraph 15.1.5.1. The Contract Time and Contract Sum may under these circumstances be adjusted by Change Order for the additional time actually and directly caused by the unforeseen occurrence. The extension will be net of any delays caused by or due to the fault or negligence of the Contractor and will also be net of any contingency or "float" time allowance included in the Project Schedule. In the event delays in

the Work are encountered for any reason, the Owner and Contractor shall undertake reasonable steps to mitigate the effect of such delay.

...

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15. The Contract Time is set with reference to and knowledge of weather conditions usual to the area of the Project. To justify an excused delay in the Contract Time, adverse weather conditions not reasonably anticipated for purposes of Subparagraph 8.3.1 require the presence of abnormally severe or unsafe working conditions on the site that have a material, adverse effect on the scheduled Critical Path Work activities. As a minimum condition for a claim for additional time for abnormally severe weather, the Contractor must provide documentation from National Oceanic and Atmospheric Administration, or other comparable weather agency, that the conditions as the basis for the claim are more severe than for any comparable time period in the vicinity of the site within the past ten years.

...

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents. If the delay was caused by any public entity other than the Owner and not caused by the Owner, the Contractor, a Subcontractor of any tier, the Architect, or anyone acting on behalf of one or more of them, the Contractor is entitled only to an increase in the Contract Time (but not a change in the Contract Sum). If the delay was caused by the Contractor, a Subcontractor of any tier, or anyone acting on behalf of one or more of them, the Contractor is not entitled to an increase in the Contract Time or Contract Sum.

...

§ 8.3.4 [Deleted].

...

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents. The Owner will make progress payments to the Contractor no more than once each month based on a verified Application for Payment submitted by the Contractor and signed by the Owner.

...

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect, Architect and the Owner, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect and the Owner may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

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§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, 9.2., for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

...

§ 9.3.1.4 The Contractor shall submit its monthly Application for Payment to the Owner and the Architect (if required by the Owner), on AIA Document G702, supported by AIA Document G703, or an equivalent form

approved by the Owner. Each Application for Payment shall be accompanied by the following, all in form and substance satisfactory to the Owner:

...

.1 Description of the Work.

...

.2 Detailed cost report and updated schedule of values.

...

.3 Separate documentation and accounting for Work performed pursuant to Change Orders, Construction Change Directives, or minor changes in the Work; allowances; application of contingency; and payment for materials stored other than at the Project Site.

...

.4 The Contractor's executed lien, bond, and claim releases ("Lien Releases") on forms acceptable to the Owner. Lien Releases shall provide a conditional release of liens, bonds, and claims for the Work that is subject to the current Application for Payment and an unconditional release for all Work performed through the date of all prior payment periods.

...

.5 All other information and materials required to comply with the requirements of the Contract Documents.

...

The Owner may, at its option, request documentation from the Contractor evidencing that Subcontractors, Sub-subcontractors, and suppliers of every tier have provided the requisite conditional and unconditional releases and waivers of lien and bond rights to the Contractor for each Application of Payment.

...

§ 9.3.2 Unless otherwise expressly provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the Project site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

...

§ 9.3.3 The Contractor warrants 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 Certificates for Payment have been previously issued and payments received from the

Owner shall, to the best of the Contractor's knowledge, information and belief, payments have previously been 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.

PAGE 34

§ 9.3.4 Retainage will be withheld at a rate of five percent (5%) in accordance with ORS 279C.570.

...

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. ~~The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified.~~ However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

...

- .3 failure of the Contractor or Subcontractor to make payments properly to Subcontractors or Sub-subcontractors or for labor, materials or equipment;

...

- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or

...

- .7 repeated failure to carry out the Work in accordance with the Contract Documents;

...

- .8 unsatisfactory Work progress;

...

- .9 disputed Work, materials, or products, not to exceed one hundred fifty percent (150%) of the amount in dispute;

...

- .10 failure to comply with other material provisions of the Contract Documents;

...

- .11 failure to maintain current safety and as-built documents as required by Section 3.11; or

...

~~the Contract Documents.~~ 12 failure to train personnel on the Project site in required safety procedures as required in the Contract Documents.

...

§ 9.5.2 When the ~~above~~ reasons for withholding certification are removed, certification will be made for amounts previously withheld.

...

§ 9.5.3 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect ~~and the Architect will reflect such payment on the next Certificate for Payment.~~ Architect. The Owner will notify the Contractor of a joint payment, and the Owner will receive credit against the Contract Sum for the joint payment.

PAGE 35

§ 9.5.4 If the Contractor disputes any determination by the Architect with regard to any Certificate of Payment, the Contractor nevertheless shall expeditiously continue the Work.

...

§ 9.7 FAILURE OF PAYMENT

...

§ 9.7.1 If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

...

§ 9.7.2 Failure of payment does not exist under Section 9.7.1 if the Owner exercises authority granted by the Contract documents to withhold payment notwithstanding certification by the Architect.

...

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when (1) the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use; and (2) the Contractor, its Subcontractors of any tier, and its suppliers of any tier have completed or satisfied all conditions required of the Contractor for the issuance of a temporary or permanent certificate of occupancy.

PAGE 36

- .1 As part of the final Application for Payment, the Contractor shall assemble for the Architect's approval within thirty (30) days of Substantial Completion three (3) complete bound copies of all operation, maintenance, and warranty data from all manufacturers whose equipment is installed in the Work. The final Certificate for Payment will not be issued by the Architect until all warranties and guaranties have been received and accepted by the Owner.

...

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Owner or the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

...

§ 9.8.3 Upon receipt of the Contractor's list, the Owner or the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Owner's or Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Owner or the Architect. In such case, the Contractor shall then submit a request for another inspection by the Owner or the Architect to determine Substantial Completion.

...

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list ~~accompanying the Certificate prepared under this Section 9.8.~~ Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

...

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

...

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Owner and the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor ~~or, if no agreement is reached, by decision of the Architect-Contractor.~~

...

§ 9.9.4 The Contractor shall deliver to the Owner certificates of inspection, use, and occupancy upon completion of the Work in sufficient time for occupation of the Project in accordance with the approved schedule for the Work. The costs of such procurement, payment, and delivery shall be included within the Contract Sum.

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§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Owner and the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. Documents. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

...

§ 9.10.4 In the event that final completion is not accomplished within 30 days after the date of Substantial Completion due to any fault of the Contractor, the Owner may withhold from any subsequent progress payments and from the final payment 150 percent of the reasonable cost of the unfinished Work necessary to attain final completion. Such funds are to be paid pro rata following successful completion of the unfinished Work if the Work is done by the Contractor. In the event that the Contractor fails to complete the Work necessary to attain final completion, the Owner may, without waiving any other remedies it may have, complete the Work and deduct the actual cost thereof from the funds withheld. The Owner shall not withhold any amount under this section relating to Work arising from Change Orders or Construction Change Directives issued following the date of Substantial Completion.

...

§ 9.10.5 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

...

.2 failure of the Work to comply with the requirements of the Contract Documents; or

...

.3 terms of special warranties required by the Contract Documents or included in the Contract Documents; or

...

.4 the correction remedy allowed by Section 12.2.

...

§ 9.10.5-9.10.6 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.

§ 9.10.7 Requests for payment will not be considered if submitted (1) more than ninety (90) days following completion of the Work performed or (2) on or after the date of acceptance of final payment, whichever is

...

ARTICLE earlier.

...

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

...

§ 10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor acknowledges the unique safety risks associated with construction of school facilities in the presence of faculty, students, staff, and visitors.

...

§ 10.1.2 This Contract incorporates by this reference any Owner's safety policies current as of the date of commencement of the Work, which have been or will be made available to the Contractor. The Contractor, as a condition precedent to commencement of the Work, will instruct all personnel of the Contractor and its Subcontractors, prior to their performing any of the Work, of the elements of these policies with which the personnel will be required to comply. Notwithstanding any other provision of the Contract Documents, the Contractor's (or any Subcontractor's) failure to perform adequate safety training is grounds for the Owner's immediate suspension of the Work at the Contractor's sole expense and may result in cancellation of the Contract.

...

§ 10.1.3 In addition to the policies identified above, the Contractor shall review with all Subcontractors the methods, materials, tools, and equipment to be used to verify their compliance with all safety standards and laws and the Contractor shall be responsible for compliance with them, to ensure safe, hazard-free conditions for all persons visiting or working on the entire Project site and the Owner's adjoining facilities.

...

§ 10.1.4 The Contractor will develop a fire response plan consistent with that of the Owner, which will be strictly enforced by the Contractor's project safety officer and the Owner. The Contractor will supply fire extinguishers in sufficient size and quantity, distributed throughout the Project site, to maintain a safe working environment.

...

§ 10.1.5 The Contractor will ensure that all equipment furnished and installed as part of the Work is rated by Underwriters Laboratories or another method approved by the state testing laboratory or the Owner, as appropriate.

...

§ 10.1.6 Tobacco use is not permitted on any of the Owner's property. The Contractor will publish this standard to all personnel for whom it or its Subcontractors are responsible and will enforce it appropriately.

...

§ 10.2.1 The Contractor shall take all necessary reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

...

- .1 employees on the ~~Work-Work~~, the Owner's faculty, staff, students, and visitors and other persons who may be affected thereby;

...

- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors;~~and~~

...

- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of ~~construction~~construction; and

...

- .4 adjoining operations of the Owner.

...

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including installing fencing and posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities. The Contractor shall also be responsible, subject to the terms of the Contract, for all measures necessary to protect any property adjacent to the Project and improvements therein. Any damage to such property or improvements shall be promptly repaired by the Contractor. Contractor shall provide reasonable fall protection safeguards and provide approved fall protection safety equipment for use by all exposed Contractor employees.

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§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel. The Contractor must obtain advance approval before proceeding with the storage or use of explosives or hazardous materials for performance of the Work.

...

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 ~~and 10.2.1.3~~ caused in whole or in part through 10.2.1.43 to the extent caused by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3, except through 10.2.1.4, but not to the extent of damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. ~~liable.~~ The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

...

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent or designated safety officer unless otherwise designated by the Contractor in writing to the Owner and Architect.

...

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition. The Contractor will ensure that storage practices on the Project site will keep combustible load levels at a minimum and in approved containers that are clearly labeled. The Contractor will provide material safety data sheets to the Owner's Representative for all chemicals used on the Project site.

...

§ 10.2.8 INJURY OR DAMAGE TO PERSON OR PROPERTY

...

~~If either party suffers injury or damage to person or~~ The Contractor will immediately report to the Owner by telephone or messenger whenever any person at the Project Site suffers injury or if there is property damage to the Owner's existing facilities or adjoining property. The notice shall provide sufficient detail to enable the other party to investigate the matter. The Contractor will promptly follow up the notice with a written report to the Owner.

...

~~property because of an act or omission~~ § 10.2.9 Without limiting any other requirement of this Section 10.2, the Contractor shall protect adjoining property and shall provide barricades, temporary fences, and covered walkways to protect the safety of passersby, as required by prudent construction practices, laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, or the Contract Documents. The Contractor shall be responsible for all measures necessary to protect any property adjacent to the Project and improvements thereon.

...

~~of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given~~ § 10.2.10 Without limiting any other requirement of this Section 10.2, the Contractor shall, at its sole cost and expense, promptly repair any damage or disturbance to walls, utilities, sidewalks, curbs, adjoining property, and the property of third parties (including utility companies and governments) resulting from the performance of the Work, whether caused by the Contractor or by its Subcontractors of any tier. The Contractor shall maintain streets in good repair and traversable condition.

...

~~to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the~~ § 10.2.11 The Contractor will ensure that storage practices on the Project site will keep combustible load levels to a minimum and in approved containers that are clearly labeled. The Contractor will provide material safety data sheets to the Owner for all chemicals used on the Project Site.

...

~~other party to investigate the matter~~ § 10.2.12 Without limiting any other requirement of this Section 10.2, the Contractor shall maintain Work, materials, and apparatus free from damage from rain, wind, storms, frost, and heat. If adverse weather makes it impossible to continue operations safely in spite of weather precautions, the Contractor shall cease Work and notify the Owner and the Architect of the cessation.

...

§ 10.2.13 The Contractor shall not permit open fires on the Project Site.

PAGE 40

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters Hazardous Materials as that term is defined under Section 10.3.6. With respect to Hazardous Materials to be used during the course of the Work, the Contractor will implement and enforce a program to inventory and properly store and secure all Hazardous Materials that may be used or present on the Project site, maintain available for inspection at the Project site all material safety data sheets, and comply with all regulations required by law for the storage, use, and disposal of Hazardous Materials. The program must provide for notification of all personnel of potential chemical hazards. Review of these hazards must be included in the Contractor's safety training program. The Contractor shall submit to the Owner a list of all Hazardous Materials to be brought by the Contractor or its Subcontractors onto the Owner's property, including the purpose for their use on the Project.

...

a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing. § 10.3.2 In the event of a release or discovery of a preexisting release of Hazardous Materials, or if it is foreseeable that injury or death to persons may occur because of any material or substance (including without limitation Hazardous Materials) encountered on the Project site, the Contractor shall promptly (1) stop the Work or the portion of the Work affected, (2) notify the Owner and the Architect orally and in writing, and (3) protect against exposure of persons to the Hazardous Materials. The Contractor shall provide all written warnings, notices, reports, or postings required at law or by contract for the existence, use, release, or discovery of Hazardous Materials.

...

§ 10.3.2 Upon receipt of the Contractor's written notice, 10.3.3 With respect to any Hazardous Materials or other material or substance reported to the Owner under Section 10.3.2 that was not introduced to the Project site by the Contractor or its Subcontractors of any tier, the Owner shall obtain the services of a licensed laboratory-qualified environmental consultant to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause verify it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall may, subject to agreement by the Owner and the Contractor, be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up-start-up, which adjustments shall be accomplished as provided in Article 7.

...

§ 10.3.3.1 With respect to any Hazardous Materials or other material or substance reported to the Owner under Section 10.3.2 that was introduced to the Project site by the Contractor or its Subcontractors of any tier, the

Contractor shall be responsible to carry out the duties of (1) proposing to the Owner and the Architect a qualified environmental consultant, (2) obtaining and paying for the services of the environmental consultant, and (3) verifying that the material is rendered harmless, as otherwise set forth in Section 10.3.3. The Contractor will not be entitled to an increase in the Contract Sum as stated in the last sentence of Section 10.3.3 if the Contractor or its Subcontractors of any tier are responsible for the condition requiring the testing of the material and the stoppage of the Work. Remediation work must be conducted by properly qualified contractors approved in advance by the Owner. Generally, the Owner may at its option contract directly with environmental consultants, and remediation contractors, regardless of whether the work will be performed at the Contractor's expense.

...

§ 10.3.4 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including ~~but not limited to attorneys' without limitation attorney fees,~~ arising out of or resulting from performance of the Work in the affected area if in fact the material or substance was not introduced to the Project site by the Contractor or its Subcontractors of any tier, presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered ~~harmless,~~ harmless.

...

~~provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity. No indemnification provided by the Owner under this Section 10.3.4 will be required to indemnify the Contractor, Subcontractors, or their employees or agents to the extent of~~

...

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances. liability for death or bodily injury to persons or damage to property caused in whole or in part by the Contractor's own negligence, but will require indemnity to the extent of the fault of the Owner or its agents or representatives.

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§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence. To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, the Owner's Representatives, and employees of any of them from and against claims, damages, losses, and expenses, including without limitation to attorney fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance was introduced to the Project site by the Contractor or its Subcontractors of any tier, presents the risk of bodily injury or death, and has not been rendered harmless. No indemnification provided by the Contractor under this Section 10.3.5 will be required to indemnify the Owner or its agents or representatives to the extent of liability for death or bodily injury to persons or damage to property caused in whole or in part by the Owner's own negligence, but will require indemnity to the extent of the fault of the Owner or its agents or representatives.

...

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the

Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred. "Hazardous Materials" are any substance defined or designated as being radioactive, infectious, hazardous, dangerous, or toxic by any federal, state, or local statute, regulation, or ordinance presently in effect or subsequently enacted. For purposes of Section 10.3, the term "introduce" means the physical placement or transportation of Hazardous Materials in or on the Project site regardless of whether the Hazardous Material was specified, required, or otherwise addressed in the Contract Documents.

...

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, act to prevent threatened damage, injury or loss, loss and immediately notify the Owner. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

...

- .4 Claims for damages insured by usual personal injury liability ~~coverage~~; coverage and commercial general liability coverage (or its equivalent as approved in advance by the Owner);

...

- .7 Claims for bodily injury or property damage arising out of completed operations; and

...

- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3-18.3.18;

...

- .9 claims for third-party injury and property damage (including without limitation clean-up costs) as a result of pollution conditions arising from the Contractor's operations or completed operations; and

...

- .10 claims involving the Contractor's professional liability, solely to the extent that the Contractor accepts design or design/build responsibilities under this Contract.

...

Contractor with prior approval from the Owner, may provide a Contractor Controlled Insurance Program (CCIP), which will include commercial general liability and excess liability and employers liability for the benefit of the Owner and all additional insureds required by Owner, however, nothing herein shall obligate Contractor to provide professional liability coverage under the CCIP or to provide coverage to the Owner, additional insureds, A/E, its subconsultants, or enrolled subcontractors of every tier who perform the Work at or from the designated Project site for claims arising from the design of the project which coverages are expressly excluded from the CCIP policies.

...

§ 11.1.2 ~~The~~ CONTRACTOR PROVIDING INSURANCE

...

Without waiver of any other requirement of Section 11.1, the Contractor will pay for and maintain the following

insurance at all times during the performance of the Work, without interruption until final acceptance of the Work or for such further duration as required below. All of the Contractor's insurance carriers shall be rated A VII or better by A.M. Best's rating service, unless otherwise approved by the Owner.

PAGE 42

.1 Workers' Compensation. The Contractor shall purchase and maintain workers' compensation coverage sufficient to meet statutory liability limits.

...

Section 11.1.1.2 Employer's Liability. The Contractor shall purchase and maintain employer's liability insurance in addition to its workers' compensation coverage with at least the minimum limits listed in Section 11.1.3 of these General Conditions.

...

~~shall be written for not less than limits of liability specified in~~ .3 Commercial General Liability. The Contractor shall purchase and maintain commercial general liability ("CGL") insurance on an occurrence basis, written on ISO Form CG 00 01 (12 04 or later) or an equivalent form approved in advance by the Owner. CGL coverage shall include all major coverage categories, including bodily injury, property damage, and products/completed operations coverage maintained for at least six (6) years following Final Payment. The CGL insurance must also include the following: (1) separation of insureds and (2) per-project aggregate.

...

.4 Professional Liability. To the extent that the Contract Documents ~~or required~~ require the Contractor to provide professional design services or certifications related to systems, materials, or equipment, the Contractor shall (1) purchase and maintain professional liability/errors-and-omissions insurance and (2) cause those Subcontractors providing professional design services or certifications related to systems, materials, or equipment to do so under the requirements of Sections 5.5 and 11.1.3.

...

~~by law, whichever coverage~~ .5 Automobile Liability. The Contractor shall purchase and maintain automobile liability insurance with coverage for owned, hired, and nonowned vehicles on ISO Form CA 00 01 or an equivalent form approved in advance by the Owner. The automobile liability insurance shall include pollution liability coverage with vehicle overturn and collision.

...

~~is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination.~~ .6 Pollution Liability. If the Owner designates the Project as having a known pollution exposure, the Contractor shall purchase Contractors Pollution Liability ("CPL") insurance. If the CPL insurance is written on a claims-made basis rather than an occurrence basis, then coverage must be maintained for at least six (6) years following final payment. Coverage is to include third-party claims for bodily injury, property damage, and environmental damage resulting from pollution conditions caused during the performance of covered operations both on site and migrating from the jobsite. Coverage is also to include pollution conditions arising from covered operations, including

work performed by the Contractor's Subcontractors and third-party claims against the Contractor alleging improper supervision of the Subcontractors. The Contractor shall arrange for, and be responsible for, the selection of Subcontractors used to transport all Hazardous Materials that leave the Project site.

...

of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until **.7 Commercial Umbrella/Excess Coverage.** The Contractor shall purchase or maintain commercial umbrella or excess liability insurance to meet the minimum limits as described below in Section 11.1.3. Commercial umbrella/excess liability coverage includes: (1) "Pay on behalf of" wording; (2) concurrency of effective dates with primary coverage; (3) punitive damages coverage (if not prohibited by law); (4) application of aggregate (when applicable) in primary coverage; and (5) drop-down feature. The third-party liability insurance shall be scheduled to the umbrella/excess coverage.

...

the expiration of **§ 11.1.3 Limits.** The insurance required by Section 11.1 shall be written for at least the limits of liability specified in this Section or required by law, whichever is greatest.

...

.1 Workers' Compensation. Statutory Limits

...

.2 Employer's Liability.

...

Each Accident: \$ 1,000,000

...

Each Bodily Injury Disease: \$ 1,000,000

...

Aggregate Bodily Injury Disease: \$ 1,000,000

...

.3 Commercial General Liability.

...

Each Occurrence: \$ 2,000,000

...

General Aggregate: \$ 3,000,000

...

Product/Completed Operations: \$ 3,000,000

...

Personal & Advertising Injury: \$ 2,000,000

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.4 Professional Liability/E&O.

...

Each Claim/Aggregate: \$ 2,000,000

...

.5 Automobile Liability.

...

Combined Single Limit: \$ 1,000,000

...

.6 Pollution Liability.

...

Single Limit: \$ 50,000,000

...

Aggregate: \$ 50,000,000

...

.7 Commercial Umbrella/Excess Coverage.

...

Each Occurrence: \$ 20,000,000

...

the period for correction of Work or **§ 11.1.4 Additional Insureds.** The Contractor's third-party liability insurance policies shall include the Owner and its officers, employees, agents, volunteers, partners, successors, and assigns as additional insureds. The policy endorsement must extend premise operations and products/completed operations to the additional insureds. The additional insured endorsement for the Commercial General Liability must be written

on ISO Form CG 2010 (11/85), a CG 2037 (07/04) together with CG 2033 (07/04), or the equivalent; but shall not use the following forms: CG 20 10 (10 93) or CG 20 10 (03 94).

...

for such other period for maintenance of completed operations coverage as specified in the Contract Documents. **§ 11.1.5 Joint Venture.** If the Contractor is a joint venture, the joint venture shall be a *named* insured for the liability insurance policies.

...

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. **11.1.6 Primary Coverage.** The Contractor's insurance identified in Section 11.1 shall be primary insurance coverage and may not seek contribution from any insurance or self-insurance carried by the Owner including any property damage coverage carried by the Owner. Contractor's insurance shall apply separately to each insured against whom a claim is made or suit is brought. The Contractor's insurance shall not include any cross-suit exclusion or preclude an additional insured party from asserting a claim as a third party. The Contractor waives all rights of subrogation against the Owner and coverage that the Owner maintains.

...

to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. **§ 11.1.7 Contractor's Failure to Maintain Insurance.** If the Contractor for any reason fails to maintain required insurance coverage, such failure shall be deemed a material breach of the Contract and the Owner, at its sole discretion, may suspend or terminate the Contract pursuant to Section 14.2. The Owner may, but has no obligation to, purchase such required insurance and without further notice to the Contractor, the Owner may deduct from the Contract Sum any premium costs advanced by the Owner for such insurance. Failure to maintain the insurance coverage required by this Section 11.1 shall contain a provision not waive the Contractor's obligations to the Owner.

...

- .1 The Contractor shall notify the Owner in writing at least thirty (30) days before any cancellation, lapse, or expiration of any insurance required by this Article 11.

...

- that coverages afforded under the policies will not be canceled or allowed. .2 The Contractor shall notify the Owner in writing of any reduction in available insurance coverage, including without limitation revised coverage limits or claims paid under the general aggregate, or both, that would cause the insurance available to the Owner to fall below or outside the requirements set forth in this Article 11 or by law.

...

to expire until at least 30 days' prior written notice has been given to the Owner. **§ 11.1.8 Certificates of Insurance.** Before commencing the Work, the Contractor shall supply to the Owner certificates of insurance for the insurance policies described in this Section 11.1 prior to the commencement of the Work and before bringing any equipment or construction personnel onto the Project site.

...

additional certificate evidencing continuation of liability coverage, including coverage for completed operations. **.1 Additional Certificates.** To the extent that the Contractor's insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. 9.10.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, general aggregate, or both, shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

PAGE 44

.2 Prohibition Until Certificates Received. The Owner may, but is not obligated to, prohibit the Contractor and its Subcontractors from entering the Project site until the required insurance certificates and all required attachments have been received and approved by the Owner. The Contractor may not enter the Project site or commence the Work until the Contractor places for the Work all coverages required under Section 11.1.2.

...

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents 11.1.9 Subcontractor Insurance. The Contractor shall cause each Subcontractor to purchase and maintain in full force and effect policies of insurance as specified in this Section 11.1, except for coverage limits, which will be agreed upon between the Owner and the Contractor. The Contractor will be responsible for the Subcontractors' coverage if the Subcontractors fail to purchase and maintain the required insurance. When requested by the Owner, the Contractor will furnish copies of certificates of insurance establishing coverage for each Subcontractor.

...

§ 11.1.10 Limitations on Coverage.

...

to include (1) the Owner, the Architect and the Architect's consultants as additional insureds for claims **.1** No insurance provided by the Contractor under this Section 11.1 will be required to indemnify the Owner, the Architect, or their employees or agents to the extent of liability for death or bodily injury to persons or damage to property caused in whole or in part by the Contractor's negligent acts their own negligence, but will require indemnity to the extent of the fault of the Contractor or its agents, representatives, or Subcontractors.

...

.2 The obligations of the Contractor under this Section 11.1 shall not extend to the liability of the Architect or its consultants for (1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs, or specifications, or (2) the giving or failure to give directions or instructions, to the extent that the directions, or failure to provide directions, are the cause of the injury or damage.

...

~~or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole.~~ **3 By requiring insurance, the Owner does not represent that coverage and limits will necessarily be adequate to protect the Contractor. Insurance in effect or procured by the Contractor will not reduce or limit the Contractor's contractual obligations to indemnify and defend the Owner for claims or suits that result from or are connected with the performance of the Contract.**

...

or in part by the Contractor's negligent acts ~~or omissions during the Contractor's completed operations.~~ **§ 11.1.11 DEDUCTIBLES/SELF-INSURED RETENTIONS** Payment of deductibles or self-insured retentions is not a Cost of the Work within the Contract Sum or the Guaranteed Maximum Price and does not justify a Change Order. **Satisfaction of all self-insured retentions or deductibles is the sole responsibility of the Contractor.**

...

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

...

§ 11.3.1 Unless otherwise provided, the ~~Owner-Contractor~~ shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

PAGE 45

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, ~~earthquake, earth movement,~~ flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for ~~Architect's~~ Architect's, Owner's, and Contractor's services and expenses required as a result of such insured loss.

...

§ 11.3.1.2 ~~If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.~~

...

§ 11.3.1.3 If the property insurance requires deductibles, the ~~Owner-Contractor~~ shall pay costs not covered because of such deductibles.

...

The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds. maintain boiler and machinery insurance.

...

§ 11.3.3 LOSS OF USE INSURANCE~~[Deleted]~~

...

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

...

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order. [Deleted]

...

§ 11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise. [Deleted]

...

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

...

[Deleted]

...

§ 11.3.7 WAIVERS OF SUBROGATION~~[Deleted]~~

...

The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate

contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

...

§ 11.3.8 A loss insured under the ~~Owner's Contractor's~~ property insurance shall be adjusted by the ~~Owner as fiduciary Contractor~~ and made payable to the ~~Owner as fiduciary Contractor~~ for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. 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.

...

§ 11.3.9 If required in writing by a party in interest, the ~~Owner as fiduciary Contractor~~ shall, upon occurrence of an insured loss, give bond for proper performance of the ~~Owner's Contractor's~~ duties. The cost of required bonds shall be charged against proceeds ~~received as fiduciary. The Owner received.~~ The Contractor shall deposit in a separate account proceeds so received, which the ~~Owner Contractor~~ shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

...

§ 11.3.10 The ~~Owner as fiduciary Contractor~~ shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the ~~Owner's Contractor's~~ exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the ~~Owner as fiduciary Contractor~~ shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

PAGE 46

§ 11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Guaranteed Maximum Price Amendment or Early Work Amendment, if any, as required by the Contract.

...

§ 11.4.3 The Contractor may require one or more Subcontractor(s) to furnish payment and performance bonds covering the faithful performance of the particular subcontract, purchase order or similar agreement and the payment of obligations arising there under. In the event such bonds are furnished pursuant to this Subparagraph, the Owner shall pay the Contractor the cost of such bonds as part of the Cost of the Work, subject to the Guaranteed Maximum Price. Upon written approval from the Owner, Contractor may elect to provide Subcontractor default

insurance (SDI) in lieu of performance and payment bonds for Subcontractors. Such subcontractor default insurance (SDI) shall provide coverage against losses directly caused by the default of performance or payment of a subcontractor under the terms and conditions of its subcontract. SDI shall be considered as part of the Cost of the Work, subject to the Guaranteed Maximum Price.

...

§ 12.1.1 If a portion of the Work is covered contrary to the Owner's or the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by ~~the Architect, be uncovered for the Architect's examination~~ the Owner or the Architect, be uncovered for examination by the Owner, the Architect, or any governmental authority and be replaced at the Contractor's expense without change in the Contract Time.

...

§ 12.1.2 If a portion of the Work has been covered that the Owner and the Architect or any governmental authority has not specifically requested to examine prior to its being covered, the Owner or the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of uncovering and correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

...

The Contractor shall promptly correct Work rejected by ~~the Architect~~ Owner, the Architect, or any governmental authority or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Owner's and the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

...

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly ~~after receipt of written for no additional compensation~~ after notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

PAGE 47

§ 12.2.2.3 The one-year period for correction of Work shall ~~not~~ be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

...

§ 12.2.3 ~~The Contractor~~ Contractor, at its expense, shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

...

The Contract shall be governed by the law of the place where the Project is located ~~except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern~~ Section 15.4. located.

...

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole or in part without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

...

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by ~~registered or~~ certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

PAGE 48

§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. 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. The Contractor shall give by public agencies or by independent testing laboratories, as may be required by the Owner or the permitting jurisdiction. The Owner shall retain and pay for any private inspectors or testing laboratories that are required. The costs of such private inspections and tests shall not be included in the Contract Sum. The Contractor shall forward to the Architect and the Owner copies of all inspections, results, test results, orders, permits, and other directives or correspondence received by the Contractor from any inspector, testing laboratory, or agency with jurisdiction over the Work. The Contractor shall give the Owner and the Architect timely notice of when and where tests and inspections are to be made so that the Owner and the Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.~~

...

§ 13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, ~~inspection~~ inspection, or approval not included under Section 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Owner and the Architect of when and where tests and inspections are to be made so that the Owner and the Architect may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

...

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Owner's and the Architect's services and expenses shall be at the Contractor's ~~expense~~ expense, including without limitation the cost of retesting for verification of compliance, if necessary, until the Architect certifies that the Work in question does comply with the requirements of the Contract Documents.

...

§ 13.5.7 No inspection performed or failed to be performed by the Owner shall waive any of the Contractor's obligations or be construed as an approval or acceptance of the Work or any part thereof.

...

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located at an annual rate of one percent (1.0%) over the prime lending rate published by the *Wall Street Journal*.

...

The Owner and Contractor shall commence all claims and causes of action, whether in based on contract, tort, breach of warranty, warranty, statute, or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7. law.

PAGE 49

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays (1) repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less, and (2) none of the repeated suspensions, delays, or interruptions of the entire Work are caused by act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or any of their respective agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor.

...

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages-termination.

...

- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or

...

- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents. Documents; or

...

- .5 fails to observe the training, safety, and other precautions required in Article 10, including the Contractor's own safety policies for the Project.

...

§ 14.2.2 When any of the above reasons exist, the Owner, ~~upon certification by the Initial Decision Maker that sufficient cause exists to justify such action,~~ Owner may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor the Contract and may, subject to any prior rights of the surety:

...

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for ~~the Owner's and the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this Owner.. This~~ obligation for payment shall survive termination of the Contract.

...

§ 14.2.5 If termination for cause is determined later to have been wrongful or without justification, then the termination will be considered to have been termination for convenience.

PAGE 50

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the ~~extent~~ extent:

...

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor ~~shall~~ shall:

...

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work executed. The Contractor hereby waives and forfeits all other claims for payment and damages, including without limitation anticipated profits.

...

~~not executed.~~ **§ 14.4.4** The Owner may terminate a portion of the Work for the Owner's convenience and without cause, in which case the provisions of this Section 14.4 shall apply only to the portion of the Work terminated and the Contractor shall continue with performance of the remaining Work that is not terminated.

...

Claims by either the Owner or Contractor must be ~~initiated~~ made by written notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. the Architect. Claims by either party must be initiated ~~made~~ within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. later, and must identify the known bases for each Claim and the nature and amount of the relief sought.

...

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. ~~The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.~~

...

If the Contractor wishes to make a Claim for an increase in the Contract ~~Sum~~, Sum or Guaranteed Maximum Price, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4. Failure to provide timely notice in accordance with Section 15.1.2 constitutes waiver of the Claim.

PAGE 51

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary. Claims for additional time are governed by Section 8.3. Failure to provide timely notice in accordance with Section 15.1.2 constitutes waiver of the Claim.

...

§ 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES~~[Deleted]~~

...

~~The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes~~

...

§ 15.2 INITIAL RESOLUTION

...

- ~~1— damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons;~~ **§ 15.2.1** To facilitate the resolution of Claims between the Contractor and

...

- ~~2— damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.~~ the Owner, the parties shall attempt in good faith first to resolve Claims that are made before Final Payment by the

...

~~This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents following dispute-resolution process. The parties agree not to proceed to arbitration until the following process has been attempted. Neither party's rights, defenses, Claims, and remedies shall be considered waived, released, or adversely~~

affected by its participation in this process, but this process shall not toll any applicable statutory periods of limitation, duration, or ultimate repose except to the extent that the parties separately agree in writing to toll those periods.

...

§ 15.2 INITIAL DECISION

...

§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.¹ All reasonable efforts will be made by the Owner's Representative and the Contractor's project manager to resolve any Claims that arise during the Work in a prompt and equitable manner. If they fail to reach an equitable agreement to resolve a Claim, either party may notify the other party in writing to identify the Claim with known specificity and request a meeting between the Owner's senior executive responsible for the Project and the Contractor's senior executive responsible for the Project.

...

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the ² The parties' senior executives shall meet at a mutually agreed time and place within ten (10) days of receipt of the written notice and attempt in good faith to negotiate a resolution of the Claim. If within ten (10) days after the meeting the parties have not succeeded in negotiating an agreed-upon resolution of the Claim, then either party may pursue any and all rights and remedies available to it in the Agreement.

...

parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.³ The parties may at any time mutually agree to submit any dispute between them to voluntary mediation or to arbitration under Section 15.4.

...

§ 15.2.2 [Deleted].

...

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense. [Deleted].

...

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part. [Deleted].

...

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution. [Deleted].

...

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

...

[Deleted]

...

§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision. [Deleted]

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§ 15.2.8 If a Claim relates to or is the subject of a mechanic's materialman's lien or construction lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

...

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution. [Deleted]

...

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings. may agree to engage in mediation to resolve their Claims.

...

§ 15.3.3 ~~The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.~~ **[Deleted]**

...

§ 15.4.1 ~~If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation Every Claim shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association Arbitration Service of Portland, Inc., in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded. Arbitration Service of Portland, Inc., unless the parties elect another person or entity to administer arbitration proceedings. Exclusive venue for arbitration shall be Clatsop County, Oregon.~~

...

§ 15.4.1.1 ~~A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, delivered in writing to the other party within a reasonable time after the claim, dispute or other matters in question have arisen, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations or repose purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.~~

...

§ 15.4.4.1 ~~Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) (2) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).~~

...

§ 15.4.4.2 ~~Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent arbitration.~~

...

§ 15.4.4.4. Prior to allowing any subcontractor or other party retained by the Contractor to commence work on the Project, the Contractor shall require such third party to consent in writing to arbitration if requested by the Owner or the Contractor.

...

END OF THE GENERAL CONDITIONS

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, , hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 13:08:20 on 03/28/2018 under Order No. 3771640865 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A201™ - 2007, General Conditions of the Contract for Construction, as published by the AIA in its software, other than those additions and deletions shown in the associated Additions and Deletions Report.

(Signed)

(Title)

(Dated)

**SECTION 00 73 40
PUBLIC CONTRACTING**

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Prevailing Wage Requirements (PWR) - ORS 279C.830 to .870.
- B. Prevailing Wage Rate Fee - BOLI - ORS 279C.825.
- C. Public Works Bond (Contractors) - BOLI - ORS 279C.830(2)(a).
- D. Public Works Bond (Subcontractors) - BOLI - ORS 279C.830(2)(b).
- E. Certified statements - ORS 279C.845.
- F. Withholdings for lack of payment - ORS 279C.515.
- G. Written notice of working hours - ORS 279C.520.
- H. Payment for medical services - ORS 279C.530.
- I. Ineligible to hold public works contracts - ORS 279C.860.
- J. Registration with Oregon Construction Contractors Board - ORS 701.021.
- K. Payment for daily, weekly, weekend, and holiday overtime - ORS 279C.540.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. None

1.03 PREVAILING WAGE REQUIREMENTS (PWR) - ORS 279C.830 TO .870

- A. The Work described in the Contract Documents is subject to State of Oregon Prevailing Wage Rates in effect at the time the project is first advertised in accordance with ORS 279C.800-870. Ensure all workers are paid in accordance with applicable wage rates and be solely responsible for unpaid prevailing wages.
- B. The applicable prevailing wage rates in effect at the time the bid specifications are first advertised, including the following:
 - 1. Prevailing Wage Rates for Public Works Contracts in Oregon.
 - 2. PWR Amendments, as applicable.
 - 3. State Prevailing Wage Apprenticeship Rates.
 - 4. Definitions of Covered Occupations for Public Works Contracts in Oregon.
- C. Current rates can be found at the following location:
 - 1. http://www.oregon.gov/boli/WHD/PWR/Pages/pwr_oregon_2018.aspx.

1.04 PREVAILING WAGE RATE FEE - ORS 279C.825

- A. Owner shall pay the prevailing wage rate fee required to be paid to the Commissioner of the Bureau of Labor and Industries as provided in ORS 279C.825.

1.05 PUBLIC WORKS BONDS (CONTRACTORS) - ORS 279C.830(2)(A)

- A. Contractor must have a public works bond filed with the Construction Contractors Board before starting work on the project, unless exempt under ORS 279C.836 (4), (7), (8) or (9).

1.06 PUBLIC WORKS BONDS (SUBCONTRACTORS) - ORS 279C.830(2)(B)

- A. Include in every subcontract a provision requiring the subcontractor to have a public works bond filed with the Construction Contractors Board before starting work on the project, unless exempt under ORS 279C.836 (4), (7), (8) or (9).

1.07 CERTIFIED STATEMENTS - ORS 279.845

- A. The contractor or the contractor's surety and every subcontractor or the subcontractor's surety shall file certified statements with the public agency in writing in accordance with ORS 279.845.

1.08 WITHHOLDING FOR LACK OF PAYMENT - ORS 279C.515

- A. Should the Contractor fail, neglect or refuse to make prompt payment of any claim for labor or services furnished to the Contractor or a Subcontractor by any person in connection with the Work as the claim becomes due, the Owner may pay such claim to the person furnishing the labor or services and charge the amount of the payment against funds due or to become due the Contractor.

1.09 WRITTEN NOTICE OF WORKING HOURS - ORS 279C.520

- A. Include in every subcontract that a person may not be employed for more than 10 hours in any one day, or 40 hours in any one week, except in cases of necessity, emergency or when the public policy absolutely requires it (in which case the employee shall be paid at least time and a half pay) unless otherwise permitted by law.

1.10 PAYMENT FOR MEDICAL SERVICES - ORS 279C.530

- A. Promptly, as due, make payment to any person, co-partnership, association or corporation furnishing medical, surgical and hospital care services or other needed care and attention, incident to sickness or injury, to the employees of the contractor, of all sums that the contractor agrees to pay for the services and all moneys and sums that the contractor collected or deducted from the wages of employees under any law, contract or agreement for the purpose of providing or paying for the services.
- B. Ensure all subject employers working on the Project are either employers that will comply with ORS 656.017 or employers that are exempt under ORS 656.126.

1.11 INELIGIBLE TO HOLD PUBLIC WORKS CONTRACTS - ORS 279C.860

- A. Contractor shall not be disbarred from holding public works contracts in the State of Oregon in accordance with ORS 279C.860.

1.12 REGISTRATION WITH OREGON CONSTRUCTION CONTRACTORS BOARD - ORS 701.021

- A. Contractor must be registered with the State of Oregon Construction Contractors Board, pursuant to ORS 701.021.

1.13 PAYMENT FOR DAILY, WEEKLY, WEEKEND AND HOLIDAY OVERTIME - ORS 279C.540; ORS 279C.520(1); OAR 839-025-0020(2)(B)

- A. Contractor must pay daily, weekly, weekend and holiday overtime as required by ORS 279C.540, ORS 279C.520(1); OAR 839-025-0020(2)(b).

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF DOCUMENT

**SECTION 01 10 00
SUMMARY**

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. General Requirements.
- B. Work Covered by Contract Documents.
- C. Delegated Design Requirements.
- D. Contractor Use of Premises.

1.02 GENERAL REQUIREMENTS

- A. TIME OF COMPLETION
 - 1. The work of this Contract shall be commenced on the date of written notice to proceed and shall be completed by the dates established in the Owner/Contractor Agreement, and as stipulated in the General Conditions of the Contract for Construction.
- B. LIQUIDATED DAMAGES
 - 1. The Contractor acknowledges and agrees to abide by all provisions of the General Conditions of the Contract regarding Liquidated Damages as it pertains to all work under this Contract.
- C. ASBESTOS FREE CERTIFICATION
 - 1. Absolutely no materials containing asbestos are to be furnished or installed as part of this Project. Ensure that no subcontractor or any of the Contractor's own forces installs any materials containing asbestos. At final closeout of the Project, provide to the Owner certification that no materials containing asbestos have been installed in the Project, and that the Project is asbestos-free as required by the State of the State in which the Project is located.
- D. COORDINATION
 - 1. The Contractor is responsible for overall coordination of the Project.
 - 2. The Drawings and Specifications are arranged for convenience only and do not necessarily determine which trades perform the various portions of the Work.
 - 3. Coordinate sequence of work to accommodate agreed-upon Owner occupancy.
 - 4. Perform all necessary work to receive and/or join the work of all trades.
 - 5. Verify location of existing utilities and protect from damage.
- E. PERMITS AND FEES
 - 1. The Owner will be responsible for filing and paying for building permits and all fees associated with the building permit, system development charges, impact fees, etc. The Contractor will be responsible for picking up all Project permits and will have full responsibility for requirements of and payments for all trade permits (i.e. electrical, plumbing, mechanical).
- F. REQUIREMENTS FOR CONTRACTOR, SUBCONTRACTORS, AND MATERIAL SUPPLIERS
 - 1. Ensure that all persons performing the Work comply with Owner's tobacco policy. Copies made available upon request.
 - 2. Contractor and Subcontractors shall refrain from contact with staff and students at all times.
 - 3. Neither the Contractor nor any of its Subcontractors of any tier shall utilize any employee at the site who has pled guilty to or been convicted of any felony crime involving the physical neglect of a child, physical injury to or death of a child, sexual offenses against or sexual exploitation of a child, child prostitution, or other similar offenses as defined by the most current State Statutes, or similar laws of another jurisdiction. Remove from the work and work site any employee who has engaged in such actions, or who the Owner reasonably considers objectionable.

4. Without limiting the generality of the foregoing, ensure by appropriate provision in each subcontract agreement that the Contractor may remove from the work and work site any Subcontractor or Subcontractor's employee who has engaged in such action. At no change to the Contract Sum or Contract Time, remove from the work and work site any employee or other person pursuant to this Section. Failure to comply with these requirements is grounds for immediate termination of the Agreement for cause.

1.03 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work of this Contract comprises all required on-site and earthwork construction work for the Seaside New Middle School/High School Bid Package 1 Project located at 2000 Spruce Drive, Seaside, OR 97138.

1.04 DELEGATED DESIGN REQUIREMENTS

- A. Certain components of the Work under this project are Delegated Design. It is the Contractor's responsibility to coordinate and assume or assign to subcontractors the complete responsibilities for the design, calculation, submittals, fabrication, transportation and installation of the Delegated Design portions or components as required. Delegated Design components of the Work are defined as complete operational systems, provided for their intended use.
- B. Submit deferred submittals for delegated design elements to the governing agency for the separate approval of Delegated Design items indicated below as defined in Section 01 30 00 - Administrative Requirements.
 1. Contractor is responsible for paying plan review and permit fees for all delegated design submittals.
- C. Owner shall not be responsible to pay for any delays, additional products, additional hours of work or overtime, restocking or rework required due to failure by the Contractor or the subcontractor to coordinate their work with the work of the other trades on the project or to provide the Delegated Design portion or component in a timely manner to meet the schedule of the project.
- D. Delegated Design components which require Deferred Submittals include, but are not limited to the following:
 1. Mechanically Stabilized Retaining Walls, Section 32 32 25 - Mechanically Stabilized Retaining Walls.

1.05 CONTRACTOR USE OF PREMISES

- A. Work Sequence:
 1. Perform Work in a manner required to accommodate School District use of premises during the Contract Period. Coordinate Work schedules and operations with Owner's use requirements.
 2. Provide access to and from site as required by law and by Owner:
 - a. 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.
 3. Do not obstruct roadways, sidewalks, or other public ways without permit.
- B. Limitations on Use:
 1. Owner intends to occupy and conduct school in the adjacent existing building during portions of the construction period. The existing building during times of Owner occupancy is a limited Contractor access area. Coordinate access to the existing building.
 2. Complete and exclusive use of the construction area except as outlined above will be permitted from Notice to Proceed until Substantial Completion of the Project. Coordinate areas available for early occupancy (if any) with Owner.
 3. During times of Owner's occupancy there may be down days during the Contract Period when occupied areas will be closed. Request from the District a list of down days that may occur during the Contract Period. Notify the District at least 48 hours in advance of down days during which time the Contractor intends to work. The District will pay for

employee time during such down days when the building is required to be open for Contractor use.

4. Smoking or open fires will not be permitted within the building enclosure or on the premises.
5. Do not encumber the site with materials or equipment. Confine stockpiling of materials and location of storage sheds to the areas indicated or coordinated with Owner.
6. Move any stored products under Contractor's control which interfere with operations of Owner or separate contractors.

C. Contractor's Site Conduct:

1. Identifying name tags will be worn at all times.
2. No loitering in the school buildings or unsupervised/unauthorized entry.
3. Site is tobacco-free. This means no smoking or chewing on any school property.
4. Beyond courtesy, there should be no interaction between staff and faculty.
5. Keep project free of pop cans, lunch wrappers and similar debris.
6. Review with the Owner the scheduling of any work that is excessively noisy or has the potential to disrupt activities of Owner or neighbors.
7. Be considerate of the client, the students and faculty.
8. Always consider, prior to an act, the safety of students, faculty and other co-workers.
9. Profanity is not acceptable.
10. The wearing of clothing with logos displaying alcohol, tobacco, illegal substances or suggestive themes is not acceptable attire.

D. Non-Interference with School:

1. Perform work operations upon areas adjacent to existing Owner-occupied areas and/or structures in such manner as to not interfere with continued free and comfortable use of such areas.
2. During normal school hours, keep building exits safe, protected, and restricted from remainder of construction site and clear of obstructions at all times. If closure of an exit is required by the Work, notify the school Principal and allow ample time for an alternate exit plan to be executed.
3. Work shall not be performed in Owner-occupied areas or rooms during normal school hours when such spaces are required for school use. Such Work shall be performed after normal school hours up to 10:00 PM or as agreed upon with Owner, and if no night time school activities are planned. Work may be performed during weekends and vacation periods when school is normally closed if coordinated in advance with school administration. All Work required in rooms or spaces being utilized for school purposes must be closely scheduled with the District such that rooms or spaces may be safely used for school purposes when classes resume.

E. Non-Interference with Serving Utilities:

1. Do not interrupt electric, gas, water, or other services to existing Owner-occupied structures without prior notice to the District and then only at a definite time and for a definite duration approved by Owner.
 - a. Disruption of utilities must be approved by the Owner. Requests must be made 72 hours prior to disruption and a plan detailing a definite start time and duration provided.
2. Consult with public and private utility companies for location and extent of all utilities before commencing work.
3. Provide services of a utilities locator to investigate and mark underground utilities in the vicinity of exterior work.
4. Provide all services required. Protect and maintain existing utilities, active electrical conductors, sewers, pipes, and other active lines either on project site or in offsite street excavations.
5. Arrange for and pay cost of disconnecting, removing, relocating, capping, replacing, or abandoning of public and private utilities in the way of construction operations in accordance with serving utilities policies, local regulations and governing codes. Utilities,

pipes, sewers, electrical conductors and the like to be abandoned shall be capped in accordance with instructions of governing authority or as directed.

F. Protections - Exterior Components:

1. Protect sidewalks, asphalt paving, concrete, plantings, and lawn areas at all times from spillage of materials used in carrying out the Work. Exercise care to preclude materials from clogging catch basins and yard drains. Leave all drainage items clean and in proper working condition.
2. Clean, repair, resurface, or restore existing surfaces to their original condition, or completely replace such surfaces to match existing where damaged by construction operations.
3. Whenever it is necessary to cut and remove fences and/or power lines (whether on private or public property), restore such demolished work to condition at minimum equal to that which existed prior to such demolition.
4. Damage to property adjacent to Owner's property shall be restored to the satisfaction of respective property owners.

G. Protections - Interior Components:

1. Contractor is responsible for protection of completed portions of the Work. Provide protection as required such that items are not soiled or damaged during the progression of the Work. Maintain all such protections for the entire duration of the construction until acceptance by Owner.
 - a. Provide a weathertight condition throughout the Work. Clean, repair, resurface or restore building and site components required to be protected to their original condition, or completely replace items to match existing undamaged portions of Work, where damaged by construction operations.
2. Whenever it is required and/or necessary to demolish portions of work, take all precautions to protect adjacent portions of the work which remain from damage.
3. Keep public areas such as hallways, stairs, elevator lobbies and toilet rooms free from accumulation of waste material, rubbish or construction debris.
4. Gather and shroud all existing furnishings to the extent needed to provide protection from construction dust.
5. Clean, repair, resurface, or restore such items above required to be protected to their original condition, or completely replace items to match existing undamaged portions of work, where damaged by construction operations.

H. Protections: Vegetation and Plantings:

1. Protect all existing trees to remain on-site from foliage, trunk, branch, and root damage.
2. Provide barricades and maintain same around all trees, plantings, and other landscaped areas adjacent to work of this Contract to protect such areas from damage of any nature caused by construction operations.
3. Replace any plantings damaged or destroyed with plants of equivalent type, size, quantity, and nature as approved by Architect.

I. Security:

1. Provide security and facilities to protect the Work and Owner's operations from unauthorized entry, vandalism, and theft.
2. Provide temporary barriers, doors, and locks at all openings after building is enclosed.
3. Lock automotive vehicles and other mechanized or motorized construction equipment when parked and unattended. Do not leave vehicles or equipment unattended with the motor running or ignition key in place.
4. Coordinate with Owner's building security provider and program.

J. Removal of Equipment and Materials:

1. Clear site and surrounding street areas of all equipment, apparatus, appliances, tools, unused materials, and similar items immediately as they cease to be necessary to carry out the Work.

END OF SECTION

SECTION 01 13 31
CERTIFICATE OF COMPLIANCE

No final payment shall be made until the Contractor provides to the Owner, prior to acceptance of the work, a notarized certification of compliance in following form:

The Contractor does hereby certify that all work has been performed and materials supplied in accordance with the drawings, specifications and Contract Documents for the above Work, and that:

No less than the prevailing rates of wages as ascertained by the governing body of the Contracting agency has been paid to laborers, workmen and mechanics employed on this Work;

There have been no unauthorized substitutes of Subcontractors; nor have any subcontracts been entered into without the names of the Subcontractors having been submitted to the Owner prior to the start of such subcontracted work;

No subcontract was assigned or transferred or performed by any Subcontractor other than the original Subcontractor, without prior notice having been submitted to the Owner together with the names of all Subcontractors;

All claims for material and labor and other service performed in connection with these specifications have been paid;

In WITNESS WHEREOF, the undersigned has signed and sealed this instrument this

_____ day of _____, _____

Firm Name: _____

Signature: _____

Title: _____

Attest _____
(Seal if Bidder is a Corporation)

As determined necessary, evidence of compliance may be required to be submitted with and made a part of this Certificate of Compliance.

END OF SECTION

SECTION 01 13 32
CERTIFICATE OF NO HAZARDOUS MATERIALS

No final payment shall be made until the Contractor shall file with the Owner, prior to acceptance of the work, a notarized certificate of no hazardous materials in the following form:

"To the best of my knowledge no hazardous material, including, but not limited to: asbestos, polychlorinated biphenyls (pcb's) and lead based products, is used in the construction of this project. Material safety data sheets will be provided as requested by the Owner for all materials which may be questioned in the future."

In WITNESS WHEREOF, the undersigned has signed and sealed this instrument this

_____ day of _____, _____

Firm name: _____

Signature: _____

Title: _____

Attest: _____

(Seal if Bidder is a Corporation)

As determined necessary, evidence of compliance may be required to be submitted with and made a part of this certificate.

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 RELATED REQUIREMENTS

- A. Document 00 72 00 - General Conditions: Additional requirements for progress payments, final payment, changes in the Work.
- B. Section 01 78 00 - Closeout Submittals: Project record documents.
- C. Section 01 77 00 - Closeout Procedures: Substantial Completion and Final Payment.

1.03 SCHEDULE OF VALUES

- A. Use Schedule of Values Form: AIA G703, edition stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.
- C. Forms filled out by hand will not be accepted.
- D. Submit Schedule of Values at times indicated in Section 01 30 00 - Administrative Requirements.
- E. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify site mobilization. Provide closeout and punchlist line items.
- F. For items on which progress payments will be requested for stored materials, break down the cost into:
 - 1. The cost of materials (only), delivered and unloaded, with taxes and the like, paid.
 - 2. Remainder of installed value (labor, temporary facilities/equipment needed, etc).
 - 3. Failure to provide this breakdown prior to materials being delivered voids Contractor's right to be paid for affected materials until they are installed.
- G. For each line item of installed value exceeding \$20,000, show breakdown by major products or operations under each item.
- H. Round-off figures to nearest dollar amount for the original breakdown only.
- I. Make sum of total scheduled costs equal to Contract Sum.
- J. Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 SUBCONTRACTOR AND SUPPLIER LISTING

- A. Subcontractor and Supplier Listing: Follow Project Manual Table of Contents as a format for listing name of Subcontractors, including lower-tier Subcontractors and suppliers.
 - 1. Identify by section number and title the company, address, telephone number and contact person.
 - 2. Adjacent to Subcontractor list its lower-tier Subcontractor(s) and/or supplier(s).

1.05 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Submit a preliminary copy of the Payment Application to Architect for comment prior to formal submittal.
- B. Submit applications for payment in accordance with General Conditions using specified forms.
 - 1. Contractor is encouraged to review the payment application draft during the progress meeting that occurs during the last week of the month.
- C. Payment Period: Submit at intervals stipulated in the Agreement.
- D. Use Form AIA G702 and Form AIA G703, edition stipulated in the Agreement.

- E. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- F. Forms filled out by hand will not be accepted.
- G. Execute certification by signature of authorized officer.
 - 1. Notarized Affidavit: After the first request for payment, each subsequent request shall be accompanied by notarized affidavit stating that all subcontractors have been paid less earned retainage as their interests appeared in the last payment received. No application for payment by the Contractor shall be processed unless accompanied by such Contractor's affidavit.
 - 2. In addition, the Owner may require that any requests for payment shall also be accompanied by a receipt with original signature from the Principal Subcontractors including Mechanical and Electrical, and others as required by the Owner, of the dollar amount they received for the previous month's work (less earned retention), and an affidavit by such Subcontractors stating that all sub-subcontractors, suppliers, wages, fringes, and taxes arising out of such subcontract have been paid in full as their interest appeared in the last payment received.
- H. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
 - 1. For applications for stored materials include:
 - a. Project.
 - b. Application number and date.
 - 1) Item number and identification as shown on application and description of specific material or product.
 - 2) Material stored off-site: Record of quantities and bonding/insurance of storage facility.
 - 3) Must be within 75 driving miles of the site and open to Architect's and Owner's inspections and inventory during regular business hours.
 - c. Verification of stored materials and partial payment for such materials do not constitute acceptance on the part of the District. In the event that materials stored are found to be unsuitable for installation or incorporation into the Work for any reason, Contractor shall bear full responsibility for any and all corrections needed.
 - d. District shall not be responsible for any additional costs incurred for storage of materials unless such storage is the result of and a part of an approved Change Order where the District is found to be responsible for such costs.
- I. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work. Provide a breakdown by major products or operation for amounts in excess of \$20,000.
- J. Submit four hard copies of each Application for Payment.
- K. Include the following with the application:
 - 1. Transmittal letter as specified for submittals in Section 01 30 00.
 - 2. Construction progress schedule, revised and current as specified in Section 01 32 00 - Construction Progress Documentation.
 - 3. Partial release of liens from major subcontractors and vendors.
 - 4. Affidavits attesting to off-site stored products.
- L. Current Record Documents: Prior to acting on processing each monthly request for payment, Contractor is required to present for review to Architect and consultants, a current set of record documents indicating any revisions.
- M. Certified Statements of Intent to Pay Prevailing Wage for each trade shall be on file with the Architect and Owner prior to applying for payment of work of that trade. Where such Certified Statements are not provided, that category of work will not be paid until appropriate documentation is filed.

- N. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.06 SPECIAL CONDITIONS OF INITIAL PAYMENT

- A. Prior to initial payment, the Contractor must have delivered all required insurance, bonds and contracts; acceptable Schedule of Values, Sub-Contractors/Suppliers List, resumes of key personnel, Contractor Construction Schedule.

1.07 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
1. Submit Application for Final Payment at time indicated in Section 01 30 00 - Administrative Requirements.
- B. All Project Closeout activities must be complete; all liens and claims settled; all project record documents transmitted in final approved form; record survey (if required) transmitted and recorded by the County; removal of temporary services, facilities and all debris/materials/equipment and all other requirements of the General Conditions. All permit drawings, sign-off sheets and Certificates of Occupancy transmitted.

END OF SECTION

**SECTION 01 23 00
ALTERNATES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Description of Alternates.

1.02 RELATED REQUIREMENTS

- A. Document 00 41 00 - Bid Form: Listing of Alternates on the Bid Form.

1.03 DEFINITIONS

- A. Base Bid: Includes all work shown on Drawings and as specified, with the exception of the Work specifically included in Additive or Deductive Alternates listed herein.
- B. Alternate Bid: Amount proposed by bidders and stated on the Bid Form that will be either Added To or Deducted From the Base Bid amount if the Owner decides to accept a change in either scope of work or in products, materials, equipment, systems, or other installation methods as described in the Contract Documents.
 - 1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate the alternate into the Work. No other adjustments are made to the Contract Sum.

1.04 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.
 - 1. Evaluation of Alternate: Bid evaluation will be based on lowest total of base bid modified by Owner accepted alternates.
- B. Owner reserves the right to select any or all of the Alternates up to 90 days after award of Contract. If Owner so selects, the time for Substantial Completion will be correspondingly adjusted for those selected items only. Immediately following Award of Contract the Contractor shall prepare and distribute to each party involved notification of the status of each Alternate.
- C. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.
- D. Notification: Immediately following award of Contract, prepare and distribute to each party involved notification of the status of each alternate. Indicate whether alternates have been accepted, rejected or deferred for consideration at a later date.

1.05 PROCEDURES

- A. Alternates shall conform to the requirements of each Section of the Specifications which pertain to the scope of work contained within the Alternate.
- B. Refer to Drawings for details and other information related to the construction of Alternates where such construction is required by scope.
- C. Include as part of each Alternate miscellaneous devices, accessory objects and similar items incidental to or required for a complete installation, whether or not specifically mentioned as part of the Alternate.

1.06 SCHEDULE OF ALTERNATES

- A. Alternate No. 1: Underground Detention system for synthetic turf field.
 - 1. Provide drainage for natural turf as specified and as shown on Drawings.
- B. Alternate No. 2: Gravel Paths for outdoor learning.
 - 1. Provide gravel paths as shown and detailed on Drawings L10.00 and L10.01.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedural requirements for proposed substitutions.

1.02 RELATED REQUIREMENTS

- A. Section 01 30 00 - Administrative Requirements: Submittal procedures, coordination.
- B. Section 01 60 00 - Product Requirements: Fundamental product requirements, product options, delivery, storage, and handling.

1.03 DEFINITIONS

- A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.

1.04 SUBMITTALS

- A. Substitution Requests: Electronically submit each request for consideration as a PDF. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Name of PDF shall reflect the specification Section number and the proposed product manufacturer or product name.
 - 2. Limit each request to one proposed substitution.
 - 3. Submit a separate form for each item upon which approval is requested, with the exception of groups of items (e.g., electrical fixtures, plumbing fixtures, etc.) for which an itemized listing may be attached.
 - 4. Acceptance of the particular product or method on a previous project does not confer or imply acceptance for this project.
 - 5. Submit samples to Architect upon request.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. A Substitution Request for products, assemblies, materials, and equipment 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, equipment, assembly, or system.
 - 2. Agrees to provide the same warranty for the substitution as for the specified product.
 - 3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
 - 4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
 - 5. Waives claims for additional costs or time extension that may subsequently become apparent.
 - 6. Agrees to reimburse Owner and Architect for review or redesign services, detailing, construction costs, or re-approval by authorities caused by the requested substitution.
- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
 - 1. Note explicitly any non-compliant characteristics.
- C. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
 - 1. Substitution Request Form:
 - a. Use Substitution Request Form bound at the end of this Section for substitution requests during the bid phase.

- b. Use "Substitution Request (After the Bidding Phase)" form bound at the end of this Section for substitution requests after the Award of Contract.
- D. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 1. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 2. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
 3. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable specification section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 4. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 5. Samples, where applicable or requested.
 6. Certificates and qualification data, where applicable or requested.
 7. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 8. List of availability of maintenance services and replacement materials.
 9. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 10. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
 11. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 12. Cost information, including a proposal of change, if any, in the Contract Sum.
 13. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 14. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3.02 SUBSTITUTION PROCEDURES DURING PROCUREMENT

- A. Submit all requests for substitutions electronically as PDFs.
- B. Accepted Substitutions prior to Bid Date will be listed in Addenda published in accordance with Contractor's RFQ. Bidders will not rely upon approvals made in any other manner.

3.03 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

- A. Substitutions will normally not be considered after date listed in the Contractor's RFQ, except when required due to unforeseen circumstances. Within a period of 30 days after date of Contract, the Owner may, at its option, consider formal written requests for substitution of products in place of those specified when submitted in accord with the requirements stipulated herein. To receive consideration, one or more of the following conditions must be documented in any such request:
 1. The substitution is required for compliance with final interpretation of Code requirements or insurance regulations.
 2. The substitution is required due to unavailability of a specified product, through no fault of the Contractor.
 3. The substitution is required because subsequent information disclosed the inability of the specified product to perform properly or to fit in the designated space.

4. Manufacturer's or fabricator's refusal to certify or warrant performance of specified product as required.
 5. Subsequent information that a long delivery date will not be compatible with the Contract construction period.
 6. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
- B. Owner reserves the right to reject any and all substitution requests for any reason, without obligation or liability
- C. Substitutions will not be considered under one or more of the following circumstances:
1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
 2. Submittal for substitution request has not been reviewed and recommended by Contractor. Substitution requests received directly from Subcontractors or Suppliers will be returned through the Contractor without review.
 3. Without a separate written request.
 4. When acceptance will require revisions to the Contract Documents.
 5. Submittal for substitution request does not include point-by-point comparison of proposed substitution with specified product.

3.04 RESOLUTION

- A. Architect's Action for Substitutions After Award of Contract: If necessary, Architect will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
1. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 2. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

END OF SECTION

SUBSTITUTION REQUEST FORM

TO: BRIC Architecture
1233 NW Northrup
Portland, OR 97209
Attn: Nancy.rad@bric-arch.com

PROJECT: Seaside New Middle School/High School

We hereby submit for your consideration the Product described below as a substitute for the specified product indicated:

1. Specified Product:

Name: _____

Section: _____ Paragraph: _____

2. Proposed Substitution:

a. Brand Name: _____

b. Model/Catalog No.: _____

c. Manufacturer: _____
(Name)

(Address) (Zip) (Telephone)

d. Nearest Distributor: _____
(Name)

(Address) (Zip) (Telephone)

e. Substitute product effects adjacent Work in the following way:

3. Supporting Data:

a. Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

b. Attached data also includes description of changes to Contract Documents which proposed substitution will require for its proper installation.

SUBSTITUTION REQUEST FORM

4. Certification:

The undersigned certifies that the following paragraphs, unless modified on attachments, are correct:

- a. The proposed substitution does not affect dimensions shown on Drawings.
- b. The undersigned will pay for changes to the building design, including engineering design, detailing and construction costs caused by the requested substitution.
- c. The proposed substitution will have no adverse affect on other trades, the construction schedule, or specified warranty requirements.
- d. Maintenance and service parts will be locally available for the proposed substitution.
- e. The function, appearance and quality of the proposed substitution are equal or superior in all respects to the product specified.

5. Submitted By:

Firm: _____
(Name)

(Address) (Zip) (Telephone)

By: _____ Title: _____
(Please type or print)

Signature: _____

6. Acceptance/Rejection:

Acceptable substitution items will be covered by an Addendum issued to all Bidders.

7. Architects Action:

The following is for use by the Architect:

<input type="checkbox"/> Accepted	<input type="checkbox"/> Accepted with exceptions as noted
<input type="checkbox"/> Not Accepted	<input type="checkbox"/> Received after deadline

Remarks: _____

By: _____ Date: _____

For: BRIC Architecture

END OF FORM

**SUBSTITUTION
REQUEST**
(After the Bidding Phase)

Project: _____ Substitution Request Number: _____

From: _____
To: _____ Date: _____

Architect Project Number: _____
Re: _____ Contract For: _____

Specification Title: _____ Description: _____
Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____
Manufacturer: _____ Address: _____ Phone: _____
Trade Name: _____ Model No: _____
Installer: _____ Address: _____ Phone: _____
History: ☐ New Product ☐ 2-5 years old ☐ 5-10 years old ☐ More than 10 years old
Differences between proposed substitution and specified product: _____

Point by Point comparative data attached - REQUIRED

Reason for not providing specified item: _____

Similar Installation:

Project: _____ Architect: _____
Address: _____ Owner: _____
Date Installed: _____

Proposed substitution affects other parts of Work: ☐ No ☐ Yes, explain _____

Savings to Owner for accepting substitution: _____ (\$_____).

Proposed substitution changes Contract Time: ☐ No ☐ Yes [Add] [Deduct] _____ days

Supporting Data Attached:

☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

SUBSTITUTION REQUEST

(After the Bidding Phase)

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

Telephone: _____

Attachments: _____

REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01 30 00.
- ☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01 30 00.
- ☐ Substitution rejected - Use specified materials.
- ☐ Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

Additional Comments: ☐ Contractor ☐ Subcontractor ☐ Supplier ☐ Manufacturer ☐ A/E ☐ _____

SECTION 01 26 00
CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for processing contract modifications and Change Orders.

1.02 RELATED REQUIREMENTS

- A. AIA Document A201 - General Conditions of the Contract for Construction: Governing requirements for changes in the Work, in Contract Cost, and Contract Time.
- B. Section 01 20 00 - Price and Payment Procedures: Applications for payment and Schedule of Values.
- C. Section 01 78 00 - Closeout Submittals: Project record documents, operation and maintenance (O&M) data, warranties and bonds.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Submit name of individual authorized to accept changes, and to be responsible for informing others in Contractor's employ of changes in the Work.

1.04 GENERAL REQUIREMENTS

- A. No additional work shall be undertaken without Owner's and Architect's written approval.
- B. Written approval authorizing Contractor to undertake additional Work does not authorize automatic extension of Contract Completion time.
- C. Coordinate related requirements specified in other parts of the Project Manual including, but not limited to, General Conditions, Changes in the Work, as supplemented.

1.05 DEFINITIONS

- A. Change Order (CO): This document signed by Owner, Contractor and Architect formally changes the Contract Sum or Contract Time and may incorporate Proposal Requests and/or Construction Change Directives.
- B. Proposal Request (PR): This document initiated by the Architect is to be priced by the Contractor. Upon authorization by the Owner it becomes a directive to the Contractor to modify the scope of the Contract for inclusion in a future Change Order.
- C. Architect's Supplemental Instructions (ASI): This form is a written order comprising instructions or interpretations, signed by Architect making minor changes in the Work not involving a change in Contract Sum or Contract Time. If the Contractor considers that the ASI constitutes a Change in the Work, it must notify the Owner in accordance with the Contract Documents.
- D. Construction Change Directive (CCD): A written order to the Contractor, signed by the Owner and Architect, amending Contract Documents as described. This order directs Contractor to proceed with Work that may alter Contract Sum and/or Contract Time, and is intended to be included in a subsequent Change Order pending agreement on changes in the Contract Sum and/or Contract Time.

1.06 SIGNATURES

- A. All signatures on Change Orders and Construction Change Directives shall be original; no photocopies, unless electronic signatures are acceptable to all parties. Facsimile signatures shall be followed immediately by mail and/or delivery of originals.

1.07 MODIFICATION PROCEDURES

- A. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor.
 - 1. Form for Minor Changes in the Work: Architect's "Architect's Supplemental Instructions" form.

2. If Contractor determines that an Architect's Supplemental Instruction involves adjustments to the Contract Sum or Contract Time, Contractor shall prepare and issue a Proposal Request to the Architect for approval prior to proceeding with the Architect's Supplemental Instruction.

1.08 DOCUMENTATION OF CHANGE IN CONTRACT SUM AND CONTRACT TIME

- A. Maintain detailed records of work performed on a time and materials basis. Provide complete information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.
- B. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation.
- C. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
- D. Contractor and Subcontractors shall provide the following to support their change proposals:
 1. Breakdown of Labor and Equipment rates for use on entire project, with first proposal request to CM/GC.
 2. Production rates shall not exceed that of Means Construction Data, effective June 2018.
 3. Detailed quantities of materials, labor, and equipment.
 4. Markups shall not exceed 10 percent on materials, 15 percent on labor, 5 percent on 3rd party rental, 5 percent on 2nd and 3rd tier Subcontractors.
 5. Justification for any change in Contract Time.
 6. Credit for deletions from Contract, similarly documented.
- E. Support each claim for additional costs, and for work performed on a time and materials basis with the following information:
 1. Origin and date of claim.
 2. Dates and times work was performed, and by whom.
 3. Time records and wage rates paid.
 4. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

1.09 PROPOSED CHANGE PROCEDURES

- A. 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 with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 14 days.
 1. Form for Proposal Requests: Architect's "Proposal Request" form.
 2. Form for Fixed Price Quotation: Electronically submitted PDF.
- B. If latent or unforeseen conditions require modifications to the Contract, or if an RFI response or an Architect's Supplemental Instruction is determined to have cost or schedule impacts, 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 Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 25 00 - Substitution Procedures.
 1. Form for Proposal Requests: Architect's "Proposal Request" form.
 2. Form for Fixed Price Quotation: Electronically submitted PDF.
- C. Proposal Request Log: Maintain a current log of all Proposal Requests and submit same at each project meeting and with each Application for Payment. Each Proposal Request shall have a unique number for tracking purposes.
 1. The log shall, at a minimum, show the Proposal Request number, date initiated, brief description, reference (e.g., RFI or supplemental instruction) estimated cost, estimated time, status and reason for the Proposal Request.

1.10 APPROVAL OR REJECTION OF PROPOSAL

- A. When a proposed change is initiated through a Proposal Request:
 - 1. Submit the following in writing within seven (7) days of date on Proposal Request:
 - a. All direct and indirect costs.
 - b. Schedule of Values and Unit Prices including basis for costs.
 - c. Impact on other Work not described. Describe and include all direct and indirect costs of changes to other Work not specified in the PR.
 - d. Quotation will be guaranteed for period specified in the PR beginning from signing of proposal, but, as a minimum, 30 days. If no period is specified, quotation shall be guaranteed for sixty (60) days from signing.
 - e. Proposal shall be signed by authorized person.
 - f. Failure of the Contractor to respond with pricing in a timely manner shall not be justification for claims by the Contractor of delay of the project associated with the Change.
 - 2. Architect and Owner will review proposal and respond in writing by one of the following:
 - a. Authorizing.
 - b. Requesting additional information.
 - c. Rejecting.
 - 3. Authorization to proceed with Change through a recommendation by the Architect to the Owner and written authorization by the Owner directs Contractor to undertake Work.
- B. When Change is initiated by Contractor:
 - 1. Architect and Owner review and respond in writing by one of the following:
 - a. Processing a Change Order or Proposal.
 - b. Requesting additional information.
 - c. Rejecting.
 - 2. If Owner responds by processing a Proposal Request, follow procedure outlined above.
 - 3. If additional information is requested by Owner, respond in writing within seven days of Owner's request.

1.11 DOCUMENTATION OF PROPOSALS AND CLAIMS

- A. Support each lump sum proposal quotation and each unit price (not previously established) with detailed substantiating data. Clearly cross reference tracking numbers of CCDs, RFIs, PRs, etc. to allow easy identification of costs origins
 - 1. Include as separate line items any changes related to credits to Contract Sum or Contract Time associated with not performing the originally specified Work.
- B. On request, provide additional data to support time and cost computations:
 - 1. Labor hours, number of workers, time cards and hourly rate cost justification
 - 2. Equipment hours, make and model, number of pieces required, rental agreements and hourly rate justification.
 - 3. Products required.
 - a. Recommended source of purchase and unit cost.
 - b. Quantities required.
 - 4. Documented credit for Work deleted from Contract.
 - 5. Justification citing specifics of critical path impacts per current CPM for any change in Contract Time.
- C. Support each claim for additional costs, and time-and-material/force account work with documentation, as required for lump-sum proposal. Include additional information:
 - 1. Name of Owner's authorized agent who ordered work, and date of order.
 - 2. Dates and times work was performed and by whom.
 - 3. Time record, summary of hours worked and wage rates paid.

4. Receipts and invoices for:
 - a. Equipment used, listing dates and times of use.
 - b. Products used, listing of quantities.
 - c. Subcontracts.

1.12 CONSTRUCTION CHANGE DIRECTIVES

- A. For changes that involve an adjustment to the Contract Sum or Contract Time, 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 Sum or Contract Time.
 2. Promptly execute the change.
 3. Form for Construction Change Directives: Architect's "Construction Change Directive" form.

1.13 FIXED PRICE CHANGE ORDER

- A. Base upon Architect's Proposal Request and Contractor's fixed price quotation; or Contractor's request for Change Order as approved by Architect and Owner.
- B. Change Order describes Work changes, additions and deletions, with attachments of authorized Proposal Requests, agreed Construction Change Directives and/or previously agreed upon change pricing or Contract Time modifications.
- C. Change Order provides accounting of any Contract Sum and Contract Time adjustment.

1.14 UNIT PRICE CHANGE ORDER

- A. For pre-determined unit prices and quantities, Change Order will be executed on a fixed price basis.
- B. For unit costs or quantities of units of work which are not predetermined, execute Work under a Construction Change Directive. Changes in Contract Sum or Contract Time will be computed as specified for a time and material Change Order.

1.15 TIME AND MATERIAL CHANGE ORDER

- A. Submit itemized account and supporting data after completion of change, within time limits specified in General Conditions of the Contract.
- B. Architect will determine the change allowable in Contract Sum and Contract Time as provided in the General Conditions of the Contract.
- C. Maintain and provide detailed records of work done on a time and materials basis.

1.16 EXECUTION OF CHANGE ORDERS

- A. Architect will issue Change Orders for signatures of parties as provided in General Conditions of the Contract.
 1. Form for Change Orders: Architect's "Change Order" form.
- B. Proper signatures (original and dated) on CCD or Change Order authorize Contractor to proceed with Change.
- C. Promptly sign and date Change Order or provide detailed written and signed statement detailing reasons if refusing to sign. If the Contractor does not sign and return the Change Order, all aspects will be considered disputed, and Contractor shall not be paid on any Work on it.

1.17 DISTRIBUTION

- A. Architect will distribute one electronic copy to Owner and Contractor for review.
- B. Change Orders: Upon authorization, all parties will sign originals with original signatures, unless electronic signatures are acceptable to all parties.
 1. Project procedures for distribution will be discussed and agreed upon at the preconstruction meeting.
 2. All parties will receive signed copies of the Change Order for record.

- C. Construction Change Directives: Upon authorization, Architect will issue one electronic copy to Owner and Contractor.
 - 1. Directive describes Work Change additions or deletions, with attachments of revised Contract Documents.
 - 2. Owner will sign and date as directive to proceed with Change and issue 3 copies to the Contractor.
 - 3. Promptly sign, date and return two copies to the Architect. If Contractor does not agree with terms, it will proceed with changed Work and follow procedures noted in the General Conditions while still returning one copy to the Architect.
 - 4. Distribution:
 - a. Architect will issue one original to Owner while maintaining one for Architect's files.

1.18 CREDIT AMOUNT TO CONTRACT SUM - INSURANCE

- A. If a Change Order or Construction Change Directive results in a reduction of the Contract Sum, the Owner shall be entitled to a credit that includes the amount of the value of bond premium, amounts charged for additives for insurance premium.

1.19 CORRELATION OF CONTRACTOR SUBMITTALS

- A. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item. Adjust Contract Sum as shown on Change Order.
- B. Promptly revise Progress Schedule to reflect any changes in Contract Time, revise subschedules to adjust times for other items of work affected by the change, and resubmit.
- C. Promptly enter changes in Project Record Documents.

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 Coordination.
- B. Electronic document submittals.
- C. Preconstruction meeting.
- D. Progress meetings.
- E. Preinstallation conferences.
- F. Project closeout conference.
- G. Requests for information (RFI).
- H. Coordination drawings.
- I. Submittals for review, information, and project closeout.
- J. Deferred submittals.
- K. Submittal procedures.
- L. Product submittals - detailed requirements.
- M. Timing of submittals.

1.02 RELATED REQUIREMENTS

- A. Section 01 10 00 - Summary: Delegated design requirements.
- B. Section 01 32 00 - Construction Progress Documentation: Form, content and administration of schedules.
- C. Section 01 40 00 - Quality Requirements: Testing Laboratory Reports and Manufacturer's Field Services.
- D. Section 01 60 00 - Product Requirements: General product requirements.
- E. Section 01 70 00 - Execution: Additional coordination requirements.
- F. Section 01 78 00 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

1.03 PROJECT COORDINATION

- A. Coordinate Work of all personnel, requirements and Work specified throughout the Contract Documents, including Work performed by subcontractors and suppliers.
- B. Coordinate scheduling, submittals, and the work of the various Sections of the Specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- C. Contractor's work and responsibilities include, but are not limited to, the following:
 - 1. Provide all labor, materials, equipment, delivery, tools, machines, facilities, and services necessary for the proper execution of the Work.
 - 2. Coordinate scheduling, submittals and Work of the various Sections of Specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
 - 3. Ensure that notification to and inspections by permitting agencies are completed in a timely fashion.
 - 4. Coordinate utility outages with a minimum of 48 hours advance notice to Owner.
 - 5. Store, protect, and secure materials, on and off site.
 - 6. Supervise and coordinate after hours work.

- D. The separation of portions of the Work into particular divisions of the specifications or sections of the drawings may not in every case conform to the categories of work typically subcontracted to particular crafts or trades. Inform bidders, subcontractors, crafts and trades that work assigned to them may be contained in sections other than customary. In every case, provide and coordinate at no additional cost to Owner all work required in the Contract Documents.
- E. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, all such equipment.
- F. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for piping, ductwork, 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.
 - 1. Provide coordination drawings showing space requirements of various trades in accordance with the coordination drawing Article below.
- G. In finished areas, except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish construction and components.
- H. Coordinate completion and cleanup of Work of separate Sections in preparation for Substantial Completion and for portions of Work designated for Owner occupancy.
- I. 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 activities.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 ELECTRONIC DOCUMENT SUBMITTALS

- A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF) format and transmitted via email directed to the personnel identified at the Preconstruction Meeting.
 - 1. Besides submittals for review, information, and closeout, this procedure applies to submittal schedule, requests for information (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, proposal requests, change orders, construction change directives), applications for payment, field reports and meeting minutes, substitution requests and any other document any participant wishes to make part of the project record.
 - 2. It is Contractor's responsibility to submit documents in PDF format.
 - a. Limit PDF size to 10MB, unless otherwise authorized by Architect.
 - b. Name PDF's for product submittals as indicated under "Product Submittals - Detailed Requirements" Article.
 - 3. Paper document transmittals will not be reviewed, unless otherwise authorized by Architect.
 - 4. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.

3.02 PRECONSTRUCTION MEETING

- A. The Owner will schedule a preconstruction conference before the start of construction, at a time convenient to the Owner, Contractor and the Architect, but no later than 10 days after execution of the Agreement. The conference will be held at the Project Site or another convenient location. The meeting shall be conducted to review general issues of responsibilities, communications, and contract administration procedures.
- B. Attendance Required:
 - 1. Owner.
 - 2. Architect.

3. Contractor.
 4. Contractor's Superintendent.
 5. Major Subcontractors.
 6. Major Suppliers when requested; others as appropriate.
- C. Agenda:
1. Status of the Contract, bonds, insurance or other contract requirements.
 2. Status/timing of Notice to Proceed.
 3. Distribution of Contract Documents.
 4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
 5. Designation of personnel representing the parties to Contract and Architect.
 6. Contract administration responsibilities, communications and procedures.
 7. Tentative Contractor's construction schedule.
 8. Procedures and processing of field decisions, submittals, substitutions, applications for payments, BOLI requirements, proposal request, Change Orders, and Contract closeout procedures.
 9. Scheduling.
 10. Related work by Owner and coordination with Contractor.
 11. Use of premises and ongoing facility operations.
 12. Review of existing conditions.
 13. Hazardous materials.
 14. Owner's requirements.
 15. Working hours, site access and parking.
 16. Contractor's site mobilization and storage areas.
 17. Material and equipment deliveries.
 18. Maintaining good neighborhood relations and limiting noise, store water, erosion and dust control.
 19. Construction facilities and controls.
 20. Temporary storage.
 21. Security and housekeeping procedures.
 22. Special inspection, testing and quality control, including procedures for testing.
 23. Procedures for maintaining record documents.
 24. Requirements for start-up of equipment.
 25. Inspection and acceptance of equipment put into service during the construction period.
 26. Status of permits.
 27. Progress meeting schedule date and time.
 28. Review of Contract Documents and outstanding questions related thereto.
 29. Scheduling activities of a Geotechnical Engineer.
- D. Architect will record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.03 PROGRESS MEETINGS

- A. Progress meetings will be conducted at the Project Site on a weekly basis, or at intervals otherwise agreed to. The schedule of the meetings shall be established by mutual consent of the Owner, Architect and Contractor. No changes to said schedule shall be made without mutual consent of the same parties. Coordinate preparation of the payment request with dates of meetings.
1. Notify subcontractors and other representatives of scheduled meetings where their attendance is requested.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
1. Attach a copy of the updated 3-week look ahead schedule.
 2. Distribute a copy of the agenda within 2 days of meeting.

- C. Attendees: In addition to representatives of the Contractor, Owner and the Architect, other individuals concerned with current progress or coordination may be represented at these meetings. Participation by Subcontractors shall be limited to attendance only when required by the Architect or when a prearranged topic relating to the specific trade or supplier requires their attendance at the meeting.
1. Persons designated by the Contractor to attend and participate shall have all required authority to commit the Contractor to solutions as agreed upon in the meeting.
- D. Agenda:
1. Review minutes of previous meetings.
 2. Review of work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems that impede, or will impede, planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of RFIs, ASIs, Proposal Requests, CCDs and Change Orders.
 7. Review of off-site fabrication and delivery schedules.
 8. Site access, utilization and parking.
 9. Problems from or affecting occupants or neighbors.
 10. Permitting and agency issues.
 11. Quality/inspection issues.
 12. Maintenance of progress schedule.
 - a. Review progress since the last meeting.
 - b. Distribute Contractor's two-week look ahead schedule.
 - c. Evaluate current activity in relation to the Contractor's Schedule.
 - d. Identify in advance potential delays involving: submittals, material / equipment procurement; approvals; Owner-furnished materials; or separate contracts, if any.
 - e. Determine how construction behind schedule will be expedited; securing commitments from parties involved to do so.
 - f. Determine whether a recovery schedule is required for the Contractor's Construction Schedule to insure completion within the contract time.
 13. Coordination of projected progress.
 14. Maintenance of quality and work standards.
 15. Effect of proposed changes on progress schedule and coordination.
 16. Pay Application review at monthly interval.
 17. Review of Project Record Documents.
 18. 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.

3.04 PREINSTALLATION CONFERENCES

- A. When required in individual Specification Sections, convene a preinstallation conference at work site prior to commencing work of the Section.
1. Additional conferences may be conducted as required for performance of the Work.
- B. Attendees: The Installer and representatives of manufacturers and fabricators, sub-contractors, Contractor, Owner's representative and Owner's special inspector involved in or affected by the installation, and its coordination or integration with other materials and installations, shall attend the meeting. Advise the Architect of scheduled meeting dates.
- C. Notify Architect and Owner minimum four days in advance of meeting date.
- D. Agenda: Review the progress of related construction activities, including drawing and specification requirements for the following:
1. Shop Drawings, Product Data, and quality-control samples and other required submittals.
 2. Time schedules,
 3. Weather limitations.
 4. Manufacturer's recommendations.

5. Warranty requirements.
6. Acceptability of substrates.
7. Quality, inspection, and testing requirements.
- E. Review conditions of installation, preparation and installation procedures, and coordination with related work.
- F. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
- G. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
- H. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

3.05 PROJECT CLOSEOUT CONFERENCE

- A. Request a meeting to discuss the requirements for project closeout.
- B. Attendees: In addition to representatives of the Contractor, Owner and the Architect, other individuals concerned with project closeout may be represented at these meetings.
- C. Agenda:
 1. Preparation of record documents.
 2. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 3. Submittal of written warranties.
 4. Requirements for preparing operations and maintenance data.
 5. Requirements for demonstration and training.
 6. Preparation of Contractor's punch list.
 7. Completion time for correcting deficiencies.
 8. Inspections by authorities having jurisdiction.
 9. Certificate of occupancy and transfer of insurance responsibilities.
 10. Partial release of retainage.
 11. Preparation for final field observation.
 12. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 13. Submittal procedures.
 - a. Project Record Documents.
 - b. Operating and maintenance documents.
 - c. Warranties and bonds.
 - d. Affidavits.
 - e. Turnover of extra materials and spare parts.
 14. Owner's partial occupancy requirements.
 15. Installation of Owner's furniture, fixtures, and equipment.
 16. Responsibility for removing temporary facilities and controls.
 17. Final cleaning.
 18. Contractor's demobilization of site.
 19. Maintenance.
- D. Architect will record meeting minutes.

3.06 REQUESTS FOR INFORMATION (RFIS)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, prepare and submit an RFI in the form specified.
 1. RFIs shall originate with Contractor. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
 2. Limit topics on each RFI to a single topic to expedite response.

3. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
 4. If Contractor disagrees with Architect's response to Contractor's RFI, Contractor shall notify Architect within seven days of receipt of response. Lack of such notification shall be understood to mean that Contractor agrees with response.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
1. Project name.
 2. Date.
 3. Name of Contractor.
 4. RFI number, numbered sequentially.
 5. RFI subject.
 6. Specification Section number and title and related paragraphs, as appropriate.
 7. Drawing number and detail references, as appropriate.
 8. Field dimensions and conditions, as appropriate.
 9. Contractor's suggested resolution. If proposed solution impacts the Contract Time or the Contract Sum, state impact in the RFI.
 10. The following statement:
 - a. "This reply is not an authorization to proceed with work involving additional cost, time or both. If any reply requires a change to the Contract Documents, a Change Order or Construction Change Directive must be executed in accordance with the Contract Documents prior to implementation of the reply. Proceeding with the Work in accordance with this RFI response indicates Contractor's acknowledgement that there will be no change in the Contract Sum or Contract Time."
 11. Contractor's signature.
 12. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings and other information necessary to fully describe items needing interpretation.
- C. RFI Forms: Contractor's software-generated form with the content specified and as acceptable to the Architect.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
1. The following RFIs will be returned without action:
 - a. Requests for approval of substitutions.
 - b. Requests for adjustments in the Contract Time or the Contract Sum.
 - c. Requests for interpretation of Architect's actions on submittals.
 - d. Incomplete RFIs or inaccurately prepared RFIs.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Proposal Request according to Section 01 26 00 - Contract Modification Procedures.
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.
 - b. A response to an RFI is not direction or approval of a change to either Contract Time or Contract Sum.
 - c. Proceeding with the Work in accordance with an RFI response, without such written notification and an approved Change Order or Construction Change Directive, indicates Contractor's acknowledgement that there is no change to the Contract Time or the Contract Sum.

- E. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.
- F. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log at each Progress Meeting. Include the following:
 - 1. Project name.
 - 2. RFI number including RFIs that were dropped and not submitted.
 - 3. RFI description.
 - 4. Date the RFI was submitted.
 - 5. Date Architect's response was received.
 - 6. Identification of related Minor Change in the Work, Construction Change Directive, Change Order and Proposal Request, as appropriate.

3.07 COORDINATION DRAWINGS

- A. General: Prepare coordination drawings in accordance with the requirements in individual Sections where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
- B. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable.
 - 1. Prepare sections, elevations and details as needed to describe relationship of various systems and components.
 - 2. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
 - 3. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, plumbing and electrical systems.
 - 4. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - 5. Show location and size of access doors required for access to concealed dampers, valves and other controls.
 - 6. Indicate required installation sequences.
 - 7. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
- C. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are the Contractor's responsibility. If the Architect determines that the coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, the Architect will so inform the Contractor, who shall make changes as directed and resubmit.

3.08 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 for aesthetic, color, or finish selection.

- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

3.09 DEFERRED SUBMITTALS

- A. For delegated design elements defined in Section 01 10 00 - Summary, submit deferred submittals in accordance with the specified requirements and in accordance with Section 107.3.4.2 or the Oregon Structural Specialty Code.
- B. Submission will include the following, as a minimum, in quantities as required by the governing agency:
1. Drawings showing all members, sizes, fastener information, where applicable, dimensions, connections, materials used and how attached to the main structure.
 2. Calculations, including criteria, design assumptions, substantiating computations and such additional data sufficient to show compliance with Code.
 3. Product information.
 4. Drawings and calculations must be stamped and signed by an Engineer registered in the State in which the Project is located and must have Architect/Engineer of record's submittal review stamp.
- C. Architect or Engineer, as applicable, will review delegated design submittals, and, if the submittal is acceptable and receives a "No Exceptions Taken" or "Make Corrections Noted" action, will forward to the Contractor for submission to the building official with annotation indicating that the deferred submittal documents have been reviewed and that they have been found to be in general conformance with the design of the building.
- D. The Architect's and Engineer's approval is contingent upon approval of submittal by governing authorities.
- E. Contractor shall be responsible for submission to the governing agency and for coordinating with the governing agency for timely review and approval of the submittals. Architect will not be responsible for delays due to failure of the Contractor to submit with adequate time allowance for agency review of the submittals.
- F. The deferred submittal items shall not be installed until their design and submittal documents have been approved by the building official.
- G. Contractor is responsible for obtaining written approval from governing authority for all Deferred Submittals.
- H. Contractor is responsible for obtaining and costs associated with applicable permits for delegated design elements as required by governing authority.

3.10 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.

3.11 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit Correction Punch List for Substantial Completion.
- B. Submit Final Correction Punch List for Substantial Completion.
- C. When the following are specified in individual sections, submit them at project closeout in conformance to requirements of Section 01 78 00 - Closeout Submittals:
1. Project record documents.

2. Operation and maintenance data.
3. Warranties.
4. Bonds.
5. Other types as indicated.

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

3.12 SUBMITTAL PROCEDURES

A. General Requirements:

1. Submit submittals to Architect as indicated in Electronic Document Submittals Article above.
2. Submit Schedule of all shop drawings, product data, and samples as specified in each individual Section of the Project Manual. Include submittal and installation dates of each product and assembly. Coordinate with construction schedule and allow ample time, but in no case fewer than 14 days, for Architect's review. Allow time for possible disapproval, correction, and resubmittal.
3. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 - a. Provide a separate PDF for each submittal element (Product Data, Shop Drawings, etc.) for each specification Section.
 - 1) Submit all elements for any Section as a single submittal at the same time.
 - 2) Do not combine submittals for multiple specification Sections, unless previously approved by the Architect.
 - b. Number submittals as indicated in Product Submittals - Detailed Requirements Article.
 - c. No secure PDFs allowed.
 - d. Incomplete submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
4. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
5. 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.
 - a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
 - b. Architect will not accept or process submittals which do not have Contractor's signed stamp that reflects Contractor's review and approval.
 - c. Submission of submittal by Contractor represents that Contractor has fully reviewed and certified acceptance.
6. Schedule submittals to expedite the Project, and coordinate submission of related items.
 - a. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
 - b. For sequential reviews involving Architect's consultants, Owner, or another affected party, allow an additional 7 days.
7. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
 - a. Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by Architect's review of submittals, unless Contractor notates specific deviations and the deviations are specifically approved by the Architect.
8. Provide space for Contractor and Architect review stamps.
9. When revised for resubmission, identify all changes made since previous submission.
10. Submittals not requested will not be recognized or processed.
11. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.

- B. Shop Drawing Procedures:
 - 1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting the Contract Documents and coordinating related work.
 - 2. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
- C. Do not fabricate products or begin work which requires submittals prior to return of submittal with Architect acceptance.
- D. Contractor is responsible for timely and efficient submittals and the correctness of the documentation submitted. Costs associated with multiple reviews of submittal information beyond one re-submittal (if any) shall be the responsibility of the Contractor.
- E. The Contractor is responsible for timely submittals of any required deferred submittals to the governing agencies.

3.13 PRODUCT SUBMITTALS - DETAILED REQUIREMENTS

- A. Present in a clear and thorough manner. Title each drawing with Project Name.
- B. Identify field-verified dimensions; show relation to adjacent or critical features of Work or products.
- C. Number submittals by submittal section number, followed by a two letter designation for the type of submittal and a number which sequentially numbers submittals in order submitted to Architect. For example, the initial submittal of Section 07 92 00 - Joint Sealants Product Data would be designated 079200-PD-1. If the submittal must be resubmitted it shall be identified as 079200-PD-1R1 and subsequent resubmittal shall be sequentially numbered in order as resubmitted.
- D. Shop Drawings (SD):
 - 1. Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproduction of the Contract Documents or standard printed data.
 - 2. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
 - 3. Fully illustrate requirements in the Contract Documents including, but not limited to:
 - a. Identification of products.
 - b. Compliance with specified standards.
 - c. Notation of coordination requirements.
 - d. Notation of dimensions established by field measurement.
 - e. Relationship and attachment to adjoining materials or assemblies, relevant field conditions and all necessary dimensions.
- E. Product Data (PD):
 - 1. Submit only pages which are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to Specification Section and Article number.
 - 2. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the Work. Delete information not applicable.
 - 3. Product data that has not been marked to indicate the applicable information will be returned without review.
 - 4. Contractor shall assemble Product Data required for maintenance manuals and submit to Architect in accordance with Section 01 78 00 - Closeout Submittals.
- F. Samples (SA):
 - 1. Samples for Initial Selection: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected. Architect will retain selected sample for confirmation of subsequent submittals.
 - 2. Submit samples to illustrate functional characteristics of products, including parts and attachments.

3. Approved samples which may be used in the Work are indicated in the individual Specification Sections.
 4. Label each sample with identification required for transmittal letter.
 5. Verification Samples: Submit the number of samples specified in individual Specification Sections. One of which will be retained by the Architect.
 - a. Submit three copies if no number is indicated.
 - b. Submit additional samples when copies will be required for distribution to other subcontractors or fabricators for matching or preparation of finish samples.
 6. Provide field samples of finishes at project site, at location acceptable to Architect, as required by individual Specifications Section. Install each sample complete and finished. Acceptable finishes in place may be retained in completed work if approved by Architect.
- G. Manufacturer's Instructions (MI):
1. Provide at Minimum: Manufacturer's instructions for storage, preparation, assembly, installation, start-up, adjusting, balancing, and finishing in accordance with Section 01 40 00 - Quality Requirements.
- H. Manufacturer's Certificates (MC):
1. When specified in individual Specification Sections, submit manufacturers' certificate to Architect/Engineer for review, in quantities specified herein.
 2. Indicate material or product in conformance with or exceeding specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 3. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect.

3.14 TIMING OF SUBMITTALS

- A. General:
1. The listing of submittals hereinafter is set forth as a checklist for Contractor's convenience and is general in nature.
 2. Architect reserves the right to add to this list in case of omission of any submittals specified in other Sections but not listed hereinafter.
- B. Submittals - Required Within Seven Days Postbid:
1. Contractor's Qualification Statement.
 2. Letter from Insurance Company - insurance required effective upon Contract.
 3. Letter from Surety - bonds required effective upon Contract.
 4. Breakdown of bid (if requested).
 5. Names of proposed suppliers for each of the principal portions of the Work.
 6. Contractor's Construction Management Personnel: Project Manager - minimum 3 years experience; Field Superintendent - minimum 5 years experience.
 7. Responsibility of Subcontractors.
 8. A designation of the Work to be performed by the Contractor by his own forces.
- C. Submittals - Required Within Seven Days After Notice of Intent to Award Contract (Prior to Execution of Contract):
1. Final List of Subcontractors and major material suppliers for principal portions of the Work.
 2. Evidence of bondability (Performance Bond and Payment Bond).
 3. Certificates of Insurance (on AIA Document G705 or equivalent).
 4. Actual costs (%) of the Contractor's liability insurance.
 5. Endorsements for additional insured.
 6. Statements of State Worker's Compensation coverage.
 7. Copy of Builder's Risk Policy.
 8. Project Organizational Chart.
 9. Key Staff Resumes with telephone and contact information.
 10. Summary of Warranties included in Bid, including duration and start time of each. Itemize any deviations from Bid Document requirements.
 11. Other documents required by Contract Documents.

- D. Submittals - Prior to Notice to Proceed:
 - 1. Executed Agreement.
 - 2. Certified copies of Contractor's Liability Insurance Policies (AIA Document G705).
- E. Submittals - Within Seven Days Following Contract Execution and Prior to Commencing Work:
 - 1. Deliver Bonds to Owner with copy to Architect.
 - 2. Performance and Labor & Material Payment Bonds per Project Location State Law with certified copy of Power of Attorney from Attorney-in-Fact executing bonds.
 - 3. Certified Schedule of Prevailing Wage Rates (attach to executed contract).
- F. Submittals - Within Thirty Days Following Notice to Proceed and Prior to First Payment Application:
 - 1. Schedule of values - submit at least 14-days in advance of application.
 - 2. Schedule of submittals.
 - 3. Copies of acquired and unacquired building permit licenses etc. to complete the Work of the Contract. Submit copies of any remaining permits as they are acquired.
 - 4. Construction schedule.
- G. Submittals - Prior to Each Month's Progress Payment:
 - 1. Submit 10 days in advance of date established for progress payment.
 - 2. Application and Certificate for Payment (AIA Document G702 and G703).
 - 3. Notarized affidavit of payments to all subcontractors and major material suppliers (see application for payment).
 - 4. Updated Construction Schedule.
 - 5. Public Works Contractor Wage Certification per Project Location State Law.
- H. Submittals - Prior to request for Substantial Completion:
 - 1. Notification to Architect that Work of the Project is substantially complete.
 - 2. Itemized listing of items of work to be completed or corrected.
 - 3. Submit Certificate of Occupancy or Occupancy Permit issued by the Local Building Department for the entire Project.
 - 4. Draft Operations and Maintenance Manuals and draft warranties.
- I. Submittals - Prior to request for Final Completion:
 - 1. Certified copy of punchlist items completed.
 - 2. Submit final Application for Payment.
 - 3. Summary of Commissioning indicating all required items are completed.
 - 4. Demonstration and Training training reports.
 - 5. Final complete and correct Operations and Maintenance Manuals.
 - 6. Record Drawings of Contract Documents with all changes indicated.
 - 7. Final dated and signed Warranties.

END OF SECTION

SECTION 01 32 00
CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preliminary schedule.
- B. Construction progress schedule, with network analysis diagrams and reports.
- C. Material location reports.
- D. Field condition reports.
- E. Special reports.

1.02 REFERENCES

- A. AGC (CPSM) - Construction Planning and Scheduling Manual; Associated General Contractors of America.

1.03 SUBMITTALS

- A. Preliminary Schedule: Within 14 days after date of Owner's Notice of Intent to Award the Contract, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.
 - 1. Submit minimum two hard copies to Architect and Owner for review.
 - 2. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- B. Construction Schedule: Within 14 days after date established in Notice to Proceed, submit draft of proposed complete schedule for review.
 - 1. Include written certification that structural, mechanical, electrical and other Subcontractors have reviewed and accepted proposed schedule.
 - 2. Not less than 10 percent of the initial Application for Payment may be withheld until a complete Construction Progress Schedule has been submitted in a form acceptable to Architect and Owner.
 - 3. Neither Owner nor Architect shall be responsible for review of the entire substance of the Progress Schedule.
 - 4. Within 30 days after dated established in Notice to Proceed, submit complete schedule.
 - 5. Submit updated schedule with each Application for Payment.
 - 6. At each progress meeting, submit the following:
 - a. Updated schedule incorporating revisions to the construction schedule.
 - b. A two-week look-ahead schedule listing current and upcoming activities by trade, including anticipated start and complete dates as applicable.
 - c. Recovery schedule and solutions if needed.
- C. Submit the number of opaque reproductions that Contractor requires, plus two copies that will be retained by Architect.
- D. Material Location Reports: Submit at monthly intervals.
- E. Field Condition Reports: Submit at time of discovery of differing conditions.
- F. Special Reports: Submit at time of unusual event.

1.04 QUALITY ASSURANCE

- A. Scheduler: Contractor's personnel or specialist Consultant specializing in CPM scheduling with one year minimum experience in scheduling construction work of a complexity comparable to this Project, and having use of computer facilities capable of delivering a detailed graphic printout within 48 hours of request.
- B. Develop and portray in a manner consistent with Architect's and Owner's ability to interpret the information conveyed by the Schedule. Make any and all format or other changes required by Architect and Owner to facilitate their interpretations of the Schedule.

1.05 SCHEDULE FORMAT

- A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.
- B. Diagram Sheet Size: Maximum 30 x 42 inches or width required.
- C. Scale and Spacing: To allow for notations and revisions.

PART 2 PRODUCTS

2.01 PRELIMINARY SCHEDULE

- A. Prepare preliminary schedule in the form of a preliminary network diagram.
- B. Content
 - 1. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
 - 2. Identify each item by specification section number.
 - 3. Identify work of separate floors and other logically grouped activities.
 - 4. Include conferences and meetings in schedule.
 - 5. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
 - 6. Show product and installation dates for major products.
 - 7. Provide separate schedule of submittal dates for shop drawings, product data, and samples, Owner-furnished products, and dates reviewed submittals will be required from Architect. Indicate decision dates for selection of finishes.
 - 8. Include a line item for Project Closeout with additional detail added as the activity approaches.
 - 9. Include not less than 15 days for startup and testing.
 - 10. Indicate delivery dates for Owner-furnished products.
 - 11. Coordinate content with schedule of values specified in Section 01 20 00 - Price and Payment Procedures.
 - 12. Include not more than 30 days for punch list and final completion, unless otherwise indicated.
 - 13. Provide legend for symbols and abbreviations used.

2.02 NETWORK ANALYSIS

- A. Prepare network analysis diagrams and supporting mathematical analyses using the Critical Path Method.
- B. Schedule shall include date of Notice to Proceed, date of Substantial Completion, and date of Final Completion in accordance with Contract Documents.
 - 1. Critical Path shall be clearly indicated on Schedule.
 - 2. Not more than 20 percent of the progress activities shall be on the Critical Path at any one time.
 - 3. Not more than 5 percent of the total individual activities may exceed \$50,000 or 20 calendar days (per activity) without prior approval.
- C. Illustrate order and interdependence of activities and sequence of work; how start of a given activity depends on completion of preceding activities, and how completion of the activity may restrain start of subsequent activities.
- D. Mathematical Analysis: Tabulate each activity of detailed network diagrams, using calendar dates, and identify for each activity:
 - 1. Preceding and following event numbers.
 - 2. Activity description.
 - 3. Estimated duration of activity, in maximum 20 day intervals.
 - 4. Earliest start date.
 - 5. Earliest finish date.
 - 6. Actual start date.
 - 7. Actual finish date.

8. Latest start date.
 9. Latest finish date.
 10. Total and free float; float time shall accrue to Owner and to Owner's benefit.
 11. Monetary value of activity, keyed to Schedule of Values.
 12. Percentage of activity completed.
 13. Responsibility.
- E. Analysis Program: Capable of compiling monetary value of completed and partially completed activities, accepting revised completion dates, and recomputation of all dates and float.
- F. Milestone completion dates shall be clearly shown on the Schedule.
- G. If abbreviations are used on the Schedule, a legend shall be provided to define all abbreviations.
- H. Required Reports: List activities in sorts or groups:
1. By preceding work item or event number from lowest to highest.
 2. By amount of float, then in order of early start.
- I. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

2.03 TWO-WEEK WORK SCHEDULE

- A. Each week, prepare and present an updated schedule showing the planned activities for the next two weeks and one week prior. The schedule shall be coordinated with the master schedule and accurately portray activities completed and activities planned for the upcoming weeks. Present this schedule at the weekly progress meeting.

2.04 SCHEDULE - DRIVEN REQUIREMENTS

- A. A schedule for the purchase, delivery, and receipt of critical items required for performance of the Work, showing lead times between purchase order placement and delivery dates, shall be integrated with the Construction Progress Schedule. Neither the Architect nor the Owner shall be deemed to have approved or accepted any such material, or its schedule, nor deemed to have waived this requirement if some or all of the material is not received.
- B. Should the Contractor fail to meet any scheduled date as shown on the current Construction Progress Schedule, the Contractor shall, if requested, be required at its own expense to submit within ten days of the request an updated Construction Progress Schedule. If the Contractor's progress indicates to the Owner that the Work will not be Substantially Completed within the Contract Time, the Contractor shall, at its own expense, increase its work force and/or working hours to bring the actual completion dates of the activities into conformance with the Construction Progress Schedule and Substantial Completion within the Contract Time. The Contractor shall reschedule and also submit a revised Construction Progress Schedule at its own expense within ten days of notice from the Architect that the sequence of work varies significantly from that shown on the current Schedule showing work to complete on original Contract Time with approved extensions. Neither the Owner nor the Architect will, however, be obligated to review the substance or sequence of the Construction Progress Schedule or otherwise determine whether it is correct, appropriate or attainable.
- C. Schedule Float Utilization:
1. Any float time to activities not on the critical path shall belong to the Project, and may be used by the Project to optimize its construction process. Any float time between the end of the final construction activity and the final completion date shall belong to the Owner, and may be used by the Owner in determining if additional contract days are to be awarded for changes in the contract or for delays to the contract caused by the Owner. The Contractor will not be entitled to any adjustment in the Contract Time, the Construction Schedule, or the Contract Sum, or to any additional payment of any sort by reason of the Owner's use of float time between the end of the final construction activity and the final completion date or by reason of the loss or use of any float time, including time between the Contractor's anticipated completion date and end of the Contract Time, whether or not the float time is described as such on the Construction Progress Schedule.

- D. Closeout: In the Contractor's Construction Schedule provide key activities required under Section 01 77 00 - Closeout Procedures, Section 01 78 00 - Closeout Submittals. These activities will be cost-loaded to a cumulative total of not less than 2 percent of the contract value.

2.05 REPORTS

- A. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.
- B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.06 SPECIAL REPORTS

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

PART 3 EXECUTION

3.01 REVIEW AND EVALUATION OF SCHEDULE

- A. Participate in joint review and evaluation of schedule with Architect at each submittal.
- B. Evaluate project status to determine work behind schedule and work ahead of schedule.
- C. After review, revise as necessary as result of review and resubmit within 10 days.

3.02 UPDATING SCHEDULE

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Update diagram to graphically depict current status of Work.
- D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit reports required to support recommended changes.

3.03 DISTRIBUTION OF SCHEDULE

- A. Distribute copies of updated schedules to Contractor's project site file, to Subcontractors, suppliers, Architect, Owner, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

END OF SECTION

SECTION 01 32 33
PHOTOGRAPHIC DOCUMENTATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preconstruction photographs.
- B. Periodic construction photographs.
- C. Periodic aerial construction photographs.
- D. Final completion construction photographs.

1.02 RELATED REQUIREMENTS

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

1.03 SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files within three days of taking photographs.

1.04 USAGE RIGHTS

- A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.
- B. Do not display photographs in publications without permission of Owner.

PART 2 PRODUCTS

2.01 PHOTOGRAPHIC MEDIA

- A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 megapixels, and at an image resolution of not less than 1600 by 1200 pixels and 400 dpi.

PART 3 EXECUTION

3.01 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
 - 1. Date and Time: Include date and time in file name for each image.
 - 2. Key Plan: Include digital copy of key plan with each electronic submittal; include point of view identification in each photo file name.
 - 3. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect.
- C. Preconstruction Photographs: Before commencement of excavation, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
 - 1. Flag excavation areas before taking construction photographs.
 - 2. Take 20 photographs to show existing conditions adjacent to property before starting the Work.
 - 3. Take 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.

4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
 5. Take preconstruction aerial photographs from a minimum of 8 vantage points around the site. Determine best altitude or altitudes to depict site and scope of project.
- D. Periodic Construction Photographs: Take 20 photographs monthly, coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.
- E. Periodic Aerial Construction Photographs: Take periodic aerial photographs from a minimum of 8 vantage points around the site. Determine best altitude or altitudes to depict site and scope of project.
1. Coordinate with Owner and Architect prior to flying site to determine sufficient progress between flights and any special vantage point locations.
 2. Include a minimum of six periodic flights approximately every three months of the construction period.
- F. Final Completion Construction Photographs: Take 20 color photographs after date of Substantial Completion for submission as project record documents. Architect will inform photographer of desired vantage points.
1. Do not include date stamp.

END OF SECTION

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Submittals.
- B. References and standards.
- C. Testing and inspection agencies and services.
- D. Control of installation.
- E. Tolerances.
- F. Manufacturers' field services.
- G. Defect Assessment.

1.02 RELATED REQUIREMENTS

- A. Document 00 31 00 - Available Project Information: Soil investigation data.
- B. Section 01 30 00 - Administrative Requirements: Submittal procedures.
- C. Section 01 42 16 - Definitions.
- D. Section 01 60 00 - Product Requirements: Requirements for material and product quality.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
 - 1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
- C. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- D. Manufacturer's Field Reports: Submit reports in quantities as specified for Product Data.
 - 1. Submit report within 30 days of observation to Architect for information.
- E. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility, in accordance with Section 1709.1 of the Oregon Structural Specialty Code, sent to authorities having jurisdiction and the Owner before starting work on the following systems.
 - 1. Seismic-force resisting system, designated seismic system, or component listed in the designated seismic systems and seismic-force-resisting systems statement of inspections indicated on the Structural Drawings.
 - 2. Main wind-force resisting systems and wind-resisting components listed in the wind-force-resisting systems statement of special inspections indicated on the Structural Drawings.
- F. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.04 DEFINITIONS

- A. Preconstruction Testing: Tests and inspections performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
- B. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.05 CONFLICTING REQUIREMENTS

- A. Metal Thickness: Where thickness of metals is designated in both gage and thickness in inches, the thickness in inches shall govern. Gages are provided for convenience only. Specified submittals for metals shall indicate thicknesses in inches.

1.06 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- E. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.07 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 - 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
 - 1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 - 2. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 - 3. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 - 4. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

1.08 MANUFACTURER'S FIELD SERVICES

- A. Manufacturer's Field Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and

conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

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 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.03 TESTING AND INSPECTION

- A. See individual specification sections for testing and inspection required.
- B. Testing Agency Duties:
 - 1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - 2. Perform specified sampling and testing of products in accordance with specified standards.
 - 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 4. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
 - 5. Perform additional tests and inspections required by Architect.
 - 6. Submit reports of all tests/inspections specified.
 - a. One copy of all testing and inspection reports shall be promptly sent directly to the Contractor, Architect, Owner, Structural Engineer, Building Department, Soils Engineer (Soil Compaction), unless otherwise directed.
 - b. In addition to written reports, immediately notify by telephone Architect, Owner and Contractor of any portions of the work found to be in non-compliance with the Contract Documents.
- C. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the Work.

- D. Contractor Responsibilities:
1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. Facilitate geotechnical monitoring.
 - e. To provide storage and curing of test samples.
 4. Notify Architect and laboratory 48 hours prior to expected time for operations requiring testing/inspection services.
 - a. When tests or inspections cannot be performed, through the fault of the Contractor, reimburse the Owner for the additional costs incurred.
 - b. Schedule testing and inspection so that the services of testing and inspection personnel will be as continuous and brief as possible.
 - c. Reimburse Owner for travel and lodging expenses incurred for testing and inspection services performed outside radius of 100 miles of the site.
 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 - a. When tests or inspections cannot be performed, through the fault of the Contractor, reimburse the Owner for the additional costs incurred.
 6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 - a. Schedule testing and inspection so that the services of testing and inspection personnel will be as continuous and brief as possible.
 - b. Reimburse Owner for travel and lodging expenses incurred for testing and inspection services performed outside radius of 100 miles of the site.
- E. Contractor shall be responsible for coordinating testing services so as to ensure that tests are performed and reports delivered in a manner not to cause delays to the Work. Allow adequate time for inspection, geotechnical monitoring and any needed corrections before proceeding to the next construction stage.
- F. Furnish records, drawings, certificates, and similar data as may be required by the testing personnel to assure compliance with the Contract Documents.
- G. Provide to the testing agency the approved design mix to be used for concrete, mortar, grout, and other materials mixes which require testing by the testing laboratory. Furnish copies of product test reports performed by Contractor as required by Contract Documents.
- H. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect.
- I. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.

3.04 INSPECTION AND TESTING LABORATORY REPORTS

- A. The testing agency will perform and furnish the following:
1. Laboratory Test Reports: Furnish laboratory test reports of materials and construction as required, including:
 - a. Date issued.
 - b. Project title and number.
 - c. Testing laboratory or engineering firm name, address, and telephone number.
 - d. Name and signature of representative.
 - e. Description of method of test.

- f. Identification of sample and portion of the work tested
 - g. Description of location in the work of the sample.
 - h. Time and date of obtaining sample.
 - i. Time and date of test of sample.
 - j. Weather and climatic conditions.
 - k. Evaluation of results tests, including recommendations for action, when requested by Architect or Structural Engineer.
2. Field Inspection Reports: Furnish field inspection reports for each site visit documenting activities, observations, and inspections of work being inspected include:
 - a. Date issued.
 - b. Project title and number.
 - c. Testing Laboratory or engineering firm name, address, and telephone number.
 - d. Name and signature of representative.
 - e. Observations on weather and climatic conditions.
 - f. Time and date
 - g. Conditions and/or status of the work being inspected.
 - h. Actions taken.
 - i. Recommendations or evaluation of the work.
 3. Reports will be submitted to Owner and Architect in duplicate giving observations and results of tests, indicating compliance or non-compliance with specified standards and with Contract Documents.

3.05 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- C. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
 1. Name, address, and telephone number of technical representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.

3.06 DEFECT ASSESSMENT

- A. When tests or inspection indicate non-compliance with the Contract Documents, subsequent retesting occasioned by such noncompliance shall be performed by the same personnel as performed the initial tests or inspections, and the additional cost shall be paid by the contractor as stipulated under the Conditions of the Contract.
- B. Contractor shall remove and replace any work found defective or not in compliance with the Contract Documents at no additional cost to Owner, and furnish notice for retesting as specified herein above.
- C. Replace Work or portions of the Work not conforming to specified requirements.

3.07 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
- B. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

SECTION 01 40 05
CUTTING AND PATCHING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements and limitations for cutting and patching of the Work.

1.02 RELATED REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Fundamental product requirements, substitutions and product options, delivery, storage, and handling.
- B. Section 01 70 00 - Execution: Examination, preparation, and general installation procedures.

1.03 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
- B. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Submit written request in advance of cutting or alteration which affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather-exposed or moisture-resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight-exposed elements.
 - 5. Work of Owner or separate contractor.
- C. Include in request:
 - 1. Identification of Project.
 - 2. Location and description of affected work.
 - 3. Necessity for cutting or alteration.
 - 4. Description of proposed work, and products to be used.
 - 5. Alternatives to cutting and patching.
 - 6. Effect on work of Owner or separate contractor.
 - 7. Written permission of affected separate contractor.
 - 8. Date and time work will be executed.

PART 2 PRODUCTS

2.01 MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 25 00.

PART 3 EXECUTION

3.01 GENERAL

- A. Execute cutting, fitting, patching and finishing including excavation and fill, to complete Work, and to:
 - 1. Fit the several parts together, to integrate with other work.
 - 2. Uncover work to install ill-timed work.
 - 3. Match work that has been cut to adjacent work.
 - 4. Repair areas adjacent to cuts to required condition.
 - 5. Repair new work damaged by subsequent work.
 - 6. Remove and replace defective and non-conforming work.

7. Remove samples of installed work for testing.
8. Provide openings in elements of Work for penetrations of mechanical and electrical work.
9. Provide finished appearance of surfaces and to match adjacent surfaces (unless otherwise noted) affected by the Work.

3.02 INSPECTION

- A. Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- B. After uncovering, inspect conditions affecting performance of work.
- C. Beginning of cutting or patching means acceptance of existing conditions.

3.03 PREPARATION

- A. Provide supports to assure structural integrity of surroundings; devices and methods to protect other portions of Project from damage.
- B. Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations. Maintain excavations free of water.
- C. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

3.04 PERFORMANCE

- A. Execute work by methods to avoid damage to other work, and which will provide proper surfaces to receive patching and finishing.
- B. Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- C. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
- D. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 1. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; 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.
 4. Replacement of defective work will not create new seams or joint lines.
 5. Restore work with new products in accordance with requirements of Contract Documents.
 6. Fit work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
 7. At penetrations of fire-rated wall, ceiling, or floor construction, completely seal voids with fire-rated material, full thickness of the construction element.

- E. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.05 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements. Materials subject to testing and inspection in the specifications shall be retested after cutting and patching operations are completed.

END OF SECTION

SECTION 01 42 16
DEFINITIONS

PART 1 GENERAL

1.01 SUMMARY

- A. This section supplements the definitions contained in the General Conditions.
- B. Other definitions are included in individual specification sections.

1.02 SPECIFICATION EXPLANATION

- A. The specifications are divided into Divisions and Sections for the convenience of writing and using. The titles of these are not intended to imply a particular meaning nor to fully describe the work of each division or section, and are not an integral part of the text which specifies the requirements. The Architect is not bound to define the limits of any subcontract, and will not enter into disputes between the Contractor and its employees, including subcontractors.
- B. These specifications are of the abbreviated, or "streamlined" type, and include incomplete sentences. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated, shall be interpolated as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
- C. Omissions of words or phrases shall be supplied by inference in the same manner as they are when a "note" occurs on the drawings.
- D. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

1.03 DEFINITIONS

- A. The definitions in this Section are not necessarily complete or exclusive but, generally, apply to all portions of the Work. Some contractual definitions appear in the General Conditions. Definitions of words of a special nature which relate to Work covered in one or two Sections of the Specifications are included in such Sections. Terms used throughout the Contract Documents are defined in this Section.
- B. Approve: Where used in conjunction with the Architect's or Engineer's response to submittals, requests, applications, inquiries, reports, and claims by the Contractor, the meaning of the term "approved" will be held to the limitations of the Architect's responsibilities and duties as specified in the General and Supplementary Conditions. In no case will "approval" by the Architect be interpreted as an assurance to the Contractor that the requirements of the Contract Documents have been fulfilled. The term "or approved" used in conjunction with specified materials means "properly submitted and approved substitution request."
- C. Coordinate: The term "coordinate" means satisfactorily combine the work of all trades for a complete and operating installation.
- D. Directed, Requested, etc.: Unless otherwise explained, terms such as "directed", "requested", "authorized", "selected", "approved", "required", "accepted", and "permitted" mean "directed by the Architect", "requested by the Architect", etc. However, no such implied meaning will be interpreted to extend the Architect's responsibility into the Contractor's area of construction supervision.
- E. Furnish: To supply, deliver to the project site, ready for unloading, unpacking, assembly, installation and similar operations, and inspect for damage.
- F. General Requirements: The provisions or requirements of Divisions 01 Sections apply to entire work of Contract and, where so indicated, to the other elements of work which are included in the Project.
- G. Guarantee and Warranty: "Warranty" is generally used in conjunction with products manufactured or fabricated away from the project site, and "guarantee" is generally used in conjunction with units of work which require both products and substantial amounts of labor at

the project site. The resulting difference is that warranties are frequently issued by manufacturers and frequently supported (partially) by product guarantees from contractors and/or installers.

- H. Indicated: A cross reference to details, notes or schedules on the Drawings, to other paragraphs or schedules in the Specifications, and to similar means of recording requirements in the Contract Documents. Where terms such as "shown", "noted", "scheduled", and "specified" are used in lieu of "indicated", it is for purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.
- I. Install: To unpack, assemble, erect, apply, place, anchor, work to dimension, finish, cure, protect, clean, start up, and make ready for use.
- J. Installer: The person or entity engaged by the Contractor or his Subcontractor or Sub-subcontractor for the performance of a particular unit of work at the project site, including installation, erection, application and similar required operations. It is a general requirement that Installers be recognized experts in the work they are engaged to perform.
- K. Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.
- L. Project Manual: The term "Project Manual" are the volumes which include the Bidding Requirements, Conditions of the Contract, and the Specifications, Divisions 01 through 41 inclusive, as applicable, and as listed in the Table of Contents bound therein.
- M. Provide: To furnish and install, complete and ready for the intended use.
- N. Selected: The term "selected" means "selected by the Architect and Owner"; the Architect shall be the sole judge of the acceptability of a product or an installation.
- O. Site: Space available to the Contractor for performing the Work under this Contract, either exclusively or in conjunction with other contractors as part of the overall Project. The Site may be unimproved vacant land, an existing building or space within an existing building. The extent of the Site is shown on the Drawings.
- P. Specification Language: Imperative language is used, generally, throughout the Specifications. Requirements expressed imperatively are to be performed by the Contractor. For clarity at certain locations, contrasting subjective language is used to describe responsibilities which must be performed by the Contractor or, when so noted, will be performed by others.
- Q. Supply: Same as Furnish.
- R. Trades: Using terms such as carpentry is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as carpenter. It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 45 05
FIELD ENGINEERING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.

1.02 RELATED REQUIREMENTS

- A. Document 00 31 00 - Available Project Information: Geotechnical Report and Site Topographical Survey.
- B. Section 01 77 00 - Closeout Procedures: Submitting surveys.

1.03 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

1.04 SUBMITTALS

- A. Qualification Data: For land surveyor.
- B. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.
- C. Submit name, address, and telephone number of land surveyor before starting survey work.
- D. Certified Surveys: Submit two copies stamped and signed by land surveyor.
 - 1. Submit documentation verifying accuracy of survey work, including copies of logs and field information.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
 - 3. Provide notice to the utility locator service at least 2 business days prior to any excavation work. Before commencing any excavation, provide notice of the scheduled commencement of excavation to all owners of underground facilities. Notice shall be communicated to the owners of underground utilities not less than 2 business days or more than 10 business days before the scheduled date of commencement of excavation unless otherwise agreed by all parties involved.
 - a. 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 952-001-0090. You may obtain copies by calling the center at 503-232-1987. If you have questions about the rules, you may contact the center. You must notify the center at least two business days before commencing any excavation.
 - 4. Excavation shall not proceed until all known facilities have been marked.

5. If an underground facility is damaged and such damage is the consequence of the failure to fulfill an obligation under the requirements of this Section, the party failing to perform that obligation shall be liable for any and all damages in accordance with Washington State Law.
6. Records: Maintain complete, orderly, legible and accurate logs of control and survey work and utility locations as the work progresses.

3.02 PREPARATION

- A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

3.03 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 3. Inform installers of lines and levels to which they must comply.
 4. Check the location, level and plumb, of every major element as the Work progresses.
 5. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
 6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.04 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
 1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
- C. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing critical building and site dimensions, locations, angles, elevations of construction and sitework, as-built locations of all utilities and all civil structures including rim and invert elevations.

END OF SECTION

**SECTION 01 60 00
PRODUCT REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Manufacturer's standard warranties and special warranties.
- B. General product requirements.
- C. Transportation, handling, storage and protection.
- D. Product option requirements.
- E. Substitution limitations.
- F. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

- A. Section 01 25 00 - Substitution Procedures: Substitutions made during and after the Bidding/Negotiation Phase.
- B. Section 01 40 00 - Quality Requirements: Product quality monitoring.
- C. Section 01 74 19 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting packaging and substitutions.

1.03 SUBMITTALS

- A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
 - 1. Submit within 15 days after date of Agreement.
 - 2. For products specified only by reference standards, list applicable reference standards.
- B. 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.
- C. 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.
- D. 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.

1.04 QUALITY ASSURANCE

- A. For products or workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.
- D. Should specified reference standards conflict with Contract Documents, request clarification from the Architect before proceeding.

- E. Neither the contractual relationships, duties, nor responsibilities of the parties in Contract nor those of the Architect shall be altered by the Contract Documents by mention or inference otherwise in any reference document.
- F. Contractor warrants to the Owner that the 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 not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of material and equipment.

1.05 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 - 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 - 2. Refer to Divisions 02 through 33 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 01 77 00 - Closeout Procedures.

PART 2 PRODUCTS

2.01 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by the Contract Documents.
 - 1. Means new material, machinery, components, equipment, fixtures, and systems comprising the Work. Does not include machinery and equipment used for preparation, fabrication, conveying, and erection of the Work.
 - 2. Products may also include existing materials or components when specifically designated for reuse.
- B. DO NOT USE products having any of the following characteristics:
 - 1. Made using or containing CFC's or HCFC's.
 - 2. Made of wood from newly cut old growth timber.

2.02 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 - 3. Two or more items of the same kind shall be considered identical and by the same manufacturer.
 - 4. Provide products suitable for service conditions.
 - 5. Adhere to equipment capacities, sizes and dimensions shown or specified unless variations are specifically approved in writing.

6. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
7. Where products are accompanied by the term "as selected," Architect will make selection.
8. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

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 Products of More than One Manufacturer: Use one of the products named and meeting specifications, no options or substitutions allowed.
- D. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.
- E. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Submit a request for substitution for other named manufacturers. Use of manufacturers not named not allowed.
- F. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
 1. If no product available within specified category matches and complies with other specified requirements, comply with requirements for substitutions
- G. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.04 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 LIMITATIONS

- A. See Section 01 25 00 - Substitution Procedures.

3.02 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
- E. Transport and handle products in accordance with manufacturer's instructions.
- F. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

- G. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- H. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- I. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

- 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. Store materials in a manner that will not endanger Project structure.
- C. Store and protect products in accordance with manufacturers' instructions.
- D. Store with seals and labels intact and legible.
- E. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- F. For exterior storage of fabricated products, place on sloped supports above ground.
- G. Provide off-site storage and protection when site does not permit on-site storage or protection.
- H. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- I. Comply with manufacturer's warranty conditions, if any.
- J. Do not store products directly on the ground.
- K. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- L. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- M. Prevent contact with material that may cause corrosion, discoloration, or staining.
- N. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- O. 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**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Protection of installed construction.
- C. Correction of the Work
- D. Progress cleaning.

1.02 RELATED REQUIREMENTS

- A. Section 01 45 05 - Field Engineering: Construction layout.

1.03 REFERENCE STANDARDS

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations.

1.04 QUALITY ASSURANCE

- A. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

1.05 PROJECT CONDITIONS

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

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where applicable, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - a. Description of the Work.
 - b. List of detrimental conditions, including substrates.
 - c. List of unacceptable installation tolerances.
 - d. Recommended corrections.
 - 2. Verify compatibility with and suitability of substrates, including compatibility with finishes or primers.
 - 3. Examine roughing-in for mechanical, plumbing, fire suppression and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - a. Verify that utility services are available, of the correct characteristics, and in the correct locations.
 - 4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - a. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
 - 5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.
- B. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

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.
- D. Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication.
- E. Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- F. Review Contract Documents and field conditions. Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of the Contractor, submit a request for information to Architect according to requirements in Section 01 30 00 - Administrative Requirements.

3.03 GENERAL INSTALLATION REQUIREMENTS

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. 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.
 - 2. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
 - 3. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
 - 4. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
 - 5. Make neat transitions between different surfaces, maintaining texture and appearance.
 - 6. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 7. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
 - 8. Architect may make minor adjustments in fixture, outlet, grille, louver, or ventilator locations prior to rough-in work with no additional cost.
- B. Installer Inspections: Require installer of each major unit of work to inspect substrate and conditions for installation and to report unsatisfactory conditions in writing.
 - 1. Correct unsatisfactory conditions before proceeding with installation.
 - 2. Inspect each product immediately before installation.
 - 3. Do not install damaged or defective products, materials or equipment.
 - 4. Start of installation shall be understood as acceptance of substrate conditions by the installer.
- C. Clearances: Provide adequate clearance between Architectural, Structural, Mechanical and Electrical systems. Verify physical dimensions of equipment and its available space. Check access routes through concealed or existing spaces for installation of systems or equipment.
 - 1. Review the Contract Documents for possible conflicts prior to rough-in. Verify that equipment will fit in the space provided. Resolve conflicts with the Architect prior to rough-in work.
- D. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- E. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- F. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- G. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

- H. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- I. Attachment: Provide blocking, attachment plates, anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- J. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- K. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.04 PROTECTION OF INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual specification Sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate work area to minimize damage.
- C. Provide and maintain temporary shoring and lateral bracing of structure during erection to resist all loads including:
 - 1. Wind
 - 2. Seismic
 - 3. Construction
 - 4. Materials
 - 5. Moving equipment
- D. Do not remove temporary bracing and shoring until adequate, permanent connections or structural elements are in final position and positively anchored.
- E. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- F. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- G. 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.
- H. Prohibit traffic from landscaped areas.
- I. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- J. Comply with manufacturer's written instructions for temperature and relative humidity.

3.05 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.

- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

3.06 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
 - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Utilize containers intended for holding waste materials of type to be stored.
 - 4. Daily cleaning shall include magnetic sweep of jobsite to pick up all nails and metallic debris.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 01 74 19 - Construction Waste Management and Disposal.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

END OF SECTION

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

- A. Owner requires that this project generate the least amount of trash and waste possible.
- B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- D. Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration:
 - 1. Aluminum and plastic beverage containers.
 - 2. Corrugated cardboard.
 - 3. Wood pallets.
 - 4. Clean dimensional wood: May be used as blocking or furring.
 - 5. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
 - 6. Glass.
 - 7. Gypsum drywall and plaster.
 - 8. Plastic buckets.
 - 9. Carpet tile, and carpet remnants: DuPont (<http://flooring.dupont.com>) and Interface (www.interfaceinc.com) conduct reclamation programs.
 - 10. Paint.
 - 11. Plastic sheeting.
 - 12. Rigid foam insulation.
- E. Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, incineration, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.
- F. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.
- G. Methods of trash/waste disposal that are not acceptable are:
 - 1. Burning on the project site.
 - 2. Burying on the project site.
 - 3. Dumping or burying on other property, public or private.
 - 4. Other illegal dumping or burying.
- H. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 RELATED REQUIREMENTS

- A. Section 01 30 00 - Administrative Requirements: Additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. Section 01 50 00 - Temporary Facilities and Controls: Additional requirements related to trash/waste collection and removal facilities and services.

1.03 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.

- C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.
- D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.
- E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- I. Return: To give back reusable items or unused products to vendors for credit.
- J. Reuse: To reuse a construction waste material in some manner on the project site.
- K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.
- M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- N. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Submit Waste Management Plan within 10 calendar days after receipt of Notice of Award of Bid, or prior to any trash or waste removal, whichever occurs sooner; submit projection of all trash and waste that will require disposal and alternatives to landfilling.
- C. Waste Management Plan: Include the following information:
 - 1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
 - 2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
 - 3. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
 - 4. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
 - 5. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
 - 6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.

PART 2 PRODUCTS

2.01 PRODUCT SUBSTITUTIONS

- A. See Section 01 60 00 - Product Requirements for substitution submission procedures.

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

- A. See Section 01 30 00 for additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. See Section 01 50 00 for additional requirements related to trash/waste collection and removal facilities and services.

3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.
- B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect.
- C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.
- D. Meetings: Discuss trash/waste management goals and issues at project meetings, particularly at:
 - 1. Pre-bid meeting.
 - 2. Pre-construction meeting.
 - 3. Regular job-site meetings.
- E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
 - 1. Provide containers as required.
 - 2. Provide construction dumpsters. Do not intermingle trash with school dumpsters.
 - 3. Provide adequate space for pick-up and delivery and convenience to subcontractors.
 - 4. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.
- F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.
- G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
- H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.
- I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION

**SECTION 01 77 00
CLOSEOUT PROCEDURES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Substantial Completion.
- B. Final Completion.
- C. Punch List.
- D. Warranties.
- E. System startup.
- F. Adjusting.
- G. Cleaning prior to Substantial Completion review.
- H. Final Cleaning.
- I. Maintenance.

1.02 RELATED REQUIREMENTS

- A. Section 01 13 31 - Certificate of Compliance.
- B. Section 01 13 32 - Certificate of No Hazardous Materials.
- C. Section 01 78 00 - Closeout Submittals: Project record documents, operation and maintenance (O&M) data, warranties and bonds.
- D. Section 01 79 00 - Demonstration and Training: Requirements relating to Owner training prior to Closeout.

1.03 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting review for determining date of Substantial Completion, complete the following. List items below that are incomplete with request.
 - 1. In progress payment request coincident with or first following date claimed, show either 100 percent completion for portion of work claimed as "substantially complete", or list incomplete items, value of incompleteness, and reasons for being incomplete. Include supporting documentation for completion as indicated in these contract documents.
 - a. Submit statement showing accounting of changes to the Contract Sum.
 - b. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 2. Advise Owner of pending insurance changeover requirements.
 - 3. Submit workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 5. Submit completed Certificate of Compliance. Refer to Section 01 13 31.
 - 6. Submit completed Certificate of No Hazardous Materials. Refer to Section 01 13 32.
 - 7. Prepare and submit drafts for Operation and Maintenance Manuals.
 - 8. Prepare and submit drafts for Project Record Documents.
 - 9. Prepare and submit damage or settlement surveys, property surveys, and similar final record information.
 - 10. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable. Submit an itemized receipt, signed by Owner, to Architect.
 - 11. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.

12. Terminate and remove temporary facilities from Project site, along with construction tools, and similar elements.
 13. Advise Owner of changeover in heat and other utilities.
 14. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
 15. Complete final cleaning requirements, including touchup painting.
 16. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
 17. Make submittals that are required by governing or other authorities.
 - a. Provide copies to Architect and Owner.
 - b. Provide copy of Occupancy Permit to Architect and Owner.
- B. Review: Submit a written request for review for Substantial Completion. On receipt of request, Architect will either proceed with review or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after review or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Results of completed review will form the basis of requirements for Final Completion.
 2. Should the Architect have to perform any additional reviews due to failure of Work to comply with claims of completion made by Contractor, the cost for each additional review will be charged to the Owner at the Architect/Engineer's hourly rate. The Owner shall have the right to deduct such charges from the contract amount as provided in the Conditions of the Contract.

1.04 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final review for determining final completion, complete the following:
1. Submit a final Application for Payment with final waivers according to Section 01 20 00 - Price and Payment Procedures.
 - a. Submit updated final statement, accounting for additional (final) changes to Contract Sum.
 2. Submit consent of surety.
 3. Prepare and submit final Project Record Documents within 30 days after date of Substantial Completion or before final completion, whichever occurs first.
 4. Submit final warranties.
 5. Submit final operation and maintenance manuals.
 6. Submit certified copy of Architect's Substantial Completion review list of items to be completed or corrected (punch list). The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 8. Submit permanent Certificate of Occupancy.
 9. Submit payment and release of liens to requirements of General Conditions. Before final payment, the Contractor shall furnish the following to the Architect:
 - a. An affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner of property might in any way be responsible, have been paid or otherwise satisfied (use AIA Form G706 or approved).
 - b. An affidavit from each Subcontractor on AIA Form G706 or approved.
 - c. Letter from Bonding Company addressed to Owner but submitted to the Architect, approving release of final payment and waiving submission of final receipts as well as a statement confirming the extension of the Bond for the warranty period as specified. Final receipts from all Subcontractors and material and equipment suppliers may be required to furnish to the Owner by the Contractor if the Surety does not waive this requirement. Letters to be in substantially the following form:
 - 1) (Name of Owner)Re: (Bond No.)
 - 2) (Address)(Name of Contractor)

- 3) (Name of Project)
- 4) Gentlemen:
- 5) The (Name of Bonding Company), surety on the above named Bond, consents to payment of retained percentages and agrees to waive submission of final receipts.
- 6) It is also agreed that the final payment to the Contractor shall not relieve the Surety Company of any of its obligations and that the Bond is extended to include guarantees and warranties of workmanship and materials.
- 7) (NAME OF BONDING COMPANY)
- 8) Attorney-in-Fact
- d. Submit Contractor's Affidavit of Release of Liens (AIA Form G706A).
- e. Return all copies of the Drawings and Specifications in accordance with the General Conditions.
10. Submit Affidavit of Wages Paid for Contractor and all sub-contractors.
11. Submit Department of Revenue Release (for projects over \$35,000 only).
12. Complete startup testing of systems.
13. Submit test/adjust/balance records.
14. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
15. Submit attendance record for training of Owner's personnel.
16. Complete requirements of Section 01 78 00 - Closeout Submittals.
17. Complete requirements of Section 01 79 00 - Demonstration and Training.
- B. Review: Submit a written request for final review for acceptance. On receipt of request, Architect will either proceed with review or notify Contractor of unfulfilled requirements. Architect will either prepare a letter to Owner recommending final acceptance or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
 1. Additional Reviews: Request an additional review when the Work identified in previous reviews as incomplete is completed or corrected.
 2. Should the Architect have to perform any such additional reviews due to failure of Work to comply with claims of completion made by Contractor, the cost for each additional review will be charged to the Owner at the Architect/Engineer's hourly rate. The Owner shall have the right to deduct such charges from the contract amount as provided in the Conditions of the Contract.
 3. Provide additional cleaning services as required for Work which was not complete at the time of initial review. Reclean as required until all Work is fully complete and recommended for final acceptance by Architect.
 4. If the Work does not achieve Final Completion within two weeks of the date originally scheduled to do so, plus any time adjustments by Change Order, the Architect's time and efforts beyond that period shall constitute extra services, the cost of which at the Architect's standard hourly rates will be deducted from the Contractor's Final Payment or retainage by the Owner.
 5. Punch list items in the Schedule of Values will be released on any given line item only when all punchlist items relating to that line item are satisfactorily completed.

1.05 CONTRACTOR'S LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Prior to requesting review for Substantial Completion, perform a thorough punch list of the project identifying incomplete items, damaged items and substandard items requiring correction.
 1. Distribute the Punch List to applicable subcontractors and indicate corrections made to each item.
 2. Reinspect and sign off on all complete items.
 3. This Punch List will form the basis of the list to be submitted with the request for Substantial Completion.
 4. Supplement Punch List with valuation of incomplete items and reasons for being incomplete.

5. Prepare Punch List in digital format acceptable to Architect.
- B. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Page number.
 4. Submit list of incomplete items in the following format:
 - a. PDF electronic file.

1.06 WARRANTIES

- A. Submittal Time:
 1. Submit summary of warranties included in the bid within seven days after Notice of Intent to Award Contract (Prior to Execution of the Contract). Indicate duration of each warranty and start date.
 2. Submit sample warranties as part of the project submittal process.
 3. Submit final warranties before requesting review for final acceptance.
- B. Comply with requirements of Section 01 78 00 - Closeout Submittals.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 EXECUTION

3.01 SYSTEM STARTUP

- A. Coordinate schedule for start-up and functional testing of various equipment and systems.
- B. Notify Architect and Owner seven days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- G. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units and retest.
- H. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- I. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.02 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.
- B. Testing, adjusting, and balancing HVAC systems: See requirements of Division 23.

3.03 CLEANING PRIOR TO SUBSTANTIAL COMPLETION REVIEW

- A. At time of project close-out, clean or reclean the Work to the condition expected from a normal, commercial building cleaning and maintenance program.
- B. Complete the following cleaning operations before requesting the Architect's review for certification of Substantial Completion.
 - 1. Remove grease, dust, dirt, stains, manufacturer's labels, fingerprints, etc., from sight exposed surfaces.
 - 2. Remove non-permanent protection and labels.
 - 3. Wash and polish all interior and exterior glazing and mirrors.
 - 4. Repair, patch and touch-up marred surfaces.
 - 5. Clean heating and cooling ducts, blowers, coils, fixtures, equipment, piping, and grilles.
 - 6. Replace disposable air filters and clean permanent filters.
 - 7. Remove construction debris.
 - 8. Flush water systems and disinfect domestic water lines. Sanitize plumbing and food service facilities.
 - 9. Broom clean new exterior paved surfaces and walks. Vacuum clean interior carpeted surfaces and wet mop hard floor surfaces.
 - 10. Clean light fixtures and replace burned-out lamps and replace damaged lenses.
 - 11. Police yards and grounds.

3.04 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and anti-pollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting review for certification of Substantial Completion for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

- k. Remove labels that are not permanent.
 - l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 1) Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates.
 - m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - n. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
 - o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grilles.
 - q. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter upon inspection.
 - r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fixtures to comply with requirements for new fixtures.
 - s. Leave Project clean and ready for occupancy.
2. Maintain in cleaned condition until Final Completion or Owner occupancy.

3.05 MAINTENANCE

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

SECTION 01 78 00
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project Record Documents.
- B. Operation and Maintenance Data.
- C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

- A. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- B. Section 01 77 00 - Closeout Procedures: Contract closeout procedures.
- C. Individual Product Sections: Specific requirements for operation and maintenance data.
- D. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

- A. Record Drawings:
 - 1. Draft: Submit one copy of marked-up record prints in electronic color PDF format prior to request for review for Substantial Completion.
 - 2. Final: Submit one paper copy set and an electronically scanned copy of marked up prints within 30 days of dated established for Substantial Completion or prior to request for review for final completion, whichever occurs first.
 - 3. Approved permit set of plans.
- B. Record Specifications:
 - 1. Draft: Submit one copy of marked-up copy of Project Manual in electronic color PDF format prior to request for review for Substantial Completion.
 - 2. Final: Submit one copy of marked-up copy of Project Manual and one electronically scanned copy within 30 days of date established for Substantial Completion or prior to request for review for final completion, whichever occurs first.
- C. Operation and Maintenance Manuals:
 - 1. Draft: Submit one copy of draft manuals in electronic color PDF format prior to request for review for Substantial Completion. Architect will review draft and return one copy with comments. Revise content of all document sets as required prior to final submission.
 - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 3. Final: Submit two sets of revised Manuals and an electronically scanned copy in final form prior to request for review for final completion.
- D. Warranties and Bonds:
 - 1. Submit a summary of warranties included in the bid within seven days after Notice of Intent to Award Contract (Prior to Execution of the Contract). Indicate duration of each warranty and start date.
 - 2. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 3. Draft: Submit as part of normal submittal process.
 - 4. Final: Submit final forms of warranties prior to request for review for final completion.
- E. PDF Format: Submit searchable PDF electronic files. File names shall clearly identify the Owner, project name, drawing or specification number and name and date. File name shall be established to list in the same order as identified in the Contract Documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and Construction Change Directives.
 - 5. ASIs and responses to RFIs.
 - 6. Reviewed shop drawings, product data, and samples.
 - 7. Manufacturer's instruction for assembly, installation, and adjusting.
 - 8. Architect will provide one hard copy and one PDF electronic file of a conformed set of Contract Documents, incorporating addenda for use by Contractor in developing Record Drawings.
- B. The record documents shall include all disciplines of work whether changes occur or not. These documents, as well as the approved permit set of plans, shall be available to the Architect and Owner at the site and reviewed with them on a monthly basis. Satisfactory maintenance of up-to-date record drawings on a monthly basis will be a requirement for approval of progress payments.
- C. Store record documents in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.
- D. Record Drawings:
 - 1. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations below first floor.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Addenda.
 - k. Changes made by Change Order or Construction Change Directive.
 - l. Changes made following Architect's written orders, including ASIs and responses to RFIs.
 - m. Details not on the original Contract Drawings.
 - n. Field records for variable and concealed conditions.
 - o. Record information on the Work that is shown only schematically.
 - 2. Record drawings shall include, as a minimum, the location and performance data on each piece of equipment, general configuration of duct and pipe distribution system, including sizes, and the terminal air and water design flow rates.
 - 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Utilize personnel proficient at recording graphic information in production of marked-up record prints.
 - 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 - 5. Mark important additional information that was either shown schematically or omitted from original Drawings.

6. Mark revisions and/or clarifications issued by Addenda, ASI, Construction Change Directive, Change Orders or responses to RFIs to reflect the change. Each such revision shall be graphically depicted to represent physical construction and clearly noted with the applicable Addenda, ASI, Change Order or RFI number. Notation of the Addenda, RFI, ASI, Construction Change Directive or Change Order number alone will not be acceptable.
 7. Ensure entries are complete and accurate, enabling future reference by Owner.
 8. Scanned Drawings: After review of draft drawings by Architect, incorporate necessary changes and prepare a full set of scanned Contract Drawings and Shop Drawings on CD-ROM.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
1. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 2. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 3. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals.
 4. Mark revisions and/or clarifications issued by Addenda, ASI, Construction Change Directive, Change Orders or responses to RFIs to reflect the change. Each such revision shall be graphically depicted to represent physical construction and clearly noted with the applicable Addenda, ASI, Change Order or RFI number. Notation of the Addenda, RFI, ASI, Construction Change Directive or Change Order number alone will not be acceptable.
 5. Format: Submit record Specifications as scanned PDF electronic file(s) of marked up paper copy of Specifications.

3.02 OPERATION AND MAINTENANCE DATA

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
 1. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
 2. Product data, with catalog number, size, composition, and color and texture designations.
 3. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

- D. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- E. Additional information as specified in individual product specification sections.
- F. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 - 1. Description of unit or system, and component parts.
 - 2. Identify function, normal operating characteristics, and limiting conditions.
 - 3. Include performance curves, with engineering data and tests.
 - 4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
- D. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- E. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Provide servicing and lubrication schedule, and list of lubricants required.
- G. Include manufacturer's printed operation and maintenance instructions.
- H. Include sequence of operation by controls manufacturer.
- I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Provide control diagrams by controls manufacturer as installed.
- K. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- L. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- M. Include test and balancing reports.
- N. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; Project Number, Name of Design Firm, and subject matter of contents.

- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- H. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.
 - 1. Text shall be minimum 12 point font size.
- I. Drawings: Provide with reinforced punched binder tab. Bind in with text. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.
- J. Arrangement of Contents: Organize each volume in parts as follows:
 - 1. Project Directory.
 - 2. Table of Contents, of all volumes, and of this volume.
 - 3. Operation and Maintenance Data: Arranged by system, then by product category.
 - a. Source data.
 - b. Product data, shop drawings, and other submittals.
 - c. Operation and maintenance data.
 - d. Field quality control data.
 - e. Photocopies of warranties and bonds.
 - 4. Design Data: To allow for addition of design data furnished by Architect or others, provide a tab labeled "Design Data" and provide a binder large enough to allow for insertion of at least 20 pages of typed text.
- K. PDF Electronic File: After review of draft manuals, assemble each manual into a composite electronically-indexed file. Submit on digital media acceptable to Architect.
 - 1. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically-linked operation and maintenance directory.
 - 2. Enable inserted reviewer comments on draft submittals.
 - 3. File Names and Bookmarks: Enable bookmarking of individual documents based upon file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel upon opening file.

3.06 WARRANTIES AND BONDS

- A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

- D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
 2. The Owner reserves the right to refuse to accept or pay for Work for the Project where a Special Warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.
- E. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- F. Verify that documents are in proper form, contain full information, and are notarized.
- G. Co-execute submittals when required.
- H. Retain warranties and bonds until time specified for submittal.
- I. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.
- J. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
- K. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
1. Product or work item.
 2. Installer of product or item, with name of principal, address, and telephone number.
 3. Describe the work provided by this installer/Subcontractor, under this Contract.
 4. Date of beginning of warranty or service and maintenance contract. (See General Condition's Warranty paragraph.)
 5. Duration of warranty or service maintenance contract.
 6. Information for Owner's personnel, including:
 - a. Proper procedure in case of failure.
 - b. Contact phone numbers of manufacturer.
 7. Instances that might affect validity of warranty or bond.
 8. Contractor, name of responsible principal, address, and telephone number.
- L. Schedule of Warranties: Provide a summary schedule of start and end date of each warranty.
- M. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION

SECTION 10 14 53
SITE TRAFFIC SIGNAGE

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Traffic signage.
 - 2. ADA signage.
- B. Related Sections include the following:
 - 1. Not used this section.

1.03 DEFINITIONS

- A. ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines."

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication and installation details for signs.
 - 1. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
- C. Sign Schedule: Use same designations indicated on Drawings.

1.05 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with applicable provisions in ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.06 COORDINATION

- A. Coordinate placement of anchorage devices with templates for installing signs.

1.07 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Deterioration of metal and polymer finishes beyond normal weathering.
 - b. Deterioration of embedded graphic image colors and sign lamination.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Aluminum Sheet and Plate: ASTM B 209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of Alloy 5005-H32.
- B. Aluminum sheet thickness shall be as follows:

<u>Maximum Horizontal Dimension</u>	<u>Sheet Aluminum Thickness</u>
Overlay panels	0.050 inch
Up to 20"	0.080 inch
20 inches to 36 inches	0.125 inch
Over 36 inches	0.188 inch

2.02 ACCESSORIES

- A. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

2.03 FABRICATION

- A. General: Provide manufacturer's standard signs of configurations indicated.
1. Welded Connections: Comply with AWS standards for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of exposed side. Clean exposed welded surfaces of welding flux and dress exposed and contact surfaces.
 2. Mill joints to tight, hairline fit. Form joints exposed to weather to exclude water penetration.
 3. Preassemble signs in the shop to greatest extent possible. Disassemble signs only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation, in location not exposed to view after final assembly.
 4. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.
- B. Comply with Manual on Uniform Traffic Control Devices requirements for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction. Produce smooth, even, level sign panel surfaces, constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally.
- C. All standard traffic signs along public streets and parking areas including, but not limited to, STOP, YIELD, SCHOOL ZONE, SCHOOL CROSSING, CROSS WALK, NO PARKING, BUMP, RESERVED PARKING AND FIRE LANE shall conform to standard requirements of the ODOT Standard Specifications.
- D. Handicap Parking Stall and Van Parking Signs: Provide at each handicap parking stall as indicated on Drawings.

2.04 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.05 ALUMINUM FINISHES

- A. Baked-Enamel Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Apply baked enamel complying with paint manufacturer's written instructions for cleaning, conversion coating, and painting.
 - 1. Organic Coating: Thermosetting, modified-acrylic enamel primer/topcoat system complying with AAMA 2603 except with a minimum dry film thickness of 1.5 mils, medium gloss.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- B. Verify that items including anchor inserts are sized and located to accommodate signs.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Locate signs and accessories where indicated, using mounting methods of types described and complying with manufacturer's written instructions.
 - 1. Install signs level, plumb, and at heights indicated, with sign surfaces free of distortion and other defects in appearance.
- B. Wall-Mounted Signs: Comply with sign manufacturer's written instructions except where more stringent requirements apply.
 - 1. Shim Plate Mounting: Provide 1/8-inch- thick, concealed aluminum shim plates with predrilled and countersunk holes, at locations indicated, and where other mounting methods are not practicable. Attach plate with fasteners and anchors suitable for secure attachment to substrate. Attach panel signs to plate using method specified above.
 - 2. Mechanical Fasteners: Use non-removable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.
- C. Bracket-Mounted Signs: Provide manufacturer's standard brackets, fittings, and hardware for mounting signs that project at right angles from walls and ceilings. Attach brackets and fittings securely to walls and ceilings with concealed fasteners and anchoring devices to comply with manufacturer's written instructions.

3.03 CLEANING AND PROTECTION

- A. After installation, clean soiled sign surfaces according to manufacturer's written instructions. Protect signs from damage until acceptance by Owner.

END OF SECTION

SECTION 26 00 00
ELECTRICAL BASIC REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Work included in 26 00 00, Electrical Basic Requirements applies to Division 26, Electrical work to provide materials, labor, tools, permits, incidentals, and other services to provide and make ready for Owner's use of electrical systems for proposed project.
- B. Contract Documents include, but are not limited to, Specifications including Division 00, Procurement and Contracting Requirements and Division 01, General Requirements, Drawings, Addenda, Owner/Architect Agreement, and Owner/Contractor Agreement. Confirm requirements before commencement of work.
- C. Definitions:
 - 1. Provide: To furnish and install, complete and ready for intended use.
 - 2. Furnish: Supply and deliver to project site, ready for unpacking, assembly and installation.
 - 3. Install: Includes unloading, unpacking, assembling, erecting, installation, applying, finishing, protecting, cleaning and similar operations at project site as required to complete items of work furnished.
 - 4. Approved or Approved Equivalent: To possess the same performance qualities and characteristics and fulfill the utilitarian function without any decrease in quality, durability or longevity. For equipment/products defined by the Contractor as "equivalent", substitution requests must be submitted to Engineer for consideration, in accordance with Division 01, General Requirements, and approved by the Engineer prior to submitting bids for substituted items.
 - 5. Authority Having Jurisdiction (AHJ): Indicates reviewing authorities, including local fire marshal, Owner's insurance underwriter, Owner's representative, and other reviewing entity whose approval is required to obtain systems acceptance.

1.02 RELATED SECTIONS

- A. Contents of Section applies to Division 26, Electrical Contract Documents.
- B. Related Work:
 - 1. Additional conditions apply to this Division including, but not limited to:
 - a. Specifications including Division 00, Procurement and Contracting Requirements and Division 01, General Requirements.
 - b. Drawings
 - c. Addenda
 - d. Owner/Architect Agreement
 - e. Owner/Contractor Agreement
 - f. Codes, Standards, Public Ordinances and Permits

1.03 REFERENCES AND STANDARDS

- A. References and Standards per Division 00, Procurement and Contracting Requirements and Division 01, General Requirements, individual Division 26, Electrical Sections and those listed in this Section.
- B. Codes to include latest adopted editions, including current amendments, supplements and local jurisdiction requirements in effect as of the date of the Contract Documents, of/from:
 - 1. State of Oregon:
 - a. OAR - Oregon Administrative Rules
 - b. OESC - Oregon Electrical Specialty Code
 - c. OFC - Oregon Fire Code
 - d. OMSC - Oregon Mechanical Specialty Code
 - e. OPSC - Oregon Plumbing Specialty Code
 - f. OSSC - Oregon Structural Specialty Code

- g. OEESC - Oregon Energy Efficiency Specialty Code
 - h. Oregon Elevator Specialty Code
- C. Reference standards and guidelines include but are not limited to the latest adopted editions from:
- 1. ABA - Architectural Barriers Act
 - 2. ADA - Americans with Disabilities Act
 - 3. ANSI - American National Standards Institute
 - 4. APWA - American Public Works Association
 - 5. ASCE - American Society of Civil Engineers
 - 6. ASHRAE Guideline 0, the Commissioning Process
 - 7. ASTM - ASTM International
 - 8. CFR - Code of Federal Regulations
 - 9. EPA - Environmental Protection Agency
 - 10. ETL - Electrical Testing Laboratories
 - 11. FCC - Federal Communications Commission
 - 12. FM - FM Global
 - 13. IBC - International Building Code
 - 14. IEC - International Electrotechnical Commission
 - 15. IEEE - Institute of Electrical and Electronics Engineers
 - 16. IES - Illuminating Engineering Society
 - 17. ISO - International Organization for Standardization
 - 18. MSS - Manufacturers Standardization Society
 - 19. NEC - National Electric Code
 - 20. NECA - National Electrical Contractors Association
 - 21. NEMA - National Electrical Manufacturers Association
 - 22. NETA - National Electrical Testing Association
 - 23. NFPA - National Fire Protection Association
 - 24. OSHA - Occupational Safety and Health Administration
 - 25. UL - Underwriters Laboratories Inc.
- D. See Division 26, Electrical individual Sections for additional references.
- E. Where code requirements are at variance with Contract Documents, meet code requirements as a minimum requirement and include costs necessary to meet these in Contract. Machinery and equipment are to comply with OSHA requirements, as currently revised and interpreted for equipment manufacturer requirements. Install equipment provided per manufacturer recommendations.
- F. Whenever this Specification calls for material, workmanship, arrangement or construction of higher quality and/or capacity than that required by governing codes, higher quality and/or capacity take precedence.

1.04 SUBMITTALS

- A. See Division 01, General Requirements for Submittal Procedures as well as individual Division 26, Electrical Sections.
- B. Provide drawings in format and software release equal to the design documents. Drawings to be the same sheet size and scale as the Contract Documents.
- C. In addition:
 - 1. "No Exception Taken" constitutes that review is for general conformance with the design concept expressed in the Contract Documents for the limited purpose of checking for conformance with information given. Any action is subject to the requirements of the Contract Documents. Contractor is responsible for the dimensions and quantity and will confirm and correlate at the job site, fabrication processes and techniques of construction, coordination of the work with that of all other trades, and the satisfactory performance of the work.

2. Provide product submittals and shop drawings in electronic format only. Electronic format must be submitted via zip file via e-mail. For electronic format, provide one zip file per specification division containing a separate file for each Specification Section. Individual submittals sent piecemeal in a per Specification Section method will be returned without review or comment. All transmissions/submissions to be submitted to Architect. Deviations will be returned without review.
3. Product Data: Provide manufacturer's descriptive literature for products specified in Division 26, Electrical Sections.
4. Identify/mark each submittal in detail. Note what differences, if any, exist between the submitted item and the specified item. Failure to identify the differences will be considered cause for disapproval. If differences are not identified and/or not discovered during the submittal review process, Contractor remains responsible for providing equipment and materials that meet the specifications and drawings.
 - a. Label submittal to match numbering/references as shown in Contract Documents. Highlight and label applicable information to individual equipment or cross out/remove extraneous data not applicable to submitted model. Clearly note options and accessories to be provided, including field installed items. Highlight connections by/to other trades.
 - b. Include technical data, installation instructions and dimensioned drawings for products, fixtures, equipment and devices installed, furnished or provided. Reference individual Division 26, Electrical specification Sections for specific items required in product data submittal outside of these requirements.
 - c. See Division 26, Electrical individual Sections for additional submittal requirements outside of these requirements.
5. Maximum of two reviews of complete submittal package. Arrange for additional reviews and/or early review of long-lead items; Bear costs of these additional reviews at Engineer's hourly rates. Incomplete submittal packages/submittals will be returned to contractor without review.
6. Resubmission Requirements: Make corrections or changes in submittals as required, and in consideration of Engineer's comments. Identify Engineer's comments and provide an individual response to each of the Engineer's comments. Cloud changes in the submittals and further identify changes which are in response to Engineer's comments.
7. Structural/Seismic: Provide weights, dimensions, mounting requirements and like information required for mounting, seismic bracing, and support. Indicate manufacturer's installation and support requirements to meet ASCE 7-10 requirements for non-structural components. Provide engineered seismic drawings and equipment seismic certification. Equipment Importance Factor as specified in Division 01 and in Structural documents.
8. Trade Coordination: Include physical characteristics, electrical characteristics, device layout plans, wiring diagrams, and connections as required per Division 26, Electrical Coordination Documents. For equipment with electrical connections, furnish copy of approved submittal for inclusion in Division 26, Electrical submittals.
9. Make provisions for openings in building for admittance of equipment prior to start of construction or ordering of equipment.
10. Substitutions and Variation from Basis of Design:
 - a. The Basis of Design designated product establishes the qualities and characteristics for the evaluation of any comparable products by other listed acceptable manufacturers if included in this Specification or included in an approved Substitution Request as judged by the Design Professional.
 - b. If substitutions and/or equivalent equipment/products are being proposed, it is the responsibility of parties concerned, involved in, and furnishing the substitute and/or equivalent equipment to verify and compare the characteristics and requirements of that furnished to that specified and/or shown. If greater capacity and/or more materials and/or more labor is required for the rough-in, circuitry or connections than for the item specified and provided for, then provide compensation for additional charges required for the proper rough-in, circuitry and connections for the equipment

being furnished. No additional charges above the Base Bid, including resulting charges for work performed under other Divisions, will be allowed for such revisions. Coordinate with the requirements of "Submittals". For any product marked "or approved equivalent", a substitution request must be submitted to Engineer for approval prior to purchase, delivery or installation.

11. Shop Drawings: Provide coordinated shop drawings which include physical characteristics of all systems, device layout plans, and control wiring diagrams. Reference individual Division 26, Electrical specification Sections for additional requirements for shop drawings outside of these requirements.
 - a. Provide Shop Drawings indicating access panel locations, size and elevation for approval prior to installation.
12. Samples: Provide samples when requested by individual Sections.
13. Resubmission Requirements:
 - a. Make any corrections or change in submittals when required. Provide submittals as specified. The engineer will not be required to edit and/or interpret the Contractor's submittals. Indicate changes for the resubmittal in a cover letter with reference to page(s) changed and reference response to comment. Cloud changes in the submittals.
 - b. Resubmit for review until review indicates no exception taken or "make corrections as noted".
14. Operation and Maintenance Manuals, Owners Instructions:
 - a. Submit, at one time, electronic files (PDF format) on CD/DVD of manufacturer's operation and maintenance instruction manuals and parts lists for equipment or items requiring servicing. Submit data when work is substantially complete and in same order format as submittals. Include name and location of source parts and service for each piece of equipment.
 - 1) Include copy of approved submittal data along with submittal review letters received from Engineer. Data to clearly indicate installed equipment model numbers. Delete or cross out data pertaining to other equipment not specific to this project.
 - 2) Include copy of manufacturer's standard Operations and Maintenance for equipment. At front of each tab, provide routine maintenance documentation for scheduled equipment. Include manufacturer's recommended maintenance schedule and highlight maintenance required to maintain warranty. Furnish list of routine maintenance parts, including part numbers, sizes, quantities, relevant to each piece of equipment.
 - 3) Include Warranty per Division 00, Procurement and Contracting Requirements and Division 01, General Requirements, Section 26 00 00, Electrical Basic Requirements and individual Division 26, Electrical Sections.
 - 4) Include product certificates of warranties and guarantees.
 - 5) Include copy of complete parts list for equipment. Include available exploded views of assemblies and sub assemblies.
 - 6) Include commissioning reports.
 - 7) Include copy of startup and test reports specific to each piece of equipment.
 - 8) Engineer will return incomplete documentation without review. Engineer will provide one set of review comments in Submittal Review format. Contractor must arrange for additional reviews; Contractor to bear costs for additional reviews at Engineer's hourly rates.
 - b. Thoroughly instruct Owner in proper operation of equipment and systems. Where noted in individual Sections, training will include classroom instruction with applicable training aids and systems demonstrations. Field instruction per Section 26 00 00, Electrical Basic Requirements, Demonstration.
 - c. Copies of certificates of code authority inspections, acceptance, code required acceptance tests, letter of conformance and other special guarantees, certificates of warranties, specified elsewhere or indicated on Drawings.

15. Record Drawings:
- a. Maintain at site at least one set of drawings for recording "As-constructed" conditions. Indicate on drawings changes to original documents by referencing revision document, and include buried elements, location of conduit, and location of concealed electrical items. Include items changed by field orders, supplemental instructions, and constructed conditions.
 - b. Record Drawings are to include equipment and fixture/connection schedules that accurately reflect "as constructed or installed" for project.
 - c. At completion of project, input changes to original project on CAD Drawings or Revit Model and make one set of black-line drawings created from CAD Files or Revit Model in version/release equal to contract drawings. Submit CAD or Revit disk and drawings upon substantial completion.
 - d. See Division 26, Electrical individual Sections for additional items to include in record drawings.

1.05 QUALITY ASSURANCE

- A. Regulatory Requirements: Work and materials installed to conform with all local, State and Federal codes, and other applicable laws and regulations.
- B. Drawings are intended to be diagrammatic and reflect the Basis of Design manufacturer's equipment. They are not intended to show every item in its exact dimensions, or details of equipment or proposed systems layout. Verify actual dimensions of systems (i.e. distribution equipment, duct banks, light fixtures, etc.) and equipment proposed to assure that systems and equipment will fit in available space. Contractor is responsible for design and construction costs incurred for equipment other than Basis of Design, including, but not limited to, architectural, structural, electrical, HVAC, fire sprinkler, and plumbing systems.
- C. Manufacturer's Instructions: Follow manufacturer's written instructions. If in conflict with Contract Documents, obtain clarification. Notify Engineer/Architect, in writing, before starting work.
- D. Items shown on Drawings are not necessarily included in Specifications or vice versa. Confirm requirements in all Contract Documents.
- E. Provide products that are UL listed.

1.06 WARRANTY

- A. Provide written warranty covering the work for a period of one year from date of Substantial Completion in accordance with Division 00, Procurement and Contracting Requirements and Division 01, General Requirements, Section 26 00 00, Electrical Basic Requirements and individual Division 26, Electrical Sections.
- B. Sections under this Division can require additional and/or extended warranties that apply beyond basic warranty under Division 01, General Requirements and the General Conditions. Confirm requirements in all Contract Documents.

1.07 COORDINATION DOCUMENTS

- A. Prepare and submit coordinated layout drawings (composite drawings), prior to construction, to coordinate installation and location of HVAC equipment, ductwork, grilles, diffusers, piping, plumbing equipment/fixtures, fire sprinklers, plumbing, lights, cable tray and electrical services with architectural and structural requirements, and other trades (including plumbing, fire protection, electrical, ceiling suspension, and tile systems), and provide maintenance access requirements. Coordinate with submitted architectural systems (i.e roofing, ceiling, finishes) and structural systems as submitted, including footings and foundation. Identify zone of influence from footings and ensure systems are not routed within the zone of influence. Unless otherwise required by Division 00, Procurement and Contracting Requirements or Division 01, General Requirements, Division 23, HVAC to combine information furnished by other trades into master coordination documents.

- B. Prepare Drawings as follows:
 - 1. Drawings in CAD Format or Revit Model. CAD format or Revit Model release equal to design documents. Drawings to be same sheet size and scale as Contract Drawings and indicate location, size and elevation above finished floor of equipment and distribution systems.
 - 2. Review and revise, as necessary, section cuts in Contract Drawings after verification of field conditions.
 - 3. Incorporate Addenda items and change orders.
 - 4. Provide additional coordination as requested by other trades.
- C. Advise Architect in event conflict occurs in location or connection of equipment. Bear costs resulting from failure to properly coordinate installation or failure to advise Architect of conflict.
- D. Verify in field exact size, location, and clearances regarding existing material, equipment and apparatus, and advise Architect of discrepancies between that indicated on Drawings and that existing in field prior to installation related thereto.
- E. Submit final Coordination Drawings with changes as Record Drawings at completion of project.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Provide like items from one manufacturer.

2.02 MATERIALS

- A. Base contract upon furnishing materials as specified. Materials, equipment, and fixtures used for construction are to be new, latest products as listed in manufacturer's printed catalog data and are to be UL approved or have adequate approval or be acceptable by state, county, and city authorities. Equipment/fixture supplier is responsible for obtaining State, County, and City acceptance on equipment/fixtures that are not UL approved or are not listed for installation.
- B. Articles, fixtures, and equipment of a kind to be standard product of one manufacturer.
- C. Names and manufacturer's names denote character and quality of equipment desired and are not to be construed as limiting competition.
- D. Hazardous Materials:
 - 1. Comply with local, State of Oregon, and Federal regulations relating to hazardous materials.
 - 2. Comply with Division 00, Procurement and Contracting Requirements and Division 01, General Requirements for this project relating to hazardous materials.
 - 3. Do not use any materials containing a hazardous substance. If hazardous materials are encountered, do not disturb; immediately notify Owner and Architect. Hazardous materials will be removed by Owner under separate contract.

2.03 ACCESS PANELS

- A. See Division 01, General Requirements and Division 08, Openings for products and installation requirements.
- B. Confirm Access Panel requirements in Division 01, General Requirements, Division 08, Openings and individual Division 26, Electrical Sections. In the absence of specific requirements, comply with the following:
 - 1. Provide flush mounting access panels for service of systems and individual components requiring maintenance or inspection. Where access panels are located in fire-rated assemblies of building, rate access panels accordingly.
 - a. Ceiling access panels to be minimum of 24-inch by 24-inch.
 - b. Wall access panels to be minimum of 12-inch by 12-inch.
 - c. Provide screwdriver operated catch.
 - d. Manufacturers and Models:
 - 1) Drywall: Karp KDW.
 - 2) Plaster: Karp DSC-214PL.

- 3) Masonry: Karp DSC-214M.
- 4) 2 hour rated: Karp KPF-350FR.
- 5) Manufacturers: Milcor, Elmdor, Acudor, or approved equivalent.

PART 3 - EXECUTION

3.01 ACCESSIBILITY AND INSTALLATION

- A. Confirm Accessibility and Installation requirements in Division 00, Procurement and Contracting Requirements, Division 01, General Requirements, Section 26 00 00, Electrical Basic Requirements and individual Division 26, Electrical Sections.
- B. Install equipment requiring access (i.e., junction boxes, light fixtures, power supplies, motors, etc.) so that they may be serviced, reset, replaced or recalibrated by service people with normal service tools and equipment. Do not install equipment in passageways, doorways, scuttles or crawlspaces which would impede or block the intended usage.
- C. Install equipment and products complete as directed by manufacturer's installation instructions. Obtain installation instructions from manufacturer prior to rough-in of equipment and examine instructions thoroughly. When requirements of installation instructions conflict with Contract Documents, request clarification from Architect prior to proceeding with installation. This includes proper installation methods, sequencing, and coordination with other trades and disciplines.
- D. Earthwork:
 - 1. Confirm Earthwork requirements in Contract Documents. In the absence of specific requirements, comply with individual Division 26, Electrical Sections and the following:
 - a. Perform excavation, dewatering, shoring, bedding, and backfill required for installation of work in this Division in accordance with related earthwork Sections. Contact utilities and locate existing utilities prior to excavation. Repair any work damaged during excavation or backfilling.
 - b. Excavation: Do not excavate under footings, foundation bases, or retaining walls.
 - c. Provide protection of underground systems. Review the project Geotechnical Report for references to corrosive or deleterious soils which will reduce the performance or service life of underground systems materials.
- E. Firestopping:
 - 1. Confirm requirements in Division 07, Thermal and Moisture Protection. In the absence of specific requirements, comply with individual Division 26, Electrical Sections and the following:
 - a. Coordinate location and protection level of fire and/or smoke rated walls, ceilings, and floors. When these assemblies are penetrated, seal around piping and equipment with approved firestopping material. Install firestopping material complete as directed by manufacturer's installation instructions. Meet requirements of ASTM E814, Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
- F. Plenums:
 - 1. In plenums, provide plenum rated materials that meet the requirements to be installed in plenums. Immediately notify Architect/Engineer of discrepancy.
- G. Start up equipment, in accordance with manufacturer's start-up instructions, and in presence of manufacturer's representative. Test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment.
- H. Provide miscellaneous supports/metals required for installation of equipment and conduit.

3.02 SEISMIC CONTROL

- A. Confirm Seismic Control requirements in Division 01, General Requirements, Structural documents, and individual Division 26 Electrical Sections.

B. General:

1. Earthquake resistant designs for Electrical (Division 26) equipment and distribution, i.e. power distribution equipment, generators, UPS, etc. to conform to regulations of jurisdiction having authority.
2. Restraints which are used to prevent disruption of function of piece of equipment because of application of horizontal force to be such that forces are carried to frame of structure in such a way that frame will not be deflected when apparatus is attached to a mounting base and equipment pad, or to structure in normal way, utilizing attachments provided. Secure equipment and distribution systems to withstand a force in direction equal to value defined by jurisdiction having authority.
3. Provide stamped shop drawings from licensed Structural Engineer of seismic bracing and seismic movement assemblies for conduit and equipment. Submit shop drawings along with equipment submittals.
4. Provide stamped shop drawings from licensed Structural Engineer of seismic flexible joints for conduit crossing building expansion or seismic joints. Submit shop drawings along with seismic bracing details.
5. Provide means to prohibit excessive motion of electrical equipment during earthquake.

3.03 REVIEW AND OBSERVATION

- A. Confirm Review and Observation requirements in Division 00, Procurement and Contracting Requirements, Division 01, General Requirements, Section 26 00 00, Electrical Basic Requirements and individual Division 26, Electrical Sections.
- B. Notify Architect, in writing, at following stages of construction so that they may, at their option, visit site for review and construction observation:
 1. Underground conduit installation prior to backfilling.
 2. Prior to covering walls.
 3. Prior to ceiling cover/installation.
 4. When main systems, or portions of, are being tested and ready for inspection by AHJ.
- C. Final Punch:
 1. Prior to requesting a final punch visit from the Engineer, request from Engineer the Electrical Precloseout Checklist, complete the checklist confirming completion of systems' installation, and return to Engineer. Request a final punch visit from the Engineer, upon Engineer's acceptance that the electrical systems are ready for final punch.
 2. Costs incurred by additional trips required due to incomplete systems will be the responsibility of the Contractor.

3.04 CONTINUITY OF SERVICE

- A. Confirm requirements in Division 00, Procurement and Contracting Requirements and Division 01, General Requirements. In the absence of specific requirements in Division 01, General Requirements, comply with individual Division 26, Electrical Sections and the following:
 1. During remodeling or addition to existing structure, while existing structure is occupied, present services to remain intact until new construction, facilities or equipment is installed.
 2. Prior to changing over to new service, verify that every item is thoroughly prepared. Install new wiring, and wiring to point of connection.
 3. Coordinate transfer time to new service with Owner. If required, perform transfer during off-peak hours. Once changeover is started, pursue to its completion to keep interference to a minimum.
 - a. If overtime is necessary, there will be no allowance made by Owner for extra expense for such overtime or shift work.
 4. No interruption of services to any part of existing facilities will be permitted without express permission in each instance from Owner. Requests for outages must state specific dates, hours and maximum durations, with outages kept to these specific dates, hours and maximum durations. Obtain written permission from Owner for any interruption of power, lighting or signal circuits and systems.
 - a. Organize work to minimize duration of power interruption.

- b. Coordinate utility service outages with utility company.

3.05 CUTTING AND PATCHING

- A. Confirm requirements in Division 00, Procurement and Contracting Requirements and Division 01, General Requirements. In the absence of specific requirements in Division 01, General Requirements, comply with individual Division 26, Electrical Sections and the following:
 - 1. Proposed floor cutting/core drilling/sleeve locations to be approved by Project Structural Engineer. Submit proposed locations to Architect/Project Structural Engineer. Where slabs are of post tension construction, perform x-ray scan of proposed penetration locations and submit scan results including proposed penetration locations to Project Structural Engineer/Architect for approval. Where slabs are of waffle type construction, show column cap extent and cell locations relative to proposed penetration(s).
 - 2. Cutting, patching and repairing for work specified in this Division including plastering, masonry work, concrete work, carpentry work, and painting included under this Section will be performed by skilled craftsmen of each respective trade in conformance with appropriate Division of Work.
 - 3. Additional openings required in building construction to be made by drilling or cutting. Use of jack hammer is specifically prohibited. Patch openings in and through concrete and masonry with grout.
 - 4. Restore new or existing work that is cut and/or damaged to original condition. Patch and repair specifically where existing items have been removed. This includes repairing and painting walls, ceilings, etc. where existing conduit and devices are removed as part of this project. Where alterations disturb lawns, paving, and/or walks, surfaces to be repaired, refinished and left in condition matching existing prior to commencement of work.
 - 5. Additional work required by lack of proper coordination will be provided at no additional cost to the Owner.

3.06 EQUIPMENT SELECTION AND SERVICEABILITY

- A. Replace or reposition equipment which is too large or located incorrectly to permit servicing, at no additional cost to Owner.

3.07 DELIVERY, STORAGE AND HANDLING

- A. Confirm requirements in Division 00, Procurement and Contracting Requirements and Division 01, General Requirements. In the absence of specific requirements, comply with individual Division 26, Electrical Sections and the following:
 - 1. Handle materials delivered to project site with care to avoid damage. Store materials on site inside building or protected from weather, dirt and construction dust. Products and/or materials that become damaged due to water, dirt, and/or dust as a result of improper storage and handling to be replaced before installation.
 - 2. Protect equipment to avoid damage. Close conduit openings with caps or plugs. Keep motors and bearings in watertight and dustproof covers during entire course of installation.
 - 3. Protect bus duct and similar items until in service.

3.08 DEMONSTRATION

- A. Confirm Demonstration requirements in Division 00, Procurement and Contracting Requirements, Division 01, General Requirements, and individual Division 26, Electrical Sections.
- B. Upon completion of work and adjustment of equipment, test systems and demonstrate to Owner's Representative, Architect, and Engineer that equipment furnished and installed or connected under provisions of these Specifications functions in manner required. Provide field instruction to Owner's Maintenance Staff as specified in Division 01, General Requirements, Section 26 00 00, Electrical Basic Requirements and individual Division 26, Electrical Sections.
- C. Manufacturer's Field Services: Furnish services of a qualified person at time approved by Owner, to instruct maintenance personnel, correct defects or deficiencies, and demonstrate to satisfaction of Owner that entire system is operating in satisfactory manner and complies with

requirements of other trades that may be required to complete work. Complete instruction and demonstration prior to final job site observations.

3.09 CLEANING

- A. Confirm Cleaning requirements in Division 01, General Requirements, Section 26 00 00, Electrical Basic Requirements and individual Division 26, Electrical Sections.
- B. Upon completion of installation, thoroughly clean electrical equipment, removing dirt, debris, dust, temporary labels and traces of foreign substances. Throughout work, remove construction debris and surplus materials accumulated during work.

3.10 INSTALLATION

- A. Confirm Installation requirements in Division 00, Procurement and Contracting Requirements and Division 01, General Requirements, Section 26 00 00, Electrical Basic Requirements and individual Division 26, Electrical Sections.
- B. Install equipment and fixtures in accordance with manufacturer's installation instructions, plumb and level and firmly anchored to vibration isolators. Maintain manufacturer's recommended clearances.
- C. Start up equipment, in accordance with manufacturer's start-up instructions, and in presence of manufacturer's representative. Test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment.
- D. Provide miscellaneous supports/metals required for installation of equipment.

3.11 PAINTING

- A. Confirm requirements in Division 01, General Requirements and Division 09, Finishes. In the absence of specific requirements, comply with individual Division 26, Electrical Sections and the following:
 - 1. Ferrous Metal: After completion of work, thoroughly clean and paint exposed supports constructed of ferrous metal surfaces (i.e., hangers, hanger rods, equipment stands, etc.) with one coat of black asphalt varnish for exterior or black enamel for interior, suitable for hot surfaces.
 - 2. In Electrical Room, on roof or other exposed areas, equipment not painted with enamel to receive two coats of primer and one coat of rustproof enamel, colors as selected by Architect.
 - 3. See individual equipment Specifications for other painting.
 - 4. Structural Steel: Repair damage to structural steel finishes or finishes of other materials damaged by cutting, welding or patching to match original.
 - 5. Conduit: Clean, primer coat and paint interior/exterior conduit exposed in public areas with two coats paint suitable for metallic surfaces. Color selected by Architect.
 - 6. Covers: Covers such as manholes, vaults and the like will be furnished with finishes which resist corrosion and rust.

3.12 ACCESS PANELS

- A. Confirm Access Panel requirements in Division 01, General Requirements. In the absence of specific requirements in Division 01, General Requirements, comply with individual Division 26, Electrical Sections and the following:
 - 1. Coordinate locations/sizes of access panels with Architect prior to work.

3.13 ACCEPTANCE

- A. Confirm requirements in Division 00, Procurement and Contracting Requirements and Division 01, General Requirements. In the absence of specific requirements, comply with individual Division 26, Electrical Sections and the following:
 - 1. System cannot be considered for acceptance until work is completed and demonstrated to Architect that installation is in strict compliance with Specifications, Drawings and manufacturer's installation instructions, particularly in reference to following:
 - a. Cleaning
 - b. Operation and Maintenance Manuals

- c. Training of Operating Personnel
- d. Record Drawings
- e. Warranty and Guaranty Certificates
- f. Start-up/Test Document and Commissioning Reports

3.14 FIELD QUALITY CONTROL

- A. Confirm Field Quality Control requirements in Division 01, General Requirements, Section 26 00 00, Electrical Basic Requirements and individual Division 26, Electrical Sections.
- B. Tests:
 - 1. Conduct tests of equipment and systems to demonstrate compliance with requirements specified. Reference individual Specification Sections for required tests. Document tests and include in operation and maintenance manuals.
 - 2. During site evaluations by Architect or Engineer, provide appropriate personnel with tools to remove and replace trims, covers, and devices so that proper evaluation of installation can be performed.

3.15 LETTER OF CONFORMANCE

- A. Provide Letter of Conformance, copies of manufacturers' warranties and extended warranties with a statement that Electrical items were installed in accordance with manufacturer's recommendations, UL listings and FM Global approvals. Include Letter of Conformance, copies of manufacturers' warranties and extended warranties in Operation and Maintenance Manuals.

END OF SECTION

**SECTION 26 05 33
RACEWAYS**

PART 1 - GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Rigid Metal Conduit (RMC)
 - 2. Intermediate Metal Conduit (IMC)
 - 3. Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Metal Conduit
 - 4. Electrical Metallic Tubing (EMT)
 - 5. Flexible Metal Conduit (FMC)
 - 6. Liquidtight Flexible Metal Conduit (LFMC)
 - 7. Electrical Polyvinyl Chloride (PVC) Conduit
 - 8. Conduit Fittings
 - 9. Surface Raceway Systems
- B. Provide a complete system of conduit and fittings, with associated couplings, connectors, and fittings, as shown on drawings and described in these specifications.

1.02 RELATED SECTIONS

- A. Contents of Division 26, Electrical and Division 01, General Requirements apply to this Section.
- B. In addition, reference the following:
 - 1. Section 26 05 29, Hangers and Supports for Electrical Systems and Equipment
 - 2. Section 26 05 34, Boxes
 - 3. Section 26 05 43, Electrical Vaults and Underground Raceways

1.03 REFERENCES AND STANDARDS

- A. References and Standards as required by Section 26 00 00, Electrical Basic Requirements and Division 01, General Requirements.

1.04 SUBMITTALS

- A. Submittals as required by Section 26 00 00, Electrical Basic Requirements and Division 01, General Requirements.

1.05 QUALITY ASSURANCE

- A. Quality assurance as required by Section 26 00 00, Electrical Basic Requirements and Division 01, General Requirements.

1.06 WARRANTY

- A. Warranty of materials and workmanship as required by Section 26 00 00, Electrical Basic Requirements and Division 01, General Requirements.

1.07 DEFINITIONS

- A. Raceway system is defined as consisting of conduit, tubing, duct, and fittings including but not limited to connectors, couplings, offsets, elbows, bushings, expansion/deflection fittings, and other components and accessories. Complete electrical raceway installation before starting the installation of conductors and cables.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Rigid Metal Conduit (RMC):
 - 1. Allied Tube & Conduit
 - 2. Beck Manufacturing Inc.
 - 3. Picoma
 - 4. Wheatland Tube Company
 - 5. Or approved equivalent.

- B. Intermediate Metal Conduit (IMC):
 - 1. Allied Tube & Conduit
 - 2. Beck Manufacturing WL
 - 3. Picoma
 - 4. Wheatland Tube Company
 - 5. Or approved equivalent.
- C. Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit:
 - 1. Allied Tube & Conduit
 - 2. Thomas & Betts Corporation
 - 3. Robroy Industries
 - 4. O'kote Inc.
 - 5. Or approved equivalent.
- D. Electrical Metallic Tubing (EMT):
 - 1. Allied Tube & Conduit
 - 2. Beck Manufacturing WL
 - 3. Picoma
 - 4. Wheatland Tube Company
 - 5. Or approved equivalent.
- E. Flexible Metal Conduit (FMC):
 - 1. AFC Cable Systems Inc.
 - 2. Electri-Flex Company
 - 3. International Metal Hose
 - 4. Or approved equivalent.
- F. Liquidtight Flexible Metal Conduit (LFMC):
 - 1. AFC Cable Systems Inc.
 - 2. Electri-Flex Company
 - 3. International Metal Hose
 - 4. Or approved equivalent.
- G. Electrical Polyvinyl Chloride (PVC) Conduit:
 - 1. AFC Cable Systems Inc.
 - 2. Electri-Flex Company
 - 3. International Metal Hose
 - 4. JM Eagle
 - 5. Or approved equivalent.
- H. Conduit Fittings:
 - 1. Bushings:
 - a. Insulated Type for Threaded Raceway Without Factory Installed Plastic Throat Conductor Protection:
 - 1) Thomas & Betts 1222 Series
 - 2) O-Z Gedney B Series
 - 3) Or approved Equivalent.
 - 2. Raceway Connectors and Couplings:
 - a. Thomas & Betts Series
 - b. O-Z Gedney Series
 - c. Or approved Equivalent.
 - 3. Expansion/Deflection Fittings:
 - a. EMT: O-Z Gedney Type TX
 - b. RMC: O-Z Gedney Type AX, DX and AXDX, Crouse & Hinds XD
 - c. PVC: O-Z Gedney Type DX with PVC adapters, Carlon E945 Series, Kraloy OPEJ Series
 - d. Or approved equivalent.

- I. Surface Raceway Systems:
 - 1. Single Channel Surface Raceway and Signal:
 - a. Legrand (Wiremold) AL3300 Series
 - b. MonoSystems SWA 3200 Series
 - c. Or approved equivalent.
 - 2. Two Channel Surface Raceway:
 - a. Legrand (Wiremold) ALDS4000 Series
 - b. MonoSystems SWA 4500 Series
 - c. Or approved equivalent.

2.02 RIGID METAL CONDUIT (RMC)

- A. UL 6, ANSI C80.1. Hot dipped galvanized steel conduit after thread cutting.
 - 1. Fittings: NEMA FB2.10.

2.03 INTERMEDIATE METAL CONDUIT (IMC)

- A. UL6, ANSI C80.6. Hot dipped galvanized after thread cutting.
 - 1. Fittings: NEMA FB2.10.

2.04 POLYVINYL CHLORIDE (PVC) EXTERNALLY COATED GALVANIZED RIGID METAL CONDUIT

- A. Description: UL 6, ANSI C80.1, and NEMA RN 1; rigid steel conduit with external PVC coating.
 - 1. PVC Coating: Minimum 40 mils in thickness.
- B. Fittings and Conduit Bodies: NEMA FB 1; steel fittings with external PVC coating to match conduit.

2.05 ELECTRICAL METALLIC TUBING (EMT)

- A. Description: UL 797, ANSI C80.3; steel galvanized tubing.
- B. Fittings: NEMA FB 1; steel, compression type.

2.06 FLEXIBLE METAL CONDUIT (FMC)

- A. Description: UL 1, Interlocked steel construction.
- B. Fittings: NEMA FB 2.20.

2.07 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

- A. Description: UL 360, inner core made from spiral wound strip of heavy gauge, hot dipped galvanized low carbon steel. 3/4-inch through 1-1/4-inch trade sizes to have a square lock core and contain an integral bonding strip of copper. 1-1/2-inch and larger to have fully interlocked core. Jacket material to be moisture, oil and sunlight resistant flexible PVC.
- B. Fittings: NEMA FB 2.20.

2.08 ELECTRICAL POLYVINYL CHLORIDE (PVC) CONDUIT

- A. Description: UL 651, NEMA TC 2; Schedule 40 PVC.
- B. Fittings: NEMA TC 3.

2.09 CONDUIT FITTINGS

- A. Bushings:
 - 1. Insulated type for threaded raceway connectors without factory-installed plastic throat conductor protection.
 - 2. Insulated grounding type for threaded raceway connectors.
- B. Raceway Connectors and Couplings:
 - 1. Steel connectors, couplings, and conduit bodies, hot-dip galvanized.
 - 2. Connector locknuts to be steel, with threads meeting ASTM tolerances. Locknuts to be hot-dip galvanized.
 - 3. Connector throats (EMT, flexible conduit, metal clad cable and cordset connectors) to have factory installed plastic inserts permanently installed. For normal cable or conductor exiting angles from raceway, the cable jacket or conductor insulation to bear only on plastic throat insert.

4. Steel gland, Tomic or Breagle connectors and couplings are recognized for this Contract as having acceptable raceway to fitting electrical conductance.
 5. Set screw connectors and couplings, without integral compression glands, are recognized for this Contract as not having acceptable raceway to fitting electrical conductance. A ground conductor sized per this Specification must be included and bonded within raceway assembly utilizing this type connector or coupling.
- C. Provide expansion/deflection fittings for EMT.

2.10 SURFACE RACEWAY SYSTEMS

- A. Single Channel Surface Raceway:
1. Power: Provide 20 amp multi-outlet assembly as indicated on drawings.
 2. Signal: Blank cover with outlets as indicated on drawings.
- B. Two Channel Surface Raceway: One channel for power, other channel for signal. Provide 20 amp multi-outlet assembly as indicated on drawings. Provide divider between channels.
- C. Provide lengths scaled from drawings to tolerance of 1/2-inch, over raceway length, between end wall surface. Do not scale from Division 26, Electrical Drawings.
- D. Provide prewired receptacles every 24-inches unless otherwise noted on drawings. Reference Section 26 27 26, Wiring Devices for device requirements.
- E. Provide end caps, corner joints, tees, transition fittings, device brackets and like items for complete installation.
- F. Verify exact mounting height with drawings.
- G. Finish Brushed Aluminum.
- H. Basis of Design: Surface raceway design, shown on the drawings, is based on Legrand (Wiremold) product line. Approved manufacturers listed are allowed on condition of meeting the specified conditions including area of fill, finish and coordination with other trades. Remove and replace raceway not meeting these conditions at no cost to Owner.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

- A. Finished Surfaces: Schedule raceway installation to avoid conflict with installed wall and ceiling surfaces. If unavoidable, coordinate work and repairs with Architect.
- B. Conduit Size:
1. Minimum Size: 3/4-inch for power and control, unless otherwise noted. 3/4-inch for communication/data, unless otherwise noted. 3/4-inch for signal systems, unless otherwise noted.
- C. Underground Installations:
1. More than 5-feet from Foundation Wall: Use PVC.
 2. Within 5-feet from Foundation Wall: Use PVC coated RMC.
 3. In or Under Slab on Grade: Use PVC.
 4. Minimum Size: 1-inch.
- D. In Slab Above Grade:
1. Use PVC.
 2. Maximum Size Conduit in Slab: Contact Structural Engineer for maximum outside diameter of conduit.
- E. Provide two pull strings/tapes in empty conduits. Types:
1. Utility Company Conduit: Polyester measure/pulling tape, Greenlee 4436 or approved equivalent. Coordinate exact requirements with utility company.
 2. Feeders: Polyester measure/pulling tape, Greenlee 4436 or approved.
 3. Branch Circuits and Low Voltage: Greenlee Poly Line 431 or approved.
 4. If fish tape is used for pulling line or low voltage wiring, fiberglass type to be used. Metal fish tapes will not be allowed.

5. Secure pull string/tape at each end.
 6. Provide caps on ends of empty conduit to be used in future.
 7. Label both ends of empty conduits with location of opposite end.
- F. Elbows: Use fiberglass or PVC coated RMC for underground installations.
- G. Elbow for Low Energy Signal Systems: Use long radius factory ells where linking sections of raceway for installation of signal cable.
- H. Elbow for Medium Voltage Systems: Use long radius factory ells where linking sections of raceway per NEC Article 300.34.
- I. Verify that field measurements are as shown on drawings.
- J. Plan locations of conduit runs in advance of the installation and coordinate with ductwork, plumbing, ceiling and wall construction in the same areas.
- K. Locate penetrations and holes in advance where they are proposed in the structural sections such as footings, beams, and walls. Penetrations are acceptable only when the following occurs:
1. Where shown on the structural drawings.
 2. As approved by the Structural Engineer prior to construction, and after submittal of drawing showing location, size, and position of each penetration.
- L. Verify routing and termination locations of conduit prior to rough-in.
- M. Conduit routing is shown on drawings in approximate locations unless dimensioned. Route as required to complete wiring system.
- N. Install raceways securely, in neat and workmanlike manner, as specified in NECA 1, Standard Practices for Good Workmanship in Electrical Construction.
- O. Install steel conduit as specified in NECA 101, Standard for Installing Steel Conduits.
- P. Install nonmetallic conduit in accordance with manufacturer's instructions.
- Q. Inserts, anchors and sleeves.
1. Coordinate location of inserts and anchor bolts for electrical systems prior to concrete pour.
 2. Coordinate location of sleeves with consideration for other building systems prior to concrete pour.
- R. Conduit Supports:
1. Arrange supports to prevent misalignment during wiring installation.
 2. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
 3. Group related conduits; support using conduit rack. Construct rack using steel channel. Provide space on each for 25 percent additional conduits.
 4. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports.
 5. Do not attach conduit to ceiling support wires.
- S. Flexible steel conduit length not-to-exceed 6-feet, 3-feet in concealed walls. Provide sufficient slack to reduce the effect of vibration.
- T. Install conduit seals at boundaries where ambient temperatures differ by 10 degrees F or more as shown on the drawings. Install seals on warm side of partition.
- U. Seal raceways stubbing up into electrical equipment. Plug raceways with conductors with duct-seal. Cap spare raceways and plug PVC raceway products with plastic plugs as made by Underground Products, or equal, shaped to fit snugly into the stubup.
- V. Seal raceways penetrating an exterior building wall to prevent moisture and vermin from entering into the electrical equipment.
- W. Use suitable caps on spare and empty conduits to protect installed conduit against entrance of dirt and moisture.

- X. Only conduit servicing elevator equipment can be installed through elevator shafts or equipment rooms. These conduits may only enter the room and go directly to the equipment being supplied.
- Y. Keep 277/480 volt wiring independent of 120/208 volt wiring. Keep power wiring independent of communication system wiring.
- Z. Keep emergency system wiring independent of other wiring systems per NEC 700.
- AA. Installation of conduit in structural concrete that is less than 3-inches thick is prohibited without the approval of the Structural Engineer. Maintenance pads, and curbs are exempted.
- AB. Raceways Embedded in Floor Slabs:
 - 1. Do not install raceways in slab without the approval of the Structural Engineer.
 - 2. Do not let raceways interfere with placement of floor slab reinforcement components.
 - 3. Install raceways between the upper and the lower layers of reinforcing steel.
 - 4. Space raceways not less than 8-inches on centers except where they converge at panels or junction boxes.
 - 5. Raceways running parallel to slabs supports, such as beams, columns and structural walls, to be installed not less than 12-inches from such supporting elements.
 - 6. Branch circuit homeruns are not permitted in slab, route branch circuit homeruns above grade exposed in approved areas or above lay-in ceiling spaces.
 - 7. Route conduits in or under slabs point-to-point.
 - 8. Do not cross conduits in slab.
 - 9. Encase medium voltage feeder conduits using red concrete.
- AC. Arrange conduit to maintain headroom and present neat appearance.
- AD. Do not install conduits on surface of building exterior, along vapor barrier, across roof, on top of parapet walls, or across floors, unless otherwise noted on drawings.
- AE. Exposed conduits are permitted only in following areas:
 - 1. Mechanical rooms, electrical rooms or spaces where walls, ceilings and floors will not be covered with finished material.
 - 2. Existing walls that are concrete or block construction.
 - 3. Where specifically noted on Drawings.
 - 4. Route exposed conduit parallel and perpendicular to walls, tight to finished surfaces and neatly offset into boxes.
- AF. Do not install conduits or other electrical equipment in obvious passages, doorways, scuttles or crawl spaces which would impede or block area passage's intended usage.
- AG. Install continuous conduit and raceways for electrical power wiring and signal systems wiring.
- AH. Below Grade Conduit:
 - 1. See 26 05 43, Electrical Vaults and Underground Raceways.
 - 2. Use PVC, PVC coated RMC, or fiberglass conduit.
 - 3. Provide watertight conduit sleeves and rubber seals for conduit entering building below grade, Link-Seal system by Thunderline Corporation or approved equivalent.
- AI. Route conduit installed above accessible ceilings parallel and perpendicular to walls.
- AJ. Maintain adequate clearance between conduit and piping.
- AK. Keep conduits a minimum of 12-inches away from steam or hot water radiant heating lines (at or above 104 degrees F) or 3-inches away from waste or water lines.
- AL. Cut conduit square using saw or pipecutter; deburr cut ends.
- AM. Bring conduit to shoulder of fittings; fasten securely.
- AN. Use conduit hubs to fasten conduit to cast boxes in damp and wet locations.
- AO. Install no more than the equivalent of three 90 degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams.

- AP. Use hydraulic one shot bender to fabricate elbows for bends in metal conduit larger than 2-inch size.
- AQ. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- AR. Provide suitable fittings to accommodate expansion and deflection where conduit crosses seismic, control, and expansion joints.
- AS. Conduit Terminations for Signal Systems: Provide a plastic bushing on the end of conduit used for signal system wiring.
- AT. Feeders: Do not combine or change feeder runs.
- AU. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Division 07, Thermal and Moisture Protection.
- AV. Route conduit through roof openings for piping and ductwork wherever possible. Where separate roofing penetration is required, coordinate location and installation method with roofing installation and installer.

3.02 RIGID METAL CONDUIT (RMC) INSTALLATION

- A. Outdoor Locations Above Grade: RMC.
- B. In areas exposed to mechanical damage: RMC.
- C. For security conduits installed exposed and subject to tampering: RMC.

3.03 INTERMEDIATE METAL CONDUIT (IMC) INSTALLATION

- A. Damp Locations: IMC.

3.04 POLYVINYL CHLORIDE (PVC) EXTERNALLY COATED GALVANIZED RIGID METAL CONDUIT INSTALLATION

- A. Use PVC coated RMC 36-inch radius ells for power service conduits and 48-inch radius ells for telephone service conduits.

3.05 ELECTRICAL METALLIC TUBING (EMT) INSTALLATION

- A. Damp Locations: EMT up to 2-inches in diameter with compression couplings.
- B. Dry Locations:
 - 1. Concealed: EMT.
 - 2. Exposed: EMT.
- C. Dry, Protected: EMT.

3.06 FLEXIBLE METAL CONDUIT (FMC) INSTALLATION

- A. Dry Locations: Motors, recessed luminaires and equipment connections subject to movement or vibration, use flexible metallic conduit.
- B. Install 12-inch minimum slack loop on flexible metallic conduit.

3.07 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC) INSTALLATION

- A. Use PVC coated liquidtight flexible metallic conduit for motors and equipment connections subject to movement or vibration and subjected to any of following conditions: Exterior location, moist or humid atmosphere, corrosive environments, water spray, oil, or grease.
- B. Install 12-inch minimum slack loop on liquidtight flexible metallic conduit.

3.08 ELECTRICAL POLYVINYL CHLORIDE (PVC) CONDUIT INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide equipment grounding conductor in PVC conduit runs containing power conductors.
- C. Underground Installation:
 - 1. Areas subject to vehicular traffic: Schedule 80 PVC.
 - 2. Emergency System (Life Safety and Critical) per NEC 517.30(c)(1): Schedule 80 PVC.
 - 3. Utility primary and secondary conduit: Schedule 80 PVC.

4. Other underground applications: Schedule 40 PVC, except where prohibited by the NEC or local codes.
- D. Convert PVC conduit to Rigid Metal Conduit (RMC) prior to emerging from underground, concrete encasement, or concrete slab.
- E. Locations Subject to Corrosive Influences: Schedule 80 PVC where allowed in NEC 300.6 and approved for use by the Authority Having Jurisdiction and also the Architect.
- F. Provide expansion fittings to compensate for expansion and contraction per NEC 352.44.
- G. PVC elbows are not acceptable. Use fiberglass or PVC coated RMC.
- H. Trim cut ends inside and outside to remove rough edges.
- I. Provide bushings when entering a box, fitting or other enclosure.

3.09 CONDUIT FITTINGS INSTALLATION

- A. Conduit Joints: Assemble conduits continuous and secure to boxes, panels, luminaires and equipment with fittings to maintain continuity. Provide watertight joints where embedded in concrete, below grade or in damp locations. Seal metal conduit with metal thread primer. Rigid conduit connections to be threaded, clean and tight (metal to metal). Threadless connections are not permitted for RMC.
- B. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.
- C. Use compression fittings in dry locations, damp and rain-exposed locations. Maximum size permitted in damp locations and locations exposed to rain is 2-inches in diameter.
- D. Use threaded type fittings in wet locations, hazardous locations, and damp or rain-exposed locations where conduit size is greater than 2-inches.
- E. Use PVC coated, threaded type fittings in corrosive environments.
- F. Use insulated type bushings with ground provision at switchboards, panelboards, safety disconnect switches, junction boxes that have feeders 60 amperes and greater.
- G. Condulets and Conduit Bodies:
 1. Do not use condulets and conduit bodies.
- H. Sleeves and Chases - Floor, Ceiling and Wall Penetrations: Provide necessary rigid conduit sleeves, openings and chases where conduits or cables are required to pass through floors, ceilings or walls.
- I. Expansion Joints:
 1. Provide conduits crossing expansion joints where cast in concrete with expansion-deflection fittings, installed per manufacturer's recommendations.
 2. Secure conduits 3-inches and larger to building structure on opposite sides of a building expansion joint with an expansion-deflection fitting across joint installed per manufacturer's recommendations.
 3. Provide conduits less than 3-inches where not cast in concrete with junction boxes securely fastened on both sides of expansion joint, connected together with 15-inches of slack (minimum of 15-inches longer than straight line length) flexible conduit and copper green ground bonding jumper. In lieu of this flexible conduit, an expansion-deflection fitting, as indicated for conduits 3-inch and larger may be installed.
 4. Verify expansion/deflection requirements with Structural Engineer prior to installation.
- J. Seismic Joints:
 1. No conduits cast in concrete allowed to cross seismic joint.
 2. Provide conduits with junction boxes securely fastened on both sides of seismic joint, connected together with 15-inches of slack (minimum of 15-inches longer than straight line length) flexible conduit and copper green ground bonding jumper. Prior to installation, verify with Architect that 15-inches is adequate for designed movement, and if not, increase this length as required.

- 3. Provide conduits less than 3-inches where not cast in concrete with junction boxes securely fastened on both sides of expansion joint, connected together with 15-inches of slack (minimum of 15-inches longer than straight line length) flexible conduit and copper green ground bonding jumper. In lieu of this flexible conduit, an expansion-deflection fitting, as indicated for conduits 3-inch and larger may be installed.
- K. Provide rigid conduit coupling flush with surface of slab or wall for conduit stubbed in concrete slab or wall to serve electrical equipment or an outlet under table or to supply shop tool, etc. Provide plug where conduit is to be used in future.

3.10 SURFACE RACEWAY SYSTEMS INSTALLATION

- A. Install per manufacturer's installation instructions, perpendicular and parallel to building lines.
- B. Use flat-head screws, clips, and straps to fasten raceway channel to surfaces. Mount plumb and level.
- C. Use suitable insulating bushings and inserts at connections to outlets and corner fittings.
- D. Close end of wireway and unused conduit openings.

END OF SECTION

SECTION 26 05 43
ELECTRICAL VAULTS AND UNDERGROUND RACEWAYS

PART 1 - GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Vaults
 - 2. Vault Covers
 - 3. Precast Vault Concrete Materials
 - 4. Vault Components
 - 5. Handholes
 - 6. Raceways

1.02 RELATED SECTIONS

- A. Contents of Division 26, Electrical and Division 01, General Requirements apply to this Section.
- B. In addition, reference the following:
 - 1. Section 26 05 33, Raceways

1.03 REFERENCES AND STANDARDS

- A. References and Standards as required by Section 26 00 00, Electrical Basic Requirements and Division 01, General Requirements.
- B. In addition, meet the following:
 - 1. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit (EPC-40 and EPC-80).
 - 2. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing.
 - 3. NEMA TC 6/8 - Extra-Strength PVC Plastic Utilities Duct for Underground Installation.
 - 4. NEMA TC 9 - Fittings for Extra-Strength Plastic Utilities Duct for Underground Installation.
 - 5. NEMA TC 14 - Reinforced Thermosetting Resin Conduit (RTRC) and Fittings.
 - 6. UL 1684 - Standard for Reinforced Thermosetting Resin Conduit (RTRC) and Fittings.

1.04 SUBMITTALS

- A. Submittals as required by Section 26 00 00, Electrical Basic Requirements and Division 01, General Requirements.
- B. In addition, provide:
 - 1. Shop drawings detailing items provided under this Section:
 - a. Vault cover assigned designators.
 - b. Duct entry schedule.
 - c. Pulling iron working load.
 - d. ASTM load designation and percentage increase in live load for impact.
 - e. Vault section weights.
 - f. Rebar and piling support details.
 - g. Indicate dimensions, reinforcement, size and locations of openings, and accessory locations for precast manholes and handholes.

1.05 QUALITY ASSURANCE

- A. Quality assurance as required by Section 26 00 00, Electrical Basic Requirements and Division 01, General Requirements.
- B. In addition, meet the following:
 - 1. Installer will have documented experience in the placement of vaults for a minimum of 3 years.
 - 2. Manufacturer will have documented experience in the manufacturer of vaults for minimum of three years.

1.06 WARRANTY

- A. Warranty of materials and workmanship as required by Section 26 00 00, Electrical Basic Requirements and Division 01, General Requirements.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Vaults:
 - 1. Oldcastle Precast
 - 2. Or approved equivalent.
- B. Vault Covers:
 - 1. Oldcastle Precast
 - 2. Jensen Precast
 - 3. Neenah Foundry
 - 4. Or approved equivalent.
- C. Precast Vault Concrete Materials:
 - 1. Oldcastle Precast
 - 2. Jensen Precast
 - 3. Or approved equivalent.
- D. Vault Components:
 - 1. Pull-In Irons:
 - a. Oldcastle Precast
 - b. Jensen Precast
 - c. Hubbell
 - d. Inwesco
 - e. Or approved equivalent.
 - 2. Vault Cable Rack Hardware:
 - a. Oldcastle Precast
 - b. Jensen Precast
 - c. Hubbell/Chance
 - d. Or approved equivalent.
 - 3. Grade Rings:
 - a. Oldcastle Precast
 - b. Jensen Precast
 - c. Neenah Foundry
 - d. Or approved equivalent.
- E. Handholes:
 - 1. Oldcastle Precast
 - 2. Jensen Precast
 - 3. Hubbell/Quazite
 - 4. Or approved equivalent.
- F. Raceways:
 - 1. See Section 26 05 33, Raceways.
 - 2. Fiberglass (RTRC):
 - a. FRE Composites Corp.
 - b. Champion Fiberglass
 - c. United Fiberglass of America

2.02 VAULTS

- A. Vaults: Precast, reinforced concrete sections (top, base and where required, extension sections) with knockouts or duct terminators PVC end bells for main conduit entrances with recessed keyways and subsidiary duct entrances.

- B. Concrete inserts will be set in interior surfaces of walls of each section to provide for cable rack mounting. Base section will be equipped with pulling-in irons.

2.03 VAULT COVERS

- A. Manufactured from metal casting, conforming to ASTM A48-83.
- B. Class 35B gray cast iron, with machine finished flat bearing surface.

2.04 PRECAST VAULT CONCRETE MATERIALS

- A. Concrete:
 - 1. Conform to ASTM C478.
 - 2. Compressive Strength: 5000-PSI minimum at 28 days.
 - 3. Air Content: 4 percent minimum.
 - 4. Cementitious Materials: Minimum of 564-lbs/cu yd.
 - 5. Course Aggregates: ASTM C33. Sound, crushed, angular granite stone only. Smooth or rounded stone will not be used.
 - 6. Fine Aggregates: ASTM C33. Free from organic impurities.
 - 7. Chemical Admixtures: ASTM C494. Calcium chloride or admixtures containing calcium chloride will not be used.
 - 8. Air Entraining Admixtures: ASTM C260.
- B. Reinforcing Steel: ASTM A615 grade 60 deformed bar.
- C. Lift Loops:
 - 1. ASTM A416 steel strand.
 - 2. Lifting loops made from deformed bars are not allowed.
- D. Flexible Joint Sealants:
 - 1. Butyl rubber based conforming to Federal Specification SS-S-210A, AASHTO-198, Type B-Butyl Rubber and maximum of 1 percent volatile matter.
 - 2. Suitable for application temperatures between 10 and 100 degrees F.
- E. Epoxy Gels:
 - 1. Two-component, solvent-free, moisture-insensitive, high modulus, high strength, structural epoxy paste adhesive.
 - 2. Meet requirements of ASTM C-881, Type I and II, Grade 3, Class B and C, epoxy resin adhesive.

2.05 VAULT COMPONENTS

- A. Lifting Inserts, Holes and Devices: Comply with OSHA Standard 1926.704. Size lift holes and inserts for precision fit with lift devices and not penetrating through structure wall. Precast manufacturer will provide lifting devices.
- B. Internally seal joints between tongue and groove; additionally, seal around external perimeter of the joint as follows:
 - 1. External Seals: Polyethylene backed flat butyl rubber sheet no less than 1/16-inch thick and 6-inches wide applied to outside perimeter of joint.
 - 2. Internal Seals: Plastic or paper-backed butyl rubber rope no less than 14 feet long and having cross-sectional area no less than annular space times height of joint.
 - 3. Contractor Option: Internal seals on round joints may consist of O-ring gasket conforming to ASTM C443, installed according to precast manufacturer's recommendation.
- C. Top Section: Include grooved opening for frame and cover.
- D. Frames and Covers: ASTM A48; Class 30B gray coast iron. Provide cover marking as indicated on drawings.
- E. Precast Base Sections: Cast monolithically without construction joints or with approved galvanized or PVC water stop cast in the cold joint between base slab and walls. Include 3-inch deep by 14-inch round sump with cast sleeve, and two 1-inch ground rod openings.
- F. Wall and inside slab finish resulting from casting against forms standard for industry will be acceptable. Form ties through the wall are not allowed. Float finish for exterior slab surfaces

below grade. Small surface holes, normal color variations, normal form joint marks and minor depressions, chips and spalls will be tolerated. Dimensional tolerances will be as set forth in above references.

- G. Conduit entry size and locations as indicated on drawings. Conduit openings not to extend into corners of structures, but may extend across joint with Engineer's approval.
- H. Knockout panel dimensions as required by structural design at their maximum burial depth using design loads specified below.
- I. Design components in accordance with ACI, ASTM C890 and the following loads:
 - 1. Horizontal Load on Walls and Knockout Panels: 80 psf per foot of burial depth (using a burial depth of 20-feet) plus a live lateral surcharge due to HS20 traffic load of 80 psf.
 - 2. Vertical Load on Below Grade Adaptor Slabs and Tops: Fill height of 20-feet assuming soil unit weight of 100 lbs/ft, plus live HS20 traffic load.
 - 3. Vertical Load on Covers Supported Around Perimeter: Live HS20 traffic load.
- J. Provide cable racks, mounting channels and inserts as indicated on drawings. Cable Rack Inserts: Minimum load rating of 800 pounds.
- K. Cable Supports: Maple clamps and saddles.
- L. Sump Cover: ASTM A48; Class 30B gray cast iron.
- M. Rectangular sub-grade components to be designed and manufactured in conformance with ASTM C913 and as follows:
 - 1. Joints Between Precast Components: Keyways or tongue and groove. Joints to Accept Cast Iron Frames: Flat and no less than 5-inches wide.
 - 2. Construct access vault structures to sizes and elevations shown on Drawings.
 - 3. Manholes and Hardware:
 - a. Provide each manhole with one galvanized 3/4-inch rebar x 16-inches wide bolt-on ladder, mounting pads and mounting hardware. Rungs at 12-inches centers. Side Rails: 2-inches x 5/16-inches flat bar.
 - b. Supply each manhole entrance with one galvanized 3/4-inch x 16-inches wide bolt-on manhole step.
- N. Pull-In Irons:
 - 1. 7/8-inch hot-dipped galvanized pull-in irons located opposite each new and future main cable entrance.
- O. Vault Cable Rack Hardware:
 - 1. Cable Rack: Chance #1225
 - 2. Cable Rack Hooks: Chance #1231
 - 3. Cable Rack Insulators: Chance #1121
- P. Grade Rings:
 - 1. Rings, Covers and Frames: Class 35 gray iron. Covers and Frames: Equal to Neenah Foundry #R-1530 manhole frame Type B non-rocking lid. As required to meet grading level.

2.06 HANDHOLES

- A. Housing: Polyester pre-mix with calcium carbonate and polyester resins interlaced with fiber fiberglass and ultraviolet inhibitors.
- B. Extension Rings: Capable of accepting up to 18-inches of extension rings to adapt to re-leveling of grade during construction.
- C. Lid: Polyester pre-mix with calcium carbonate and polyester resins interlaced with fiber fiberglass and ultraviolet inhibitors, with nonskid finish, neoprene gaskets and stainless steel screws. Same size as opening of housing for as much hand space as possible for wire access.
- D. Lid Legend: ELECTRICAL.
- E. Cable Entrance: Pre-cut 6 x 6-inch cable entrance at center bottom of each side.

2.07 RACEWAYS

- A. See Section 26 05 33, Raceways.
- B. PVC Conduit: NEMA TC 2; Schedule 40. Fittings and Conduit Bodies: NEMA TC 3.
- C. Plastic Utilities Duct: NEMA TC 6/8; PVC Type DB.
- D. Plastic Utility Duct Fittings: NEMA TC 9.
- E. Fiberglass Conduit (RTRC), Elbows and Fittings: NEMA TC 14 and UL 1684.
 - 1. Conduit and Fittings: 0.095 inches wall thickness.
 - 2. Large Sweep Elbows: 1.110 inches wall thickness.
 - 3. Joining Method: Supply each length of conduit with a tapered spigot and an integral bell with an integral urethane Tri-Seal gasket held in place with a retaining ring. Minimum 400 pound for the Tri-Seal joint.
 - 4. Adapters: Provide appropriate UL Listed adapters for transitions to and from PVC and steel conduit.
 - 5. Provide conduit in 20 foot lengths, free of burrs and ridges.
 - 6. Fabricate sweeps in one piece, without couplings, joints or tangent lengths, other than at ends.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

- A. Install per manufacturer's instructions and recommendations.
- B. Plan locations of duct runs in advance of the installation. Coordinate with site utility systems and building foundation depths.
- C. Duct bank routing is shown on drawings in approximate locations unless dimensions are indicated. Verify routing and termination locations of duct bank prior to excavation for rough-in. Route as required to complete duct system.
- D. Manhole and vault locations are shown on drawings in approximate locations unless dimensions are indicated. Verify locations of manholes and vaults prior to excavating for installation. Locate as required to complete duct bank system.
- E. Requirements for Precast Concrete Vaults: Coordinate delivery of precast concrete manhole components to jobsite with manufacturer. Handle materials in accordance with ASTM C891 and manufacturer's recommendations. Handle and store components on job site using methods that prevent damage.
- F. Cleaning Vaults: Clean and leave free of debris, silt and rocks from installation work.
- G. Medium Voltage System Raceways: Concrete encased in red slurry as indicated on civil drawings.

3.02 VAULTS

- A. Excavate to required depth and remove materials that are unstable or unsuitable for good foundation. Prepare level, compacted foundation extending 6-inches beyond base. Some manholes/vaults may be piling supported. Check structural drawings and details.
- B. Set base plumb and level.
- C. Provide minimum 18-inches of pea gravel below manhole/vault for stability and drainage.
- D. Thoroughly clean bells and spigots to remove dirt and other foreign materials that may prevent sealing. Unroll butyl sealant rope directly against spigot or keyway. Leave protective wrapper attached until sealant is entirely unrolled. Do not stretch. Overlap from side to side, not top to bottom.
- E. When recommended by manufacturer, fill void between horizontal joint surfaces with sand cement grout around the outside perimeter.
- F. After joining sections, apply butyl sealant sheet around outside perimeter of joint.

- G. Plug lift holes leaving less than 2-inches of wall thickness from outside using sand cement mortar, then cover with butyl rubber sheet. Additionally seal lift holes penetrating wall with epoxy gel on interior.
- H. Set frames or tops to required elevation sealing joints with butyl sealant rope and sheet.
- I. Use precast neck and shaft sections to bring manhole/vault cover to finished elevation.
- J. Provide cable racks in each manhole/vault for support of conductors. Attach cable racks to inserts after manhole/vault installation is complete.
- K. Install drains in manholes/vaults as indicated on drawings and as required.
- L. Provide 3/4-inch by 10-foot copper ground rod at each manhole/vault.
- M. Dampproof exterior surfaces, joints, and interruptions of manholes/vaults after concrete has cured 28 days.

3.03 HANDHOLES

- A. Excavate to required depth and remove materials that are unstable or unsuitable for good foundation. Prepare level, compacted foundation extending 6-inches beyond base. Some vaults may be piling supported. Check structural drawings and details.
- B. Set base plumb and level.
- C. Provide minimum 12-inches of pea gravel below handhole for stability and drainage.
- D. Turn conduits up into handhold with required bend radius per guidance in 27 05 33, Raceways.
- E. Engrave cover of handhole to identify its purpose (examples: "Power," "Emergency Power," "Signal," "Fire Alarm").

3.04 RACEWAYS

- A. Power and System Duct Bank Raceways: PVC, Fiberglass (RTRC) or PVC coated Rigid Metal Conduit.
- B. Elbows for Power and System Raceways: Fiberglass (RTRC) elbows or PVC coated Rigid Metal Conduit elbows.
- C. Provide all excavation and backfill required to support Division 01 and this Division of work. Coordinate trench specs for concrete, soil or sand backfill.
- D. Excavate trenches six inches deeper and wider than ductbank burial and cross-sectional requirements. Remove from the site all excavated materials not suitable or specified for backfill.
- E. Backfill trenches with sand, tamped firm and even to trench depth level.
- F. Backfill with non-expansive soil with limited porosity. Deposit all backfill soil in 6-inch layers. Thoroughly and carefully tamp all backfill soils to 90-95 percent compaction until the ductbank is covered by no less than 12 inches of material. Backfill and tamp the remainder of the excavation at 12-inch intervals. Uniformly grade the finished surface.
- G. Provide sheeting, shoring, dewatering and cleaning required to keep the trenches and their grades in proper condition for the work to be carried on.
- H. Restore all landscape and paving to like new to match existing.
- I. Slope raceways away from buildings and drain towards manholes or vaults with a minimum slope of 3 percent. Drain raceways into manholes or vaults, not into building structures or panels. Where sloping cannot be fully provided and there is a section of raceway where water would flow to a panel, switchboard, transformer, or building, provide a means to discharge the excess water from the raceway, or raceway system, consisting of a box or fitting at a low point prior to equipment entry, or at building entry, with a fitting or plug that can be removed to allow drainage.
- J. Cut raceway square using saw or pipe cutter; de-burr cut ends.
- K. Insert raceway to shoulder of fittings; fasten securely.
- L. Join PVC raceway using adhesive as recommended by manufacturer.

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- M. Wipe PVC raceway dry and clean before joining. Apply full even coat of adhesive to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.
- N. Number of equivalent 90-degree bends permitted between pull points: Maximum of three bends for power system conduit banks.
- O. Provide suitable fittings to accommodate expansion and deflection where required.
- P. Terminate raceway at manhole entries using end bells.
- Q. Use suitable separators and chairs installed not greater than 5 feet on centers.
- R. Provide 1/4-inch polypropylene pull rope in each empty raceway except sleeves and nipples.
- S. Swab raceway. Use suitable caps to protect installed conduit against entrance of dirt and moisture.
- T. Interface installation of underground warning tape with backfilling. Install tape 6 inches below finished surface.
- U. Concrete Encased Raceways:
 - 1. Encasement Concrete: Minimum 2,500 psi mix. Red color additive: Provide concrete mixture ration containing five pounds of red oxide for one yard of concrete.
 - 2. Securely anchor raceway to prevent movement during concrete placement.
 - 3. Provide two No. 4 steel reinforcing bars in top of bank under paved areas.
 - 4. Stagger raceway joints vertically six inches minimum.
 - 5. Connect to existing concrete encasement using dowels.

END OF SECTION

SECTION 26 05 53
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Equipment Nameplates
 - 2. Device Labels
 - 3. Wire Markers
 - 4. Conduit Markers
 - 5. Underground Warning Tape

1.02 RELATED SECTIONS

- A. Contents of Division 26, Electrical and Division 01, General Requirements apply to this Section.

1.03 REFERENCES AND STANDARDS

- A. References and Standards as required by Section 26 00 00, Electrical Basic Requirements and Division 01, General Requirements.

1.04 SUBMITTALS

- A. Submittals not required for this Section.

1.05 QUALITY ASSURANCE

- A. Quality assurance as required by Section 26 00 00, Electrical Basic Requirements and Division 01, General Requirements.
- B. In addition, meet the following:
 - 1. Manufacturer's Qualifications: Firms regularly engaged in manufacture of identification devices of types and sizes required.
 - 2. Manufacturer's standard products of categories and types required for each application as referenced in other Division 26, Electrical Sections. Where more than a single type is specified for application, provide single selection for each product category.
 - 3. Codes and Standards: Comply with ANSI A13.1 for lettering size, length of color field, colors, and viewing angles of identification devices unless otherwise indicated.

1.06 WARRANTY

- A. Warranty of materials and workmanship as required by Section 26 00 00, Electrical Basic Requirements and Division 01, General Requirements.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Equipment Nameplates:
 - 1. B & I Nameplates
 - 2. Intellicum
 - 3. JBR Associates
 - 4. Or approved equivalent.
- B. Device Labels:
 - 1. Kroy
 - 2. Brady
 - 3. Or approved equivalent.
- C. Wire Markers:
 - 1. Brady
 - 2. Panduit
 - 3. Sumitomo
 - 4. Or approved equivalent.

- D. Conduit Markers:
 - 1. Allen Systems
 - 2. Brady
 - 3. Or approved equivalent.
- E. Underground Warning Tape:
 - 1. Allen Systems
 - 2. Brady
 - 3. Or approved equivalent.

2.02 EQUIPMENT NAMEPLATES

- A. Engraved phenolic plastic, laminate, minimum 1/8-inch thick in the size indicated, with beveled edge border matching letter color. Federal specification L-P-387. All upper case letters in engraver standard letter style of the size and wording indicated. Punched for mechanical fastening, except where adhesive mounting is necessary due to substrate. Embossed tape style labels are not acceptable.
- B. Color:
 - 1. Normal (Utility): White letters on black background.
 - 2. Life Safety/Critical (Emergency Systems): Black letters on orange background.
 - 3. Equipment Branch (Legally Required Standby Systems): Black letters on yellow background.
- C. Letter Size:
 - 1. Use 1/2-inch letters minimum for identifying major equipment and loads, including switchgear, switchboards, etc.
 - 2. Use 1/2-inch letters minimum for identifying panels, breakers, etc.
 - 3. Use 3/16-inch minimum for identifying source, voltage, current, phase, and wire configurations.
- D. Fasteners: Self-tapping stainless steel screws, except contact-type permanent adhesive where screws cannot or should not penetrate the substrate.
- E. The Architect, Engineer, Commissioning Agent and Owner reserve the right to make modifications to the nameplates as necessary.
- F. Access Panel Markers: Manufacturer's standard 1/16-inch thick engraved plastic laminate access panel markers, with abbreviations and numbers corresponding to concealed valve or devices/equipment. Include center hole to allow attachment.
- G. Locations:
 - 1. Switchgear, switchboards, sub-distribution switchboards, distribution panels, and branch panels.
 - 2. Main breakers and distribution breakers in switchgear, switchboards, and distribution panels.
 - 3. Equipment including, but not limited to, motor controllers, disconnects, and VFDs.
 - 4. Low-voltage equipment enclosures including, but not limited to, fire alarm panels, access control panels, and lighting control panels.
 - 5. Distribution transformers.

2.03 DEVICE LABELS

- A. Extra strength, laminated adhesive tape, with 3/16-inch black letters on clear background. Use only for identification of individual wall switches and receptacles. Indicate device name, source panel, and source circuits. Panel and circuit designation written in permanent marker on the back of the plate and inside the back-box. Do not provide punch tape style labels.
- B. Label all junction boxes to show system identification, source circuit, or raceway origin. In finished areas, utilize device label. In unfinished areas or above ceilings, use of permanent ink marker is acceptable.

2.04 WIRE MARKERS

- A. Description: Vinyl-cloth self-adhesive type wire markers.
- B. Locations: Each conductor at panelboard gutters, pull boxes, outlet boxes, junction boxes, and each load connection.
- C. Power and Lighting Circuits: Branch circuit or feeder number as indicated on drawings and source panel.
- D. Control Circuits: control wire number indicated on schematic and interconnection diagrams on drawings or shop drawings.

2.05 CONDUIT MARKERS

- A. Description: Self-sticking vinyl.
- B. Location: Furnish markers for each conduit longer than 6-feet.
- C. Spacing: 20-feet on center.
- D. Color:
 - 1. 480 Volt System: Black letters on Orange background
 - 2. 208 Volt System: Black letters on Orange background
 - 3. Fire Alarm System: Red
 - 4. Telephone System: Orange

2.06 UNDERGROUND WARNING TAPE

- A. Description: 6-inch wide inert polyethylene plastic tape, 4-mil thick, detectable type, colored per APWA recommendations unless otherwise noted with suitable warning legend describing buried electrical lines.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

- A. Coordinate designations used on Drawings with equipment nameplates and device labels.
- B. Install nameplates and labels parallel to equipment lines.
- C. Identify empty conduit and boxes with intended use.
- D. Provide typewritten branch panel schedules with protective clear transparent covers accounting for every breaker installed. Use actual room designations assigned by name or number near completion of the work, and not the designations shown on drawings.
- E. Provide color coded boxes as follows:
 - 1. Fire Alarm: Red.

3.02 EQUIPMENT NAMEPLATES

- A. Degrease and clean surfaces to receive nameplates.
- B. Secure equipment nameplates to equipment front using self-tapping stainless steel screws.
- C. Secure equipment nameplates to inside surface of door on panelboard that is recessed in finished locations.
- D. Verify emergency system distribution equipment nameplate colors with Architect/Owner.
- E. Provide master nameplate at each incoming utility service to identify the following (each on a separate line):
 - 1. Serving Utility Transformer (ex. Utility Service #1).
 - 2. Project.
 - 3. Serving Utility Company.
 - 4. Consulting Engineering Firm of Record.
 - 5. Month and Year of Completion.
 - 6. Voltage, Phase, and Wire Configuration.

- F. Switchgear, switchboards, and panels to include name source, voltage, current phase, wire configuration and fault current rating. Transformers to include source KVA, and secondary voltage, phase, and wire configuration.
- G. Provide nameplates for flush mounted branch panelboards identifying name on front door. On inside of door provide nameplate as noted above. Verify with Architect/Owner if nameplate on outside of door is required.
- H. Provide a second label at branch panelboards listing the means of identification of branch circuit conductors. This identification legend to consist of the color code used for each voltage system (208Y/120V and 480Y/277V). See Specification Section 26 05 19, Low-Voltage Electrical Power Conductors and Cables, for required conductor color code for this project. Include identification of both voltage systems on each label, regardless of the voltage of the panelboard to which the label is affixed. Comply with requirements of NEC 210.5.

3.03 DEVICE LABELS

- A. Reference 3.01, General Installation Requirements.
- B. Install per manufacturer's instructions and recommendations.
- C. Degrease and clean surfaces to receive labels.

3.04 WIRE MARKERS

- A. Reference 3.01, General Installation Requirements.
- B. Install per manufacturer's instructions and recommendations.
- C. Provide wire markers on each conductor for power, control, signalling and communications circuits.
- D. Where switches control remote lighting or power outlets, or where switches or outlets in same location serve different purposes, such as light, power, intercom, etc. or different areas, such as corridor and outside, provide plates with 1/8-inch black letters indicating function of each switch or outlet. Also label the function of light switches where two or more are mounted in same locations.

3.05 CONDUIT MARKERS

- A. Reference 3.01, General Installation Requirements.
- B. Install per manufacturer's instructions and recommendations.

3.06 UNDERGROUND WARNING TAPE

- A. Reference 3.01, General Installation Requirements.
- B. Install per manufacturer's instructions and recommendations.
- C. Identify underground raceways using underground warning tape. Install one continuous tape per underground raceway at 6- to 8-inches below finish grade. Where multiple underground raceways are buried in a common trench and exceeds 16-inch width, install multiple warning tapes not over 10-inches apart (edge to edge) over the entire group of underground raceways.

END OF SECTION

SECTION 27 05 28
PATHWAYS FOR COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Raceway
 - 2. Rigid Metal Conduit and Fittings
 - 3. Electrical Metallic Tubing and Fittings
 - 4. Conduit Accessories
 - 5. Penetration Sealing Systems
 - 6. Telecommunications Outlet Boxes
 - 7. Innerduct
 - 8. Innerduct Fittings
 - 9. Wire Basket Runway
 - 10. J-Hooks
- B. This Section specifies the requirements to provide communications conduit raceways, boxes, cable trays, innerduct and fittings.

1.02 RELATED SECTIONS

- A. Contents of Division 27, Communications and Division 01, General Requirements apply to this Section.

1.03 REFERENCES AND STANDARDS

- A. References and Standards as required by Section 27 00 00, Communications Basic Requirements and Division 01, General Requirements.

1.04 SUBMITTALS

- A. Submittals as required by Section 27 00 00, Communications Basic Requirements and Division 01, General Requirements.
- B. Provide 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, handholes, conduit, boxes, enclosures, etc.

1.05 QUALITY ASSURANCE

- A. Quality assurance as required by Section 27 00 00, Communications Basic Requirements and Division 01, General Requirements.

1.06 WARRANTY

- A. Warranty of materials and workmanship as required by Section 27 00 00, Communications Basic Requirements and Division 01, General Requirements.

1.07 DEFINITIONS

- A. Cabinet: A freestanding floor-mounted modular enclosure designed to house and protect rack-mounted electronic equipment.
- B. Conduit: Round raceway.
- C. Conduit Body: Separate portion of a conduit or tubing system that provides access through removable cover(s) to the interior of the system at a junction of two or more sections of the system or at a terminal point of the system.
- D. Pull Box Enclosure: Box with a cover installed in one or more runs of raceway to facilitate pulling conductors through the raceway system. There are no openings in the cover.
- E. Raceway: Enclosed channel designed expressly for holding wires or cables. Metal or insulating material and the term includes conduit, tubing, wireways, underfloor raceways and surface raceways; does not include cable tray.

- F. Surface Raceway: Surface-mounted metal channel or plastic duct with snap-in removable covers for housing and protecting electrical wires and cables. Raceway and fittings are designed so sections can be electrically and mechanically coupled together without subjecting cables to abrasion.
- G. Wire Basket Runway Systems: Includes, but are not limited to straight sections of type wire basket runway cable trays, bends, tees, elbows, drop-outs, supports and accessories.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Raceway:
 - 1. Koppers Bitumastic
 - 2. Or approved equivalent.
- B. Rigid Metal Conduit and Fittings:
 - 1. Sealing Fittings:
 - a. Crouse-Hinds
 - b. Or approved equivalent.
- C. Electrical Metallic Tubing and Fittings:
 - 1. Allied Tube and Conduit
 - 2. Or approved equivalent.
- D. Conduit Accessories:
 - 1. Duct Spacers:
 - a. Carlon
 - b. Or approved equivalent.
 - 2. Expansion/Deflection Fittings:
 - a. Appleton
 - b. Or approved equivalent.
 - 3. Pulltape:
 - a. George-Ingraham
 - b. Or approved equivalent.
 - 4. Duct Plugs:
 - a. Carlon
 - b. Or approved equivalent.
- E. Penetration Sealing Systems:
 - 1. SEMCO
 - 2. Or approved equivalent.
- F. Telecommunications Outlet Boxes:
 - 1. Raco
 - 2. Or approved equivalent.
- G. Innerduct:
 - 1. Carlon
 - 2. Or approved equivalent.
- H. Innerduct Fittings:
 - 1. Carlon
 - 2. Or approved equivalent.
- I. Wire Basket Runway:
 - 1. Cablofil
 - 2. Or approved equivalent.
- J. J-Hooks:
 - 1. Erico
 - 2. Or approved equivalent.

2.02 RACEWAYS

- A. Raceways: Labeled and/or listed as acceptable to the AHJ as suitable for the use intended.
- B. Table 1: Product Identification:

Product Designation	Product Type
RGS	Rigid Galvanized Steel
EMT	Galvanized Steel Tubing
PVC	Polyvinylchloride Conduit

- C. The product identification codes used for the Communications Raceways and Boxes in Part 2, Products, are summarized in Table 1.
- D. Bitumastic material or plastic tape.

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.
 - 1. Bonding and Grounding Locknuts and Wedges: Malleable iron with set screws and lug screws.
 - 2. Insulated Bushing: Malleable iron with integral insulated throat, rated for 150C.
 - 3. Bonding and Grounding Bushing: Malleable iron with integral insulated throat, rated for 150C, with solderless lugs or lug screws.
 - 4. Sealing Fittings: Threaded type conduit seal fittings and sealing compound suitable for hazardous location installations in accordance with NEC:
 - a. Crouse-Hind retrofit sealing fitting EYSR.
 - b. 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. 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.
 - 4. Bonding Locknuts:
 - a. Malleable iron with set screws and lug screws.
 - b. Insulated Bushing: Malleable iron with integral insulated throat, rated for 150C.
 - c. Bonding and Grounding Bushing: Malleable iron with integral insulated throat, rated for 150C, with solderless lugs or lug screws.

2.05 CONDUIT ACCESSORIES

- A. Duct Spacers:
 - 1. 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 diameter conduit with 1-1/2-inch separation.
 - 2. Base Spacer: S288NHN.
 - 3. 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 tape 9216-JK.
- D. Duct Plugs:
 - 1. Aboveground Conduit Openings: Tapered PVC plugs with tab for pulltape; e.g., Carlon 4-inch 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. Vikimatic 4-inch, Part Number 40D402U. Use appropriate part number according to duct size.

2.06 PENETRATION SEALING SYSTEMS

- A. Firestopping: Provide fire barrier penetration sealing materials as specified in Division 07, 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.

2.07 TELECOMMUNICATIONS OUTLET BOXES

- A. Sheet Metal Outlet Boxes: Minimum 4-inch square by 2-1/8-inch deep, galvanized steel for use with single-gang plaster rings.
- B. Five Square Outlet Boxes: Minimum 5-inch square by 2-7/8-inch deep with built-in cable management for use with single-gang plaster rings. Randl P/N T-55017 approved.
- C. Nonmetallic Outlet Boxes: Minimum 4-inch square by 2-1/2-inch-deep. Provide gasketed, watertight single-gang cover.
- D. Cast Boxes: 4-inch square by 2-1/8-inch deep cast Feralloy, gasketed single-gang cover, threaded hubs.
- E. Floor Boxes for Installation in Cast-In-Place Concrete Floors: Flush mounted and fully adjustable formed steel as shown on the Drawings. Floor boxes provided by Division 26, Electrical.

2.08 INNERDUCT

- A. Outdoor Innerduct: 1-inch inside diameter corrugated, ribbed, or smooth walled, semi rigid PVC or heavy-wall polyethylene tubing.
- B. Indoor Innerduct: 1-inch 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 inside diameter corrugated walled innerduct for use in plenum air handling spaces.

2.09 INNERDUCT FITTINGS

- A. Couplings: Metallic or nonmetallic quick-connect, reverse threaded and Schedule 40 couplings for connecting sections of installed innerduct.
- B. Innerduct Caps: Removable push-in caps for plugging 1-inch innerduct.

2.10 WIRE BASKET RUNWAY

- A. Tray sizes have 4-inch side height.
- B. Supply straight sections in standard 120-inches, except where shorter lengths are permitted to facilitate tray assembly lengths as shown on Drawings.
- C. Tray Widths: 12-inches.
- D. Make splice plates the fast splice type as indicated below for each tray type.
 - 1. Make splice plates of yellow zinc dichromate steel.
 - 2. Furnish splice plates with straight sections and fittings as required by manufacturer.
 - 3. Finish: Electro zinc.
- E. Wire Basket Runway Supports: Trapeze style supports.

- F. Materials and Finish: Continuous steel welded and formed wire mesh, electro zinc finish.
- G. Loading Capacities: Wire basket runways to meet NEMA Class Designations.
- H. Manufacturers: Subject to compliance with these Specifications, install wire basket runway.

2.11 J-HOOKS

- A. Constructed of galvanized steel, stainless steel or hot dipped zinc.
- B. Wires or all-thread supports mounted to structure.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

- A. Workmanship:
 - 1. Provide, condition, apply, install, connect and test manufactured products, materials, equipment and components in accordance with the manufacturer's specifications and printed instructions.
 - 2. The installation of 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.
 - 3. Place support for raceways, cable trays, backboards, equipment racks and cabinets.
- B. Protection During Construction: 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.
- C. 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 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 above the floor and capped pending future use.
- D. Drywall/Gypsum Board Sleeves: Install insulating throat bushings on both ends of conduit sleeves placed in fire-rated walls using drywall construction.
- E. 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.
- F. Provide continuous sleeving through walls, floors and ceilings separating each telecom outlet from its respective MER/TR room, using sleeve conduit size as required per Standards. Restore penetrations through rated assemblies to original fire rating per NFPA and local codes.
- G. Locate sleeves as shown on Drawings. Where sleeves are not shown on Drawings, install sleeves above suspended ceilings and locate to minimize length of pathway for future cable from telecom outlet to MER/TR rooms.
- H. Where sleeves are routed between rooms with floating ceilings, extend conduits horizontally 2-feet over edge of floating ceiling to avoid exposed cabling from being seen at floor level.
- I. Make floor penetrations no more than 4-inches from wall. Install conduit stubs to extend 4-inches from floor base. Cap conduits for protection.
- J. Provide removable heat-expanding pillows at fire barrier penetrations as specified in Firestopping section and described as Firestop Material Type 7 (indicated as FSM-7).

- K. Grounding: Provide ground connections and bonding continuity between raceway and wire basket runway sections, boxes, enclosures, cabinets and fittings as required per code and industry standard.
- L. Provide plenum rated products, components and accessories for installation in plenums.

3.02 RACEWAYS

- A. Reference 3.01, General Installation Requirements.
- B. Install per manufacturer's written instructions and recommendations.

3.03 RIGID METAL CONDUIT AND FITTINGS

- A. Reference 3.01, General Installation Requirements.
- B. Install per manufacturer's written instructions and recommendations.
- C. Conduit Type:
 - 1. Install the following types of circular communications raceway in the locations listed unless otherwise indicated on the Drawings.
 - a. Exterior, Exposed Including Roof: Rigid steel conduit.

3.04 ELECTRICAL METALLIC TUBING AND FITTINGS

- A. Reference 3.01, General Installation Requirements.
- B. Install per manufacturer's written instructions and recommendations.
- C. Conduit Type:
 - 1. Install the following types of circular communications raceway in the locations listed unless otherwise indicated on the Drawings.
 - a. Interior Dry Locations, Exposed: EMT with set screw fittings.
 - b. Interior Dry Locations, Concealed (Not Embedded in Concrete): EMT with set screw fittings.
 - c. Interior Wet Locations: EMT with compression fittings.
- D. Conduit Bends and Sweeps:
 - 1. Make changes in direction of communications conduit runs with sweeps of the longest possible radius.
 - 2. Make sweeps in parallel or banked runs of conduits, 2-inches and larger in diameter, from the same center or centerline so that sweeps are parallel and of neat appearance.
 - 3. Field-Made Bends and Sweeps:
 - a. Use an acceptable hickey or conduit-bending machine.
 - b. Do not heat metal raceways to facilitate bending.
 - c. Before installing 4-inch field-made sweeps in duct banks, pull a 3-1/2-inch diameter by 12-inch long mandrel through duct sections to verify circularity and sweep radius.
 - 4. The angular sum of the bends between pull points and/or pull boxes to not exceed 180 degrees.
 - 5. Minimum Inside Bend Radius for Communications Conduit Bends, Sweeps, Boxes and Fittings:
 - a. One-inch conduit, 11-inches
 - b. Two-inch conduit, 21-inches
 - c. Three-inch conduit, 36-inches
 - d. Four-inch conduit, 48-inches
 - e. Other sizes, 10 times the inside diameter of the conduit.
 - 6. 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.
 - a. Conduit Bodies: In-line straight-through Type C conduit fittings can be used as pull boxes for conduit up to a maximum of 2-inches ID. Other conduit fittings, which include direction changes such as E, L, LB, LR, LL, LRT, TA, TB and X, are not allowed.
 - b. Refer design or installation conflicts with these requirements to the Architect.

3.05 CONDUIT ACCESSORIES

- A. Reference 3.01, General Installation Requirements.
- B. Install per manufacturer's written instructions and recommendations.
- C. Duct Spacers: Install per manufacturer's recommendation.
- D. Expansion/Deflection Fittings: Install per manufacturer's recommendation.
- E. Pulltape: Install per manufacturer's recommendation.
- F. Duct Plugs: Install per manufacturer's recommendation.

3.06 PENETRATION SEALING SYSTEMS

- A. Reference 3.01, General Installation Requirements.
- B. Install per manufacturer's written instructions and recommendations.
- C. 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.

3.07 TELECOMMUNICATIONS OUTLET BOXES

- A. Reference 3.01, General Installation Requirements.
- B. Install per manufacturer's written instructions and recommendations.
- C. Provide 4-inch by 4-inch by 2-1/8-inch deep outlet boxes for mounting telecommunications outlets with single-gang plaster rings as required, or as indicated on the Drawings.
- D. Do not install outlet boxes back to back in walls. Provide minimum 6-inch separation, except provide minimum 24-inch separation in acoustic-rated walls.
- E. 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.
- F. Provide knockout closures for unused openings.
- G. Support telecommunications outlet boxes independently of conduit.
- H. Use multiple-gang boxes where more than one device is mounted together; do not use sectional outlet boxes.
- I. Install outlet boxes in walls without damaging wall insulation.
- J. Coordinate mounting heights and locations of outlet boxes mounted above counters, benches and backsplashes.
- 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 outlet boxes in hollow stud wall.
- L. Provide cast outlet boxes in exterior and wet locations.

3.08 INNERDUCT

- A. Reference 3.01, General Installation Requirements.
- B. Install per manufacturer's written instructions and recommendations.
- C. Innerduct Type:
 - 1. Underslab and Underground Conduit Installation: Outdoor innerduct.
 - 2. Aboveground and Interior Conduit Installations: Indoor innerduct.
 - 3. Interior Exposed Locations Including Cable Tray Installations:
 - a. Nonplenum Areas: Indoor innerduct.

- b. Plenum Areas: Plenum-listed innerduct.
- D. Provide innerduct for all fiber optic cables for the entire length of the cable run.
- E. Pull innerduct through conduit 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.
- F. Cut innerduct square. Deburr cut ends.
- G. Bring innerduct to the shoulder of fittings and couplings and fasten securely.
- H. 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.
- I. Provide suitable innerduct slack in pull boxes and at turns to ensure that there is no kinking or binding of the tubing.
- J. 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.
- K. During innerduct pulling, avoid excessive tension which can damage the innerduct. Inspect innerduct following placement and replace damaged sections.
- L. 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 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.
- M. Cable Tray Installation: Tie wrap innerduct to one side of vertical ladder rack every 2-feet minimum and to one side of horizontal ladder-type cable tray every 5-feet minimum.
- N. Following installation, visually inspect innerduct, remove burrs at openings and, if necessary, clean innerduct interior.
- O. Innerduct Pull Tape and Duct Plug Installation:
 - 1. Following innerduct installation, install pulltape (muletape) with preprinted foot markers in innerduct sections. Tie the pulltape securely at each end.
 - 2. Verify lengths at the time of installation and provide as-built documentation.
 - 3. Following innerduct and pulltape installation, cap or plug innerduct with manufactured seals to prevent moisture or foreign matter from entering until cable installation starts. Seal duct openings in underground or underslab innerduct sections immediately after installation using screwtight, removable, watertight and dust-tight duct plugs.

3.09 INNERDUCT FITTINGS

- A. Reference 3.01, General Installation Requirements.
- B. Install per manufacturer's written instructions and recommendations.
- C. Wipe fittings clean and dry before joining. Apply full, even coat of cement to entire area that will be inserted into the fitting. Allow joints/assembly to cure for 20 minutes, minimum.
- D. Install per manufacturer's recommendations.

3.10 WIRE BASKET RUNWAY

- A. Reference 3.01, General Installation Requirements.
- B. Install per manufacturer's written instructions and recommendations.
- C. Cut standard straight sections of materials to length in the field.
- D. Deburr and file rough edges and cut sections.
- E. Locations shown on the Drawings are approximate unless dimensioned.
- F. Install as shown on the Drawings and securely attach under the provisions of this section.
- G. Entire length of wire basket runway to be accessible.

- H. Maintain minimum 6-inch clearance between cable tray and piping. Locate a minimum of 12-inches away from heat sources such as parallel runs of flues, steam or hot water pipes and heating appliances.
- I. 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.
- J. Do not obstruct passageways.
- K. Route wire basket runway within the assigned communications utility space.
- L. 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.
- M. Cable tray to be installed a minimum of 12-inches above the accessible ceiling.

3.11 J-HOOKS

- A. Install J-hooks rated for Category 6A cable for support of cabling from the wire basket tray to the outlet location.
- B. J-hooks are to be installed on dedicated wires or all thread rods mounted to structure. J-hooks are not to attach to ceiling grid wires.

END OF SECTION

SECTION 31 10 00
SITE CLEARING
(Revised by Addendum No. 01)

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Protecting existing trees and vegetation to remain.
 - 2. Removing existing trees and other vegetation.
 - 3. Clearing and grubbing.
 - 4. Stripping and stockpiling topsoil.
 - 5. Removing above- and below-grade site improvements.
 - 6. Disconnecting, capping or sealing site utilities.

1.02 SUBMITTALS

- A. Product Data for each type of product indicated.

1.03 MATERIAL OWNERSHIP

- A. Except for stripped topsoil and other materials indicated to remain on Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site and disposed of properly.

1.04 PROJECT CONDITIONS

- A. Traffic: minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.
- C. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.
- D. Do not commence site clearing operations until temporary erosion- and sedimentation-control and tree and vegetation-protection measures are in place.
- E. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Foot traffic.
 - 4. Erection of sheds or structures.
 - 5. Impoundment of water.
 - 6. Excavation or other digging unless otherwise indicated.
 - 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

1.05 DEFINITIONS

- A. Topsoil: Natural or cultivated surface-soil layer containing organic matter, sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying

subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of weeds, roots, and other deleterious materials.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 31 20 00 "Earth Moving."
 - 1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 EXECUTION

3.01 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Locate and clearly identify trees, shrubs, and other vegetation to remain or to be relocated.
- C. Protect existing site improvements to remain from damage during construction.
 - 1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.02 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion- and sedimentation-control measures. Requirements for temporary erosion-and-sedimentation-control are specified in Section 31 25 00 "Temporary Erosion and Sedimentation Controls."

3.03 TREE AND VEGETATION PROTECTION

- A. General: Protect trees and plants remaining on-site according to requirements below.
- B. Erect and maintain temporary fencing around tree protection zones before starting site clearing. Remove fence when construction is complete.
- C. Do not excavate within tree protection zones, unless otherwise indicated.
- D. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Owner.
- E. Where excavation for new construction is required within drip line of trees, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.
 - 1. Cover exposed roots with burlap and water regularly.
 - 2. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.
 - 3. Coat cut faces of roots more than 1-1/2 inches in diameter with an emulsified asphalt or other approved coating formulated for use on damaged plant tissues.
 - 4. Cover exposed roots with wet burlap to prevent roots from drying out. Backfill with soil as soon as possible.

3.04 UTILITIES

- A. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place.
 - 1. Arrange with utility companies to shut off indicated utilities.
- B. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Owner not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Owner's written permission.
- C. Excavate for and remove underground utilities indicated to be removed.

3.05 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction. Removal includes digging out stumps and obstructions and grubbing roots.
 - 1. Do not remove trees, shrubs, and other vegetation indicated to remain or be relocated.
 - 2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
 - 3. Completely remove stumps and remove roots, obstructions, and debris to a depth of 18 inches below exposed subgrade.
 - 4. Use only hand methods for grubbing within protection zones.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
 - 1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.06 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.
- B. Strip topsoil to a minimum depth of **12 inches** or greater to remove localized zones of loose or organic soil (*Revised by Addendum No. 1*).
- C. Stockpile topsoil away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

3.07 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, and gutters at existing full-depth joints unless indicated otherwise. Neatly saw-cut length of existing pavement to remain with vertical faces prior to removing existing pavement.

3.08 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.
- B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION

SECTION 31 20 00
EARTH MOVING
(Revised by Addendum No. 01)

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
1. Preparing subgrades
 2. Excavating and backfilling for buildings and structures.
 3. Drainage course for concrete slabs-on-grade.
 4. Base course for concrete pavements.
 5. Base course for asphalt paving.
 6. Excavating and backfilling for utility trenches.

1.02 SUBMITTALS

- A. Product Data.
- B. Aggregate Sieve Analysis.
- C. Growing media: (at least 14 days in advance of construction).
1. Documentation for the two analyses described in article 2.1.N.1 and 2.1.N.2 of this specification (particle gradation with calculated coefficient of uniformity; and pH) shall be performed by an accredited laboratory with certification maintained current. The date of the analyses shall be no more than 90 calendar days prior to the date of the submittal. The report shall include the following information:
 - a. Name and address of the laboratory.
 - b. Phone contact and e-mail address for the laboratory.
 - c. Test data, including the date and name of the test procedure.
 2. A compost technical data sheet from the compost vendor. The analysis and report must conform to the sampling and reporting requirements of the US composting Council Seal of Testing Assurance (STA) program. The analysis shall be performed and reported by an approved independent STA program laboratory and be no more than 90 calendar days prior to the date of submittal.
 3. Two gallon-sized bags of the blended material.
 4. A description of the location, equipment, and method proposed to mix the material.
- D. CDF: Design mix and trial 28-day compressive strength test results.

1.03 DEFINITIONS

- A. Backfill: Soil material used to fill an excavation.
1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Course placed between the subbase course, or subgrade, and concrete, or hot-mix asphalt paving.
- C. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Building Subfloor Material: Course supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

- F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
 - 1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
 - 2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.
- G. Fill: Soil materials used to raise existing grades.
- H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- I. Subgrade: Surface or elevation remaining after completing excavation, or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.
- J. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.
- K. Drainage Fill: Free draining, open-graded aggregate course used to support pervious pavement or in drainage zones in flow-through planters, vegetated storm water facilities and infiltration galleries.
- L. Growing media: Non-native soil mixture made up of sand, loam, and compost; used on surface storm water facilities.
- M. Unified Soil Classification System:
 - 1. GW: Well-graded gravels; gravel/sand mixtures with little or no fines.
 - 2. GP: Poorly-graded gravels; gravel/sand mixtures with little or no fines.
 - 3. GM: Silty gravels; poorly-graded gravel/sand/silt mixtures.
 - 4. GC: Clayey gravels; poorly-graded gravel/sand/clay mixtures.
 - 5. SW: Well-graded sands' gravelly sands with little or no fines.
 - 6. SP: Poorly-graded sands; gravelly sands with little or no fines.
 - 7. SM: Silty sands; poorly, graded- sand/gravel/silt mixtures.
 - 8. SC: Clayey sands; poorly-graded sand/gravel/clay mixtures.
 - 9. ML: Inorganic silts; sandy, gravelly, or clayey silts.
 - 10. CL: Lean clays; inorganic, gravelly, sandy, or silty, low to medium-plasticity clays.
 - 11. OL: Organic, low-plasticity clays and silts.
 - 12. MH: Inorganic, elastic silts; sandy, gravelly or clayey elastic silts
 - 13. CH: Fat clays; high-plasticity, inorganic clays.
 - 14. OH: Organic, medium to high-plasticity clays and silts
 - 15. PT: Peat, humus, hydric soils with high organic content.

1.04 PROJECT CONDITIONS

- A. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth moving operations.
- B. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated.

- C. Site Information: Research public utility records and verify existing utility locations prior to ordering any material. Notify the Architect immediately if any discrepancies are found in the project survey.
- D. See Geotechnical report titled Report of Geotechnical Engineering Services by GeoDesign, Inc. dated November 20, 2017 for additional information and requirements.

PART 2 PRODUCTS

2.01 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils:
 - 1. Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D 2487, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter and with no more than 5% passing the No. 200 sieve. Imported granular material used as structural fill shall be pit or quarry-run rock, crushed rock or crushed gravel and sand and shall meet specifications provided in OSSC 00330.14 (Selected Granular Backfill) or OSSC 00330.15 (Selected Stone Backfill). Imported granular material shall have at least two fractured faces.
 - 2. Native soils properly moisture conditioned and free of debris, organic material and particles over 6 inches in diameter; and meets specifications provided in OSSC 00330.12 (Borrow Material). Onsite soils generally exhibit high plasticity and shall be lime or cement and lime treated to reduce swell potential for placement as structural fill below above-grade structures or a minimum of the upper 2 feet of finished subgrade for pavements or slabs.
 - ~~2.3. All placement of native soils as structural fill shall be lime and/or cement treated for compaction. (Deleted by Addendum No. 1).~~
 - 3. **All subgrade for pavements and slabs in a cut condition shall be cement and/or lime treated (Added by Addendum No. 1).**
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups. Native soils classified as GC, SC, CL, ML, CH, and MH may be satisfactory if they are lime or lime and cement treated (or used in limited areas per the above section).
 - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Base Course: Imported granular material consisting of ¾- or 1 ½-inch-minus material (depending on the application) and meeting the requirements of OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION 00641 (Aggregate Subbase, Base, and Shoulders); with at 100 percent passing a 1-1/2-inch sieve and not more than 5 percent passing a No. 200 sieve.
- E. Structural Fill: Pit- or quarry-run rock, crushed rock, or crushed gravel and sand meeting Oregon Standard Specifications for Construction (OSSC) 00330.14 (Selected Granular Backfill) or OSSC 00330.15 (Selected Stone Backfill). The material should also be angular, fairly well graded between coarse and fine material, have less than 5 percent by dry weight passing a No. 200 sieve; and have at least two fractured faces.
- F. Bedding Course: OSSC ¾-inch—0-inch base aggregate.
- G. Building Subfloor Material: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.
- H. Backfill and Fill:
 - 1. Satisfactory soil materials

2. Initial trench backfill: Well graded granular material with a maximum particle size of 1 ½-inch and less than 10 percent by dry weight passing No. 200 sieve and meeting Oregon Standard Specifications for Construction 00405.13 (Pipe Zone Material).
- I. Drainage Fill: Angular, granular material with a maximum particle size of 2 inches and meeting OSSC 00430.11 (Granular Drain Backfill Material). Material should be free of roots, organic matter, and other unsuitable material; have less than 2 percent passing a No. 200 sieve (washed analysis); and have at least two mechanically fractured faces.
- J. In-Water Fill Material: Natural or artificially well graded angular rock with nominal maximum size of 6 inches and having less than 5 percent passing the ¾-inch sieve.
- K. Riprap: Sized as shown on the plans and graded per Oregon Standard Specifications for Construction Standard Specifications. Filter blanket for riprap support shall be as specified and/or as shown on the plans.
- L. Controlled Density Fill (CDF), also referred to as "Controlled Low Strength Material (CLSM): Highly flowable, lean concrete mix of fly ash, cement, fine aggregates, water and admixtures meeting the following other criteria:
 1. Portland Cement: ASTM C150, Type I or II.
 2. Aggregates: Non-expansive or reactive with 100 percent passing a 3/8-inch sieve and less than 10 percent passing the No. 200 sieve. Aggregates shall meet the requirements of ASTM C33.
 3. Fly ash: Conform to ASTM C618, Class F unless otherwise approved.
 4. Water: Potable.
 5. Admixtures: As necessary to improve flowability without segregation.
 6. Compressive Strength: CDF shall attain a 28-day compressive strength of 100 psi – 200 psi.

2.02 ACCESSORIES

- A. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored to comply with local practice or requirements of authorities having jurisdiction or as follows:
 1. Red: electric.
 2. Yellow: Gas, oil, steam, and dangerous materials.
 3. Orange: telephone and other communications.
 4. Blue: Water systems.
 5. Green: Sewer systems.
- B. Tracer Wire: 12 AWG minimum solid copper insulated High Molecular Weight Polyethylene (HMW PE) tracer wire or approved equal. The tracer wire insulation shall be green for sewer pipe and blue for waterlines and be a minimum of 45 mil. thick. Joints or splices shall be waterproof. The wire shall be rated for 30 Volt.
- C. Impermeable liner: PVC or HDPE Geo-membrane textured on both sides, 30 mil (.076mm) minimum.
- D. Drainage Fabric: Nonwoven geotextile, specifically manufactured as a drainage geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D 4759 and referenced standard test methods:
 1. Grab Tensile Strength: 110 lbf ; ASTM D 4632.
 2. Tear Strength: 40 lbf ; ASTM D 4533.
 3. Puncture Strength: 220 lbf ; ASTM D 4833.

4. Apparent Opening Size: No. 40 ; ASTM D 4751.
5. Permittivity (minimum): .5 sec⁻¹; ASTM D 4491.
- E. Separation Fabric: Woven geotextile, specifically manufactured as a separation geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D 4759 and referenced standard test methods:
 1. Grab Tensile Strength: 180 lbf ; ASTM D 4632.
 2. Tear Strength: 68 lbf ; ASTM D 4533.
 3. Puncture Strength: 371 lbf ; ASTM D 4833.
 4. Apparent opening size: No. 30; ASTM D 4751.

PART 3 EXECUTION

3.01 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations. Provide protective insulating materials as necessary.
- B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 31 Section "Site Clearing."
- C. Protect and maintain erosion and sedimentation controls, which are specified in Division 31 Section "Temporary Erosion and Sediment Control" during earth moving operations.
- D. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- E. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.
- F. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
- G. Protect all areas designated to receive pervious pavers or pervious pavement from excessive compaction.

3.02 EXPLOSIVES

- A. Use of explosives is not permitted on the site.

3.03 EXCAVATION

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions without prior approval by the Architect.
 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.04 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
 - a. ***Cement and/or lime treat the upper 2 feet of finished subgrade in bottom of excavation. (Added by Addendum No. 1).***

3.05 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.
- B. ***Cement and/or lime treat the upper 2 feet of finished subgrade in bottom of excavation. (Added by Addendum No. 1).***

3.06 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.
 - 1. Clearance: 6 inches each side of pipe or conduit.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade and bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
 - 1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material, 4 inches deeper elsewhere, to allow for bedding course. Hand excavate for bell of pipes.
 - 2. Excavate utility structures to provide 6 inches clearance (enlarge as needed) to allow for compaction of backfill material.

3.07 SUBGRADE INSPECTION

- A. Proof-roll subgrade with a pneumatic-tired dump truck to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades. Do not proof-roll subgrade in infiltration facilities.
- B. Soft pockets and areas of excess yielding that have been identified shall be lime or lime and cement treated, or removed and replaced with structural fill material to the depth required. Re-compact and retest until specified compaction is obtained.
- C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.08 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Architect.
 - 1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Architect.

3.09 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.10 BACKFILLS AND FILLS

- A. Backfill: Place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Construction below finish grade including, where applicable, damp-proofing, waterproofing, and perimeter insulation.
 - 2. Surveying locations of underground utilities for record documents.
 - 3. Inspecting and testing underground utilities.

4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring and bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

B. Fill: All placement of native soils as structural fill shall be lime and/or cement-treated for compaction.

- a. *The Geotechnical Engineer shall establish the mixing percentage of the cement/lime and on-site soils.*
- b. *All treatment procedures shall be directed, monitored, and verified by a Geotechnical Engineer. (Added by Addendum No. 1).*

3.11 UTILITY TRENCH BEDDING

- A. Place bedding on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

3.12 UTILITY TRENCH BACKFILL

- A. Trenches under Footings: Backfill trenches excavated under footings with satisfactory soil or approved backfill to within 18 inches from the bottom of footings elevation; fill remaining trench excavation with concrete up to the elevation of bottom of footings. Concrete is specified in "Cast-in-Place Concrete."
- B. Trenches under paved surface to receive vehicular traffic.
- C. Place and compact initial trench backfill material, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the pipe or conduit.
 1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- D. Place and compact final backfill of satisfactory soil to final subgrade elevation.
- E. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.
- F. Install tracer wire in a continuous fashion above the utility in such a manner as to be able to properly trace utility lines without loss or deterioration of signal or without the transmitted signal migrating off the tracer wire. Bring tracer wire to the surface at every box, vault, drainage structure, or manhole.

3.13 DRAINAGE FILL

- A. Compaction of the native soil subgrade should be limited in order to prevent a reduction in the permeability of the soil.
 1. Where erosion of subgrade has caused accumulation of fine materials and/or surface ponding, this material shall be removed with light equipment and underlying soils scarified to a minimum depth of 3 inches with a York rake or equivalent and light tractor.
 2. Where subgrade has been compacted due to construction traffic, subgrade shall be scarified or removed to a depth sufficient to match the naturally occurring insitu state. Add additional base course material to meet design grades at no cost to the owner.
 3. Bring subgrade of base course to line, grade, and elevations indicated. Fill and lightly re-grade any areas damaged by erosion, ponding, or traffic compaction before the placing of stone.
- B. Place drainage geotextile over prepared subgrade, overlapping ends and edges at least 12 inches. Secure in place to prevent wrinkling.

- C. Place drainage fill and compact by tamping with a plate vibrator, and screed to depth indicated. For drainage fill that exceeds 8 inches in compacted thickness, place fill in layers of equal thickness, with no compacted layer more than 8 inches or less than 4 inches thick.
- D. Place drainage geotextile over compacted drainage fill, overlapping ends and edges at least 12 inches.

3.14 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
 - 1. Under grass and planted areas, use satisfactory soil material.
 - 2. Under walks and pavements, use satisfactory soil material.
 - 3. Under steps and ramps, use engineered fill.
 - 4. Under building slabs, use engineered fill.
 - 5. Under footings and foundations, use engineered fill.
 - 6. Under and around utility structures, use engineered fill.

3.15 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
 - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 3 percent and is too wet to compact to specified dry density.
 - 3. All native excavated material used a structural fill shall be lime and/or cemented treated per this specification section.

3.16 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry density according to ASTM D 1557:
 - 1. Under structures, building slabs, steps, and pavements, compact granular soil material at 95 percent.
 - 2. Where lime or cement treatment is not required below slabs, steps, pavement, and walkways, compact fine grained soil material at 92 percent.
 - 3. Under turf or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
 - 4. For utility trenches, compact the upper 3 feet of backfill soil material at 95 percent and compact deeper backfill at 90 percent.
- D. Growing media shall be compacted with a water-filled landscape roller. It shall not otherwise be mechanically compacted.

3.17 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

- B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 - 1. Turf or Unpaved Areas: Plus or minus 1 inch.
 - 2. Walks: Plus or minus 1/2 inch.
 - 3. Pavements: Plus or minus 1/2 inch.
- C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.18 BASE COURSES UNDER PAVEMENTS AND WALKS

- A. Place base course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place base course under pavements and walks as follows:
 - 1. Shape base course to required crown elevations and cross-slope grades.
 - 2. Place base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
 - 3. Compact base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry density according to ASTM D 1557.

3.19 BUILDING SUBDRAIN MATERIAL UNDER CONCRETE SLABS-ON-GRADE

- A. Place capillary break on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place and compact drainage course under cast-in-place concrete slabs-on-grade as follows:
 - 1. Place drainage course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
 - 2. Compact each layer of drainage course to required cross sections and thicknesses to not less than 95 percent of maximum dry density according to ASTM D 1557.

3.20 LIME AND CEMENT TREATMENT

- A. Target strength for amended soils is 100 psi. The amount of lime or lime and cement necessary will vary with moisture content, soil type and strength. Provide an estimated minimum 5% dry lime or 7% total combined dry lime and cement by weight based on a soil weight of 100 pcf. Confirm actual required lime mix percentage based on samples tested in accordance with ASTM D 6276 prior to treatment.
- B. A minimum curing of 4 days is requirement between treatment and construction traffic. Construction traffic shall not be allowed on unprotected amended subgrade. To protect treated surfaces from abrasion or damage, the finished surface should be covered with 4 inches to 6 inches of granular material.
- C. ***Requirements for temporary erosion-and-sedimentation-control related to lime and cement treatment are specified in Section 31 25 00 "Temporary Erosion and Sedimentation Controls." (Added by Addendum No. 1)***

3.21 CEMENT TREATMENT

- A. Contractor shall ensure subgrade moisture content is suitable for adequate mixing of soil and lime or cement.
- B. Treated soil shall be compacted by a sheepsfoot roller to achieve compaction of 95% maximum dry density determined by ASTM D 698. Treatment procedures shall be completed within an elapsed time of approximately 4 hours and shall be protected from all traffic for a minimum of 5 days. A seven day unconfined compressive strength of 100 psi for the treated soil mixture is required. After the treated area is graded, area shall be rolled to produce a smooth compacted surface.
- C. Soil treatment shall not be conducted during periods of persistent rainfall or when temperatures are below 40 degrees Fahrenheit.

D. Requirements for temporary erosion-and-sedimentation-control related to cement treatment are specified in Section 31 25 00 "Temporary Erosion and Sedimentation Controls." (Added by Addendum No. 1)

3.22 SOIL AMENDMENT MIXING & COMPACTION

- A. For mixing equipment, use a pulverizer/mixer capable of uniformly mixing the amendment into the soil to the design depth. Blade mixing will not be allowed.
- B. Pulverize the soil/amendment mixture such that 100 percent by dry weight passes the 1 inch sieve and a minimum of 70% passes a #4 sieve, exclusive of gravel or stone retained on the sieves. The pulverizer shall be equipped to inject water to a tolerance of ¼ gallon per square foot of surface area.
- C. Contractor shall use machinery that will not disturb the subgrade. If subgrade is disturbed, the tilling/treatment equipment shall extend the full depth of the disturbance.
- D. A spreader capable of distributing the lime or cement uniformly on the ground to within 5 percent variance of the specified application rate.
- E. For compaction contractor shall utilize a static, sheepsfoot or segregated pad roller with a minimum static weight of 40,000 pounds for initial compaction of fine-grained soil (silt & clay). Alternate methods must be approved by geotechnical engineer.
- F. Contractor shall utilize a vibratory, smooth drum roller with a minimum applied lineal force of 600 pounds per inch for final compaction, or an alternate method approved by geotechnical engineer.

3.23 FIELD QUALITY CONTROL

- A. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- B. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.
- C. Testing Agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
 - 1. Paved and building slab areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.
 - 2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for each 100 feet or less of wall length, but no fewer than two tests.
 - 3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for each 150 feet or less of trench length, but no fewer than two tests.
- D. With the approval of the Engineer, proof-roll testing of subgrade and/or aggregate base may be substituted for other compaction testing.
- E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.24 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.
- D. Weather permitting and as approved, stormwater infiltration facility plants shall be installed as soon as possible after placing and grading the growing media in order to minimize erosion and further compaction.

3.25 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION

SECTION 31 25 00
TEMPORARY EROSION AND SEDIMENT CONTROL
(Revised by Addendum No. 01)

PART 1 GENERAL

1.01 SUMMARY

- A. This section includes the following:
1. Prevention of erosion due to construction activities.
 2. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.

1.02 PERFORMANCE REQUIREMENTS

- A. Comply with all requirements of U.S. Environmental Protection Agency for erosion and sedimentation control, as specified for the National Pollutant Discharge Elimination System (NPDES), under requirements for the 2012 General Permit for Discharges from Construction Activities.
- B. Also comply with all more stringent requirements of State of Oregon Erosion and Sedimentation Control Manual.
- C. Follow an Erosion and Sedimentation Control Plan.
- D. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
- E. Revisions to ESCP: Keep copies of all ESCP revisions on site. There are three ways to inform DEQ or an Agent of revisions to the ESCP:
- Submit ESCP revisions by email to DEQ or its Agent when revisions to the ESCP are minimal and identify in the email the particular changes. Submit only portions of the ESCP that have changed.
 - Submit the revisions by redlining the copy of the original ESCP or drawings. Submit only drawings that have changes.
 - When the ESCP requires extensive revisions, submit the entire revised ESCP to DEQ.

ESCP revisions must be submitted to DEQ if they are made for any of the reasons listed below:

1. Changes for emergency situations: When immediate corrective actions are required to cease the discharge of significant amounts of sediment entering surface waters or nearby properties, the ESCP revisions must identify the corrective actions taken to cease the discharge, if such actions require a change to the ESCP or a change in the method(s) of implementing the ESCP, (for example, increased inspection frequency). Submit the ESCP to DEQ within ten calendar days of the discharge identifying the corrective actions taken to cease the discharge. Approval of the revisions by DEQ or its Agent prior to implementation of corrective actions is not required.
2. Change (increase or decrease) in the size of the project: Submit revisions to DEQ or its Agent at least 10 days before implementing the revisions. If the permit registrant does not receive a response from DEQ or its Agent within 10 days of receipt, the proposed revisions are deemed approved.
3. Change (increase or decrease) in the size or location of disturbed areas: Submit revisions to DEQ or its agent at least 10 days before implementing the revisions. If the permit registrant does not receive a response from DEQ or its Agent within 10 days of the receipt, the proposed revisions are deemed approved.

4. Changes to BMPs: Submit changes in the project design that may affect stormwater discharges, local conditions, or project schedule (for example, schedule delays postpone earthwork to wet weather season so additional controls are needed) must be submitted. In addition, submit changes (such as type or design) to the BMPs identified in the ESCP, their location, maintenance required, and any other revisions necessary to prevent and control erosion and sediment runoff. Submit revisions to DEQ or its Agent at least 10 days before implementing the revisions. If the permit registrant does not receive a response within 10 days of receipt, the proposed revisions are deemed approved.
 5. Change in the erosion and sediment control inspector: Submit name, contact information, and qualifications to DEQ or its Agent. If the permit registrant does not receive a response from DEQ or its Agent within 10 days of receipt, the inspector(s) are deemed approved.
 6. Changes that DEQ or Agent requests: DEQ or Agent may require the permit registrant to submit ESCP revisions at any time if the ESCP is inadequate to prevent the discharge of significant amounts of sediment or turbidity to surface waters or to conveyance systems that discharge to surface waters.
- F. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.
- G. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
- H. Inspections:
1. Inspections must be conducted by a person who:
 - a. Is knowledgeable in the principle and practice of erosion and sediment controls, and
 - b. Possesses the skills to assess conditions at the construction site that could impact stormwater quality, and
 - c. Is knowledgeable in the correct installation of the erosion and sediment controls, and
 - d. Is able to assess the effectiveness of sediment and erosion control measures selected to control the quality of stormwater discharges from the construction activity.
 2. Visual monitoring requirement: all areas of the site disturbed by construction activity must be inspected to ensure that BMPs are in working order. Locations where vehicles enter or exit the site shall be inspected for evidence of off-site sediment tracking as well as areas used for storage of materials that are exposed to precipitation for evidence of spillage or other potential to contaminate stormwater runoff. In addition, inspect all discharge points identified in the ESCP for evidence of or the potential for the discharge of pollutants, and to ascertain whether erosion and sediment control measures are effective in preventing significant impacts to surface waters. Where discharge points are inaccessible, nearby downstream locations must be inspected to the extent that such inspections are practicable.
 3. All ESCP controls and practices must be inspected according to the following schedule:

Site Condition	Minimum Frequency
1. Active Period	Daily when stormwater runoff, including runoff from snowmelt, is occurring. At least once every two weeks, regardless of whether stormwater runoff is occurring.
2. Prior to the site becoming inactive or in anticipation of site inaccessibility	Once to ensure that erosion and sediment control measures are in working order. Any necessary

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	maintenance and repair must be made prior to leaving the site.
3. Inactive periods greater than 14 consecutive calendar days	Once every 2 weeks.
4. Periods during which the site is inaccessible due to inclement weather	If practical, inspections must occur daily at a relevant and accessible discharge point or downstream location

4. Recordkeeping Requirements: Document all visual inspections in an onsite logbook. If there are no findings, simply record the inspection date, and inspector's name. In addition, record any findings, including:
 - a. At the designated discharge location(s):
 - 1) Where to make observations:
 - a) At the discharge location if the discharge is to a conveyance system leading to surface waters;
 - b) From the discharge point to 50 feet downstream if the discharge is to surface waters; and
 - c) At any location where more than 1/2 of the width of the receiving surface water is affected.
 - 2) How to make observations:
 - a) For turbidity and color, describe any apparent color and the clarity of the discharge, and any apparent difference in comparison with surface waters.
 - b) Describe any sheen or floating material, or record that it is absent. If present, it could indicate concern about a possible spill or leakage from vehicles or materials storage.
 - b. If a site is inaccessible due to inclement weather, record the inspections noted at a relevant discharge point or downstream location, if practical.
 - c. Locations of BMPs that need to be maintained, inspections of all BMPs, including erosion and sediment controls, chemical and waste controls, locations where vehicles enter and exit the site, status of areas that employ temporary or final stabilization control, soil stockpile area, and non-stormwater pollution (e.g. paints, oils, fuels, adhesives) controls.
 - d. Locations of BMPs that failed to operate as designed or proved inadequate for a particular location;
 - e. Locations where additional BMPs are needed that did not exist at the time of inspection; and
 - f. Corrective action required and implementation dates.
 - g. All inspection records and monitoring results must be kept on site and maintained by the permit registrant. The records shall list the construction site name as it appears on the registrant's permit and the file or site number. These records must be made available to DEQ, Agent, or local municipality upon request. These records must be delivered or made available to DEQ within 3 working days of request. These inspection records and monitoring results must be maintained for at least 3 years after project completion. In addition, a copy of the ESCP and revisions must be retained on site and made available on request to the DEQ, Agent, or the local municipality. During inactive periods of greater than 7 consecutive calendar days, the ESCP must be retained by the permit registrant but does not need to be at the construction site.
- I. Erosion On-Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.

1. Control movement of sediment and soil from temporary stockpiles of soil.
 2. Prevent development of ruts due to equipment and vehicular traffic.
 3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- J. Erosion Off-Site: Prevent erosion of soil and deposition of sediment on other properties due to construction activities for this project.
1. Prevent windblown soil from leaving the project site.
 2. Prevent tracking of mud onto public roads outside site.
 3. Prevent mud and sediment from flowing onto sidewalks and pavements.
 4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- K. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
 2. If sediment basins are used as temporary preventive measures pump dry and remove deposited sediment after each storm.
- L. Sedimentation of Waterways Off-Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
- M. Open Water: Prevent standing water that could become stagnant.
- N. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

O. Cement or Lime Amended Soils (CTB):

1. **Site Preparation**
 - a. **Assessment of surface runoff collection points are noted.**
 - b. **Cutoff trenches, collection sumps, and pumps are installed as applicable.**
 - c. **Sealed storage tanks will be properly sized to contain all runoff from treated areas.**
 - d. **Sealed storage tanks shall be set up and ready for use to treat contact water.**
2. **Lay-down Mixing Equipment**
 - a. **Exposure of CTB materials to air to be minimized. Delivery tankers shall be set up to place CTB directly into spreading trucks or equipment.**
 - b. **Tarps or dust bags will be used over the discharge truck hose at unloading to prevent dust particles for becoming airborne.**
 - c. **Unloading will occur at the lowest possible pump pressure.**
 - d. **Unloading and mixing will be avoided on high wind days.**
 - e. **When spreading CTB it shall be kept 2-3 feet away from untreated area boundaries to prevent the material from migration and contaminating outside the treatment zone.**
 - f. **Treatment area will be kept damp/wet at all times CTB is being spread and mixed. Skirting around applicator/spreader and mixer is required to minimize CTB dust.**

- g. CTB is to be roto-tilled into soil immediately after being spread onto soils and shall be done with a skirted tiller.*
- h. Direct auguring machine that measures, spreads, and mixes CTB in one operation is preferred.*
- i. Compaction will be complete within 2 hours after CTB application.*

3. Site Management

- a. Dust suppression by use of water trucks shall be used on areas where work on dry soil is performed and potential airborne contamination may occur.*
- b. The volume of CTB allowed on site will be limited to the amount that can be used within a normal workday. Every effort will be made to forecast the daily delivery rate to match the daily on-site use rate.*
- c. CTB will not be added to soils at a rate that exceeds the ability of on-site resources to immediately commence mixing and compacting.*
- d. No work will occur in rain heavier than drizzle, or under drizzle that exceeds 6 hours duration, or under any rainfall which generates runoff from the areas being worked.*
- e. Should the weather change to stop the application, remaining CTB will be covered and contained to prevent stormwater from entering storage containment, and causing runoff .*
- f. All vehicles and equipment leaving the treatment area/site must be cleaned/washed to prevent CTB from leaving site. Wash water will be contained and treated as needed.*
- g. CTB contact water in the wheel wash will be removed from the site via a vactor truck for transport to an approved off-site treatment or disposal facility in accordance with all federal, state, and local laws and regulations; or, if permitted, to the sanitary sewer system.*

4. Surface Water Collection

- a. Surface runoff from the treated areas is to be collected and stored in onsite sealed treatment tanks.*
- b. A rigid schedule of TESC inspection, maintenance, and drainage controls will be maintained.*
- c. Temporarily plugging and using detention facilities is not allowed as a storage practice.*
- d. Runoff from compacted areas amended with CTB will be directed to previously sealed tank(s) until pH levels of water are verified to be within acceptable background water limits. No uncontrolled discharge from the sealed tank(s) will be allowed.*
- e. Drainage from areas amended with CTB within the past 72 hours will be prevented from co-mingling with any other project drainage.*

5. Discharge Compliance

- a. Any and all discharges from this site will be in compliance with all applicable federal, state, and local laws and regulations pertaining to health and safety, water, air, waste, and wildlife, including the Federal Clean Water Act, Clean Air Act, and Endangered Species Act. Laboratory analysis of water is required prior to discharge to verify compliance.*
- b. No infiltration is allowed to occur if pH readings are above 8.5 standard pH units, or below 6.5 standard pH units.*
- c. A pH meter must be used to determine levels.*

- d. A log of turbidity and pH readings will be kept on site for inspection.*
- e. All treatment of water must be directed, bench tested, monitored and verified by a qualified water quality specialist.*
- f. Treated area water runoff shall not enter the permanent stormwater system.*
- 6. Chemical Treatment**
 - a. Carbon dioxide sparging (dry ice pellets) may be used as the chemical treatment agent to reduce the water pH.*
 - b. Discharge would only occur after the approval of DEQ, following bench testing and consultation with DEQ.*
 - c. All materials for chemical treatment will be on site and property stored, during all phases of CTB treatment.*
- 7. Water Quality**
 - a. Turbidity and pH will be monitored on a twice-daily basis, prior to operations and immediately upon ceasing operations, and these measurements will be recorded. Monitoring will also occur immediately after any storm event of ½ inch in 24 hours, or water migration to the retention tanks(s), and the measurements recorded. If the pH approaches 8.0, monitoring frequency will increase.*
 - b. Turbidity and pH monitoring will occur in all treatment facilities, stormwater detention facilities, and in all surface water areas adjacent to site where stormwater potentially discharges. Additional upstream surface water sites will be established to determine background levels of turbidity and pH. (Added by Addendum No. 1).*

1.03 SUBMITTALS

- A. Product Data: For materials indicated in ESCP and additional materials included in ESCP revisions.
- B. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Wattles: Straw-filled tube of flexible netting.
 - 1. Straw must be certified weed free forage.
 - 2. Netting to consist of seamless, high density polyethylene and ethylvinylacetate and contain ultra-violet inhibitors.
- B. Bio-filtration Bags: Bark or woodchip filled bag of flexible netting.
 - 1. Fill material shall be clean, 100 percent recycled wood or compost product.
 - 2. Bags shall be made of nylon mesh.
- C. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; with the following properties:
 - 1. Average Opening Size: 30 U.S. Std. Sieve, maximum, when tested in accordance with ASTM D 4751.
 - 2. Permittivity: 0.05 sec⁻¹, minimum, when tested in accordance with ASTM D 4491.
 - 3. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D 4355 after 500 hours exposure.
 - 4. Tensile Strength: 100 lb-f, minimum, in cross-machine direction; 124 lb-f, minimum, in machine direction; when tested in accordance with ASTM D 4632.

5. Elongation: 15 to 30 percent, when tested in accordance with ASTM D 4632.
6. Tear Strength: 55 lb-f, minimum, when tested in accordance with ASTM D 4533.
7. Color: Manufacturer's standard, with embedment and fastener lines preprinted.
- D. Silt Fence Posts: One of the following, minimum 4 feet long:
 1. Steel U- or T-section, with minimum mass of 1.33 lb per linear foot.
 2. Softwood, 4 by 4 inches in cross-section.
 3. Hardwood, 2 by 2 inches in cross-section.
- E. Gravel: As called out on the details.
- F. Inlet protection filter sack: as shown on plans.
- G. Erosion Control Blankets: agricultural straw and coconut fiber blanket sewn between biodegradable woven natural organic fiber netting. BioNet SC 150BN Erosion Control Blanket or approved equal.
- H. Compost Socks: Mixed yard debris compost-filled tube of synthetic or cotton fiber.
- I. Concrete Washout Container: Temporary containment system for cementitious material wash-outs.
 1. Product Manufacturers:
 - a. Eco-Pan
 - b. Or approved equal.
- J. Concrete Wash-out Pit: As shown on Plans.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

- A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 SCOPE OF PREVENTIVE MEASURES

- A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.
- B. Construction Entrances: Traffic-bearing aggregate surface.
 1. Width: As required; twenty (20) feet, minimum.
 2. Length: fifty (50) feet, minimum.
 3. Provide at each construction entrance from public right-of-way.
 4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.
- C. Linear Sediment Barriers: Made of silt fences, wattles, or compost socks.
 1. Provide linear sediment barriers:
 - a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
 2. Space sediment barriers with the following maximum slope length upslope from barrier:
 - a. Slope of Less Than 2 Percent: 100 feet.
 - b. Slope Between 2 and 5 Percent: 75 feet.
 - c. Slope Between 5 and 10 Percent: 50 feet.
 - d. Slope Between 10 and 20 Percent: 25 feet.
 - e. Slope Over 20 Percent: 15 feet.

- D. Inlet Protection Filter Sack: Protect each inlet using the following measures:
 - 1. Woven fabric bag insert set beneath inlet grate.
 - 2. Bio-filtration bags blocking entire inlet face area.
- E. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.
- F. Soil Stockpiles: Protect using one of the following measures:
 - 1. Cover with polyethylene film, secured by placing soil or sand bags on outer edges.
 - 2. Cover with mulch at least 4 inches thickness of pine needles, sawdust, bark, wood chips, or shredded leaves; or, 6 inches of straw or hay;
 - a. as approved by Owner's Representative.
- G. Temporary Seeding: Use where temporary vegetated cover is required.
- H. Concrete Wash-out Container: Use when there is not sufficient space for a traditional concrete wash-out pit.
- I. Concrete Wash-out Pit: Size as required to handle estimated concrete usage.

3.04 INSTALLATION

- A. Temporary Traffic-Bearing Aggregate Surface:
 - 1. Excavate minimum of 6 inches.
 - 2. Place geotextile fabric full width and length, with minimum 12 inch overlap at joints.
 - 3. Place and compact at least 6 inches of 1.5 to 3.5 inch diameter stone.
- B. Silt Fences:
 - 1. Store and handle fabric in accordance with ASTM D 4873.
 - 2. Use nominal 36 inch high barriers with minimum 48 inch long posts spaced at 6 feet maximum, with fabric embedded at least 6 inches in ground.
 - 3. Install with top of fabric at nominal height and embedment as specified.
 - 4. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches, with extra post.
 - 5. Fasten fabric to wood posts using one of the following:
 - a. Integral pockets.
 - b. Four 3/4 inch diameter, 1 inch long, 14 gage nails.
 - c. Five 17-gage staples with 3/4 inch wide crown and 1/2 inch legs.
 - 6. Fasten fabric to steel posts using wire, nylon cord, or integral pockets.
 - 7. Wherever runoff will flow around end of barrier, provide temporary splash pad or other outlet protection.
- C. Bio-Filter Bag:
 - 1. Install bags in continuous rows with ends butting tightly, with one bag at each end of row turned uphill.
 - 2. Anchor bags with at least two stakes per bag, into the ground.
- D. Inlet Protection Filter Sack:
 - 1. Install per manufacturer's recommendations.
- E. Wattles
 - 1. Install wattles in 3-5-inch minimum deep trench that is constructed along the contour, perpendicular to the slope or direction of flow.

2. Embed wattle with a 1-inch by 1-inch hardwood stake every 4 lineal feet, driven at least 18 inches into the ground. A stake shall be placed within two feet of the end of the wattle.
 3. Adjacent rolls shall tightly abut.
- F. Concrete Wash-out Container:
1. Install per manufacturer's recommendations on level ground.
- G. Concrete Wash-out Pit:
1. Install as shown on Plans.

3.05 MAINTENANCE

- A. Inspect preventive measures routinely (daily), within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.
- B. Repair deficiencies immediately.
- C. Silt Fences:
1. Promptly replace fabric that deteriorates unless need for fence has passed.
 2. Remove silt deposits that exceed one-third of the height of the fence.
 3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.
- D. Bio-Filtration Bags:
1. Promptly replace bags that fall apart or otherwise deteriorate unless need has passed.
 2. Remove silt deposits that exceed one-half of the height of the bags.
 3. Repair bag rows that are undercut by runoff or otherwise damaged, whether by runoff or other causes.
- E. Inlet Protection Filter Sacks
1. Promptly replace sacks that are damaged or deteriorated unless the need has passed.
 2. Remove silt deposits that exceed the containment area of the sack.
- F. Wattle Rows:
1. Promptly replace wattles that fall apart or otherwise deteriorate unless need has passed.
 2. Remove silt deposits that exceed one-half of the height of the wattles.
 3. Repair wattles that are undercut by runoff or otherwise damaged, whether by runoff or other causes.
- G. Clean out temporary sediment control structures weekly and relocate soil on site.
- H. Place sediment in appropriate locations on site; do not remove from site.
- I. Concrete Wash-out Container: Properly call container provider to pick up pan when full and replace with empty pan or properly dispose of concrete waste material. Concrete waste to be recycled by container provider.

3.06 CLEAN UP

- A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Owners Representative.
- B. Clean out temporary sediment control structures that are to remain as permanent measures.
- C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION

**SECTION 32 12 16
ASPHALT PAVING**

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Hot-mix asphalt patching.
 - 2. Hot-mix asphalt paving.
 - 3. Pavement-marking paint.
 - 4. Pavement-marking thermoplastic material.
 - 5. Athletic track facility substrate.
- B. Related Requirements:
 - 1. Section 31 20 00 "Earth Moving" for subgrade preparation, fill material, aggregate subbase and base courses, and aggregate pavement shoulders.

1.02 SUBMITTALS

- A. Product Data: For each type of product. Include technical data and tested physical and performance properties.
 - 1. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the work.
 - 2. Job-mix Designs: For each job mix proposed for the Work.
- B. Material Certificates: For each paving material.

1.03 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of Section 0744 of the 2018 Oregon Standard Specifications for Construction for asphalt paving work.
 - 1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

1.04 COORDINATION

- A. Coordinate with other trades affecting or affected by Work of this Section.
- B. At Asphalt to Receive Synthetic Track Surfacing: Coordinate installation with synthetic surfacing installer. Review products and installation procedures to ensure finished concrete is compatible with synthetic track surface material and installation.

1.05 PROJECT CONDITIONS

- A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expect before time required for adequate cure, or if the following conditions are not met:
 - 1. Tack Coat: Minimum surface temperature of 60 degrees F.
 - 2. Asphalt Base and Surface Course:

<u>Dense Graded Mixes</u>	<u>Surface Temperature</u>
Less than 2 inches	60 degrees F
2 inches – 2 1/2 inches	50 degrees F
Greater than 2 1/2 inches	40 degrees F
 - 3. If placing asphalt between March 15 and September 30, temperature may be lowered 5 degrees F.

4. Do not use field burners or other devices to heat the pavement to the specified minimum temperature.
- B. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 55 deg. F for water-based materials, and not exceeding 95 deg. F.
- C. Thermoplastic Pavement-Markings: Proceed with pavement markings only on clean, dry surfaces, minimum ambient or surface temperature shall be 50 degrees F.

PART 2 PRODUCTS

2.01 AGGREGATES

- A. Conform to the requirements of 00744 of the 2018 Oregon Standard Specifications for Construction.

2.02 ASPHALT MATERIALS

- A. Asphalt Binder: AASHTO M 320 or AASHTO MP 1a, PG 64-22 or better.
- B. Tack Coat: ASTM D 977 or AASHTO M 140 emulsified asphalt.

2.03 AUXILIARY MATERIALS

- A. Recycled Materials for Hot-Mix Asphalt Mixes: Reclaimed asphalt pavement; reclaimed, unbound-aggregate base material; and recycled tires, asphalt shingles, or glass from sources and gradations that have performed satisfactorily in previous installations, equal to performance of required hot-mix asphalt paving produced from all new materials.
- B. Herbicide: Commercial chemical for weed control, registered by the EPA. Provide in granular, liquid, or wettable powder form.
- C. Pavement-Marking Paint: MPI #32 Alkyd Traffic Marking Paint.
 1. Color: White or Yellow.
- D. Pavement-Marking Paint: MPI #97 Latex Traffic Marking Paint.
 1. Color: White or Yellow.
- E. Thermoplastic Pavement Markings: Type B-HS Pre-formed, fused thermoplastic film conformed to the requirements of 00867 of the 2018 Oregon Standard Specifications for Construction.
 1. Color: White.
- F. Wheel Stops: Precast, air-entrained concrete, 2500-psi (17.2 MPa) minimum compressive strength, 6 inches high by 9 inches wide by 72 inches long. Provide chamfered corners, drainage slots on underside, and holes for anchoring to substrate.
 1. Dowels: Galvanized steel, 3/4 inch diameter, 10-inch minimum length.

2.04 MIXES

- A. Hot-Mix Asphalt: Dense-graded, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction and complying with the following requirements:
 1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
 2. Provide mixes conforming to section 00744 of the 2018 Oregon Standard Specifications for Construction.
 3. Base Course: Level 2, 1/2-inch dense, HMA.
 4. Surface Course: Level 2, 1/2-inch dense, HMA.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
- B. Proceed with paving only after unsatisfactory conditions have been corrected.

3.02 PATCHING

- A. Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into perimeter of adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.
- B. Portland Cement Concrete Pavement: Break cracked slabs and roll as required to reseal concrete pieces firmly.
 - 1. Remove disintegrated or badly cracked pavement. Excavate rectangular or trapezoidal patches, extending into perimeter of adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Recompact existing unbound-aggregate base course to form new subgrade.
- C. Tack Coat: Apply tack coat uniformly to vertical asphalt surfaces. Apply at a rate of 0.05 to 0.15 gal/sq. yd.
 - 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
 - 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.
- D. Placing Patch Material: Fill excavated pavement areas with hot-mix asphalt base mix for full thickness of patch and, while still hot, compact flush with adjacent surface.
- E. Asphalt and sand seal edges where new asphalt concrete meets existing pavement.

3.03 SURFACE PREPARATION

- A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
- B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
- C. Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.
- D. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd..
 - 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
 - 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.04 PLACING HOT-MIX ASPHALT

- A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand in areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
 - 1. Spread mix at a minimum temperature of 250 deg. F.
 - 2. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.
- B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.
- C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.05 JOINTS

- A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.
 - 1. Clean contact surfaces and apply tack coat to joints.
 - 2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
 - 3. Offset transverse joints, in successive courses, a minimum of 24 inches.
 - 4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method according to AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations."

3.06 COMPACTION

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.
 - 1. Complete compaction before mix temperature cools to 185 deg F.
- B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.
- C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:
 - 1. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent or greater than 96 percent.
- D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
- E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.
- F. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- G. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.07 INSTALLATION TOLERANCES

- A. Cold Milling: Test with a 12 foot (3.7 meter) straightedge furnished and operated by the Contractor, as directed. The variation from the top of the ridges from the testing edge of the straightedge, between any two ridge contact points, shall not exceed 1/4 inch.
- B. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:
 - 1. Base Course: Plus or minus 1/2 inch.
 - 2. Surface Course: Plus 1/4 inch, no minus.
- C. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:
 - 1. Base Course: 1/4 inch.
 - 2. Surface Course: 1/8 inch.
 - 3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

4. Difference between adjacent panels: 1/8 inch.

3.08 PAVEMENT MARKING

- A. Do not apply pavement-marking paint or thermoplastic material until layout, colors and placement have been verified with architect.
- B. Allow paving to age for 30 days before starting pavement marking.
- C. Sweep and clean surface to eliminate loose material and dust.
- D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.
 1. Broadcast glass beads uniformly into wet pavement markings at a rate of 6 lb./gal.
- E. Install thermoplastic pavement markings as indicated on the drawings per the requirements of section 00850 and 00867 of the 201 Oregon Standard Specifications for Construction.

3.09 WHEEL STOPS

- A. Install wheel stops with dowels.

3.10 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor will engage a qualified testing agency to perform tests and inspections.
- B. Replace and compact hot-mix asphalt where core tests were taken.
- C. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.
- D. At Athletic Track Facilities: Surface elevations shall be verified by means of a survey, performed by a licensed surveyor, utilizing a maximum grid size spacing of 10 feet along the edges. Provide a printed copy of the survey to the Owner's Representative prior to installation of Synthetic Running Track Surfacing.

3.11 WASTE HANDLING

- A. Except for material indicated to be recycled, remove excavated materials from Project Site and legally dispose of them in an EPA-approved landfill.

END OF SECTION

SECTION 32 13 73
CONCRETE PAVING JOINT SEALANTS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Cold-applied joint sealants.
 - 2. Hot-applied joint sealants.

1.02 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Pavement-Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.02 COLD-APPLIED JOINT SEALANTS

- A. Single-Component, Nonsag, Silicone Joint Sealant for Concrete: ASTM D 5893, Type NS.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Crafco Inc., an ERGON company; RoadSaver Silicone.
 - b. Dow Corning Corporation; 888.
 - c. Pecora Corporation; 301 NS.
 - d. Or approved Equal.
- B. Single-Component, Self-Leveling, Silicone Joint Sealant for Concrete: ASTM D 5893, Type SL.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Crafco Inc., an ERGON company; RoadSaver Silicone SL.
 - b. Dow Corning Corporation; 890-SL.
 - c. Pecora Corporation; 300 SL.
 - d. Or approved Equal.
- C. Multicomponent, Pourable, Traffic-Grade, Urethane Joint Sealant for Concrete: ASTM C 920, Type M, Grade P, Class 25, for Use T.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Pecora Corporation; Urexpan NR-200.
 - b. Or approved Equal.

2.03 HOT-APPLIED JOINT SEALANTS

- A. Hot-Applied, Single-Component Joint Sealant for Concrete: ASTM D 3406.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Crafco Inc., an ERGON company; Superseal 444/777.
 - b. McAsphalt Industries; Beram 195.

- c. Or approved Equal.
- B. Hot-Applied, Single-Component Joint Sealant for Concrete and Asphalt: ASTM D 6690, Type II or AASHTO M324, Type II.
 - 1. Products: Subject to compliance with requirements, provide the following
 - a. Meadows, W. R., Inc.; Sealtight Hi-Spec, or Sealtight 3405.
 - b. Right Pointe; D-3405 Hot Applied Sealant.
 - c. Or approved Equal.

2.04 JOINT-SEALANT BACKER MATERIALS

- A. Round Backer Rods for Cold- and Hot-Applied Joint Sealants: ASTM D 5249, Type 1, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.
- B. Round Backer Rods for Cold-Applied Joint Sealants: ASTM D 5249, Type 3, of diameter and density required to control joint-sealant depth and prevent bottom-side adhesion of sealant.
- C. Backer Strips for Cold- and Hot-Applied Joint Sealants: ASTM D 5249; Type 2; of thickness and width required to control joint-sealant depth, prevent bottom-side adhesion of sealant, and fill remainder of joint opening under sealant.

2.05 PRIMERS

- A. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated.

PART 3 EXECUTION

3.01 INSTALLATION

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.
- B. Cleaning of Joints: Clean out joints immediately before installing joint sealants.
- C. Joint-Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- D. Install joint-sealant backings of kind indicated to support joint sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of joint-sealant backings.
 - 2. Do not stretch, twist, puncture, or tear joint-sealant backings.
 - 3. Remove absorbent joint-sealant backings that have become wet before sealant application and replace them with dry materials.
- E. Install joint sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place joint sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Joint Sealants: Immediately after joint-sealant application and before skinning or curing begins, tool sealants according to the following requirements to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint:
 - 1. Remove excess joint sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.
- G. Provide joint configuration to comply with joint-sealant manufacturer's written instructions unless otherwise indicated.

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CONCRETE PAVING JOINT SEALANTS

- H. Clean off excess joint sealant or sealant smears adjacent to joints as the Work progresses, by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

END OF SECTION

SECTION 32 16 00
SITE CONCRETE

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Driveways.
 - 2. Curbs and gutters.
 - 3. Sidewalks.
 - 4. Vehicle concrete paving.
 - 5. Miscellaneous surfaces.

1.02 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- C. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements:
 - 1. Cementitious materials.
 - 2. Admixtures
 - 3. Curing compounds
 - 4. Applied finish materials.
 - 5. Bonding agent or epoxy adhesive.
 - 6. Joint fillers.
- D. Minutes of pre-installation conference.
- E. Jointing and scoring layout shop drawing.

1.03 QUALITY ASSURANCE

- A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. ACI Publications: Comply with ACI 301 unless otherwise indicated.

1.04 COORDINATION

- A. Coordinate with other trades affecting or affected by Work of this Section
- B. At Concrete to Receive Synthetic Track Surfacing: Coordinate installation with synthetic surfacing installer. Review products and installation procedures to ensure finished concrete is compatible with synthetic track surface material and installation.

1.05 MOCK-UP

- A. At Athletic Track Facilities: Construct 24 inch square sample of finish for throw circles.
- B. Accepted mock-up panel is considered basis of quality for the finished work. Keep mock-up exposed to view for duration of concrete work.

1.06 PROJECT CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

PART 2 PRODUCTS

2.01 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.
 - 1. Use flexible or curved forms for curves with a radius 100 feet or less.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.02 STEEL REINFORCEMENT

- A. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, fabricated from as-drawn steel wire into flat sheets.
- C. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.
- D. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.
- E. Dowel Bars: ASTM A 615/A 615M, Grade 60 plain-steel bars; zinc coated (galvanized) after fabrication according to ASTM A 767/A 767M, Class I coating]. Cut bars true to length with ends square and free of burrs.
- F. Tie bars: ASTM A 615/A 615M, Grade 60, deformed.
- G. Bar supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified.
 - 1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
 - 2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

2.03 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of same type, brand, and source throughout Project:
 - 1. Portland Cement: ASTM C 150, gray Portland cement, Type I.
 - a. Fly Ash: ASTM C 618, Class C.
- B. Normal-Weight Aggregates: ASTM C 33, Class 4M, uniformly graded. Provide aggregates from a single source.
 - 1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: Potable and complying with ASTM C 94/C 94M.
- D. Air-Entraining Admixture: ASTM C 260.
- E. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - 2. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 - 3. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.

2.04 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.
- F. White, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 2, Class B.

2.05 RELATED MATERIALS

- A. Joint Fillers: ASTM D 1751, asphalt-saturated cellulosic fiber] in preformed strips.
- B. Detectable warnings: ADA truncated domes aligned in a square or radial grid pattern complying with current ADAAG guidelines. Detectable warnings shall be either [precast pavers] [plastic cast-in-place pavers or plastic adhesive surface applied tile.
 - 1. Color: Yellow
 - 2. Size: Nominal 12 inch x 12 inch, 12 inch x 14 inch, or 16 inch by 24 inch.
 - 3. Thickness: 2 inch.
 - 4. Manufacturers: Tile Tech, Armor Tile, ADA Solutions, other or approved equal.
- C. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to requirements.

2.06 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301, with the following properties:
 - 1. Compressive Strength (28 Days): 3500 psi.
 - 2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.50.
 - 3. Slump Limit: 4 inches, plus or minus 1 inch.
 - 4. Air Content: 5 percent plus or minus 1.0 percent for 3/4-inch nominal maximum aggregate size.
- B. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

2.07 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.
 - 1. When temperature is between 85 degree F and 90 degree F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 degree F, reduce mixing and delivery time to 60 minutes.

PART 3 EXECUTION

3.01 EXAMINATION AND PREPARATION

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading and elevation tolerances. See Section 31 20 00 "Earth Moving."
- B. Remove loose material from compacted subbase surface immediately before placing concrete.
- C. Proceed with concrete operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

3.02 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.03 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.
 - 1. When joining existing structures, place transverse joints to align with previously placed joints, unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of the concrete structure and at locations where concrete operations are stopped for more than one-half hour unless the structure terminates at isolation joints.
 - 1. Butt Joints: Use epoxy bonding adhesive at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Expansion Joints:
 - 1. Construct expansion joints of the preformed filler type in concrete structures as shown and the following:
 - a. Not less than ½ inch wide, except where abutting or underlying concrete joints are larger, then the width shall match those joints.
 - b. At right angles to the structure alignment and normal to the structure surface.
 - c. Which completely separate the concrete segments.
 - d. Placed flush or no more than 1/8 inch below the concrete surface.
 - 2. Curbs, Islands, and Traffic Separators: provide expansion joints:
 - a. Opposite abutting expansion joints in abutting concrete.
 - b. Over existing expansion joints in concrete underlying the new concrete structure.
 - c. At each point of tangency in the structure alignment.
 - d. Not over 200 foot spacing.
 - 3. Driveways, Walks, Monolithic Curbs and Sidewalks, and Surfacing. Provide expansion joints:
 - a. Between driveways and concrete pavement.
 - b. Transversely in walks opposite expansion joints in adjoining curbs and elsewhere so the distance between joints does not exceed 45 feet.
 - c. Transversely in walks at a distance of 16 feet to 8 feet from ends of walks which abut curbs.
 - d. Around poles, posts, boxes, and other fixtures which protrude through or against the structures.
 - 4. Stairs: Provide expansion joints for stairs at the top and bottom landings as shown.
 - 5. Synthetic Track Surfacing: Do not install Expansion Joints.
- D. Contraction Joints. Construct transverse contraction joints of the weakened plane or dummy type in the exposed surfaces of the concrete structures as shown and the following:
 - 1. Locations. Locate contraction joints:
 - a. Over contraction joints in concrete underlying the new concrete structure.
 - b. Opposite contraction joints in abutting concrete.

- c. At locations to confine joint spacing to a maximum of 15 feet.
- 2. Methods. Construct contraction joints by:
 - a. Inserting and removing plates, or other devices.
 - b. Inserting and leaving in place preformed expansion joint filler even and flush with the concrete surface.
 - c. Sawing as soon as practical after concrete placement but before any uncontrolled cracking occurs.
 - d. Tooling.
 - e. Other approved methods.
- 3. Requirements. Contraction Joints shall:
 - a. Be not less than 1/8 inch or more than 1/4 inch wide.
 - b. Be a depth of one-third the thickness of the concrete.
 - c. Have clean, unfilled grooves (if preformed expansion joint filler is not used).

3.04 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. Remove snow, ice, or frost from subbase surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- D. Comply with ACI 301 requirements for measuring, mixing, transporting, placing, and consolidating concrete.
- E. Do not add water to concrete during delivery or at Project site.
- F. Do not add water to fresh concrete after testing.
- G. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
 - 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating joint devices.
- H. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- I. Screed paving surface with a straightedge and strike off.
- J. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.
- K. Curbs and Gutters: When automatic machine placement is used for curb and gutter placement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete. If results are not approved, remove and replace with formed concrete.
- L. Remove forms after the concrete has taken its initial set and while the concrete is still green. Repair minor defects with mortar containing one part Portland cement and two parts sand. Plastering will not be permitted on the faces and exposed surfaces. Honeycombed and other structurally defective concrete shall be removed and replaced at no added cost to the Owner. While the concrete is still green, the exposed surfaces shall be finished by rubbing down high

spots and form marks, by rubbing the moistened surfaces with a suitable device to provide a uniform texture and smooth surface, or by applying and rubbing a thin cement grout to produce a uniform color.

- M. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When air temperature has fallen to or is expected to fall below 40 degrees F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 degrees F and not more than 80 degrees F at point of placement.
 - 2. Do not use frozen materials or materials containing ice or snow.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mix designs.
- N. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:
 - 1. Cool ingredients before mixing to maintain concrete temperature below 90 degrees F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
 - 3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.05 FLOAT FINISHING

- A. General: Do not add water to concrete surfaces during finishing operations.
- B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
 - 1. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.
 - 2. Medium-to-Coarse-Textured Broom Finish: Provide a course finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiff-bristled broom, perpendicular to line of traffic.
- C. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4 inch (6mm) radius. Repeat tooling of edges after applying surface finished. Eliminate tool marks on concrete surfaces.

3.06 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Comply with ACI 306.1 for cold-weather protection.
- C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.
- D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

- E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound or a combination of these as follows.
1. Moist Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 4. Surfaces receiving synthetic surfacing and throw circles:
 - a. Cover surface with Curing Blanket in widest lengths and widths as practical. Lap sides and ends a minimum of 6 inches; seal with waterproof tape. Saturate cover with water and keep wet. Immediately repair any punctures or tears with cover material and waterproof tape.
 - b. Maintain wet cure for a minimum of 7 days.

3.07 CONCRETE TOLERANCES

- A. Comply with tolerances in ACI 117 and as follows:
1. Elevation: $\frac{1}{4}$ inch.
 2. Thickness: Plus $\frac{3}{8}$ inch, minus $\frac{1}{4}$ inch.
 3. Surface: Gap below 10-foot- long, unleveled straightedge not to exceed $\frac{1}{4}$ inch.
 4. Joint Spacing: $\frac{1}{2}$ inch.
 5. Contraction Joint Depth: Plus $\frac{1}{4}$ inch, no minus.
 6. Joint Width: Plus $\frac{1}{8}$ inch, no minus.
- B. Tolerances for Concrete at Track Edges and Concrete to Receive Synthetic Track Surfacing:
1. The finished elevation of installed concrete features at the track events and track edges shall not deviate (tolerance-to-grade) by more than +0 or - $\frac{1}{4}$ inch (.02 feet) from designated grade elevations when checked by survey. Surface shall also not indicate any deviation more than $\frac{1}{4}$ inch in 10 feet in any direction when placed under a 10 foot straight edge.
 2. These tolerances are required for the entire length of concrete track curbs/headers (both interior and exterior) and concrete track edges including in ground track and field equipment, slot or trench drains, and the perimeter of the "D" zone.
 3. Surface elevations of the items noted above shall be verified by means of a survey, performed by a licensed surveyor, utilizing a maximum grid size spacing of 10 feet along the concrete edges, curbs, and headers. Provide a printed copy of the survey to the Owner's Representative prior to installation of Synthetic Running Track Surfacing.
 4. Remove and replace any concrete elements not in compliance. Provide additional survey documentation and replacement for affected areas until compliance is achieved prior to installing adjacent Work noted above.

3.08 REPAIRS AND PROTECTION

- A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.
- B. Protect concrete structures from damage. Exclude traffic from structures for at least 14 days after placement. When construction traffic is permitted, maintain structures as clean as possible by removing surface stains and spillage of materials as they occur.
- C. Maintain concrete structures free of stains, discoloration, dirt, and other foreign material. Sweep sidewalk not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION

SECTION 32 32 25
MECHANICALLY STABILIZED RETAINING WALLS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and other Conditions and Division 01 – General Requirements sections apply to the work specified in this section.

1.02 SUMMARY

- A. Section Includes
 - 1. This section includes all work and installation furnishing mechanical stabilized Lock + Load Retaining Wall System or equal in accordance with these specifications and in reasonably close conformity with the lines, grades, design, and dimensions shown on the plans.
 - 2. Work includes preparing foundation soil, furnishing and installing leveling pad, unit drainage fill and backfill to the lines and grades shown on the construction drawings.
 - 3. Work includes furnishing and installing geogrid soil reinforcement of the type, size, location, and lengths designated on the construction drawing.
- B. Work Described involves the supply and installation of reinforced soil retaining walls. The concrete wall panel and counterfort create a LOCK+LOAD retaining module. Counterfort and geo-grid are the types of soil reinforcement. The work includes but is not limited to:
 - 1. Excavation to the lines and grades shown on the drawing; (or as required by the geotechnical engineer, to obtain adequate bearing capacities) excavation to be coordinated with the general contractor.
 - 2. Supply and installation of geogrid reinforcement.
 - 3. Supply and installation of drainage fill and piping.
 - 4. Supply and installation of segmental lock+load modules.
 - 5. Supply and installation of reinforced soil fill.
 - 6. Removal of all deleterious materials to the satisfaction of the engineer
- C. Related Sections
 - 1. Section 31 20 00 "Earth Moving."

1.03 REFERENCES

- A. The design of LOCK+LOAD mechanically stabilized earth retaining walls is based on the U.S. Department of Transportation Federal Highway Administration's Publication no. FWHA-NHI-00-043 "Mechanically Stabilized Earth Walls and Reinforced Soil Slopes Design and Construction Guidelines" which has been adopted by the latest American Association of Highway and Transportation Officials (AASHTO). American Society for Testing and Material Standards.

1.04 DEFINITIONS (not used)

1.05 SUBMITTALS

- A. Contractor shall submit a Manufacturer's certification, prior to start of work, that the retaining wall system components meet the requirements of this specification and the structure design.
 - 1. Delegated Design: Contractor shall submit construction drawings and design calculations for the retaining wall system prepared and stamped by a Professional Engineer registered in the State of Oregon. The engineering designs, techniques, and material evaluations shall be in accordance with the Manufacturer's Design Manual and the Performance Requirements outlined below.
- B. Delegated-Design Submittal: For mechanically stabilized LOCK+LOAD retaining walls indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 1. Submit submittals as "Deferred Submittals" in accordance with Section 01 30 00 - Administrative Requirements. Transmit a copy of each submittal indicating agency approval to the Architect for record.

1.06 PERFORMANCE REQUIREMENTS

- A. Delegated Design: design retaining wall system including comprehensive engineering analysis by a qualified design engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Engineering design shall be based on NCMA's Design Manual for Segmental Retaining Walls. Design shall be based on gravity loads due to soils pressures resulting from grades, sloped backfill and superimposed loads.
- C. Wall design shall be based on the project geotechnical report entitled: Report of Geotechnical Engineering Services, Seaside School District Campus, Seaside Oregon, dated November 20, 2017. Soil design parameters for the wall design including sliding, foundation design, equivalent fluid pressures, and wall surcharge factors shall be obtained from the geotechnical report.
- D. Contractor shall submit certification, prior to start of work that the retaining wall system (modular concrete units and specific geogrid):
 - 1. Has been successfully utilized on a minimum of five (5) similar projects, i.e., height, soil fill types, erection tolerances, etc.; and
 - 2. Has been successfully installed on a minimum of 1 million (1,000,000) square feet of retaining walls.
- E. The construction of LOCK+LOAD retaining walls shall be performed by either a contractor that has been approved as knowledgeable and experienced in the construction of MSE retaining walls by LOCK+LOAD or a representative of a LOCK+LOAD licensee shall be present at the beginning of construction until it has been determined by them that the contractor is capable of constructing this type of wall system.
- F. The walls will be constructed on a compacted sub-grade consisting of 8" of dense graded material (road base) or ¾" crushed rock. The contractor shall verify all dimensions and report discrepancies to the engineer. Design compliance is made with reference to that stated in the design summary table. Design compliance is made with the following factors of safety:
 - 1. Sliding FS > 1.5
 - 2. Bearing Capacity FS > 2.0
 - 3. Overturning FS > 2.0
 - 4. Internal Stability FS > 1.5
 - 5. Seismic Stability FS > 75% of static FS
- G. The contractor shall confirm the locations and conditions of all man-made elements which may be affected or damaged by the work. Elements which may be affected or damaged by the work must be reported to the engineer in advance of the work beginning. The engineer may modify the design or approve of changes to installation techniques proposed by the contractor to preclude damage or conflict with existing elements.
- H. Contractor shall provide evidence that the design engineer has a minimum of five years of documentable experience in the design for reinforced soil structures. The design engineer shall provide proof of current professional liability insurance with an aggregate coverage limit of not less than \$2,000,000.
- I. Owner shall/may provide soil testing and quality assurance inspection during earthwork and wall construction operations. Contractor shall provide any quality control testing or inspection not provided by the Owner. Owner's quality assurance program does not relieve the contractor of responsibility for quality control and wall performance.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Contractor shall check all materials upon delivery to assure that the proper type, grade, color, and certification have been received.
- B. Contractor shall protect all materials from damage due to jobsite conditions and in accordance with manufacturer's recommendations. Damaged materials shall not be incorporated into the work.

PART 2 PRODUCTS

2.01 CONCRETE PANELS AND COUNTERFORTS

- A. Concrete panels and counterforts are locked together to form a "Retaining Module". The retaining walls have been designed on the basis of Lock+Load retaining wall "Modules". Modules are to be purchased from a licensed LOCK+LOAD manufacturer. The LOCK+LOAD trademark on each pallet identifies LOCK+LOAD products. Information on the purchase of LOCK+LOAD and a complete list of components can be obtained through Lock & Load Retaining Walls Ltd., Tel. (877) 901-9990 Website www.lock-load.com.
- B. Color: General charcoal in color with color samples to be provided to Owner's Representative prior to final selection.
- C. Geogrid: The retaining walls have been designed to be erected as shown on the plans. Other geogrid materials may be considered suitable provided that they meet the specification and requirements of the design and are approved in advance by the Engineer.
- D. Modular Fill: The fill immediately behind the LOCK+LOAD panel and surrounding the counterfort shall be "dense graded" select free draining material (less than 5% passing a #200 sieve). Other structurally equivalent materials may be used as specified by a project controlling authority (DOT's).
- E. The maximum aggregate size shall be limited to 3/4 inch unless field tests have been performed to evaluate potential strength reductions to the geogrid design due to damage during construction.
- F. Drainage Fill: see section 31 20 00, "Earth Moving".
- G. Reinforced Backfill: As shown on the plans or as approved by the design engineer. The reinforced backfill shall have an angle of internal friction as stated in the design summary table and compacted as stated within

PART 3 EXECUTION

3.01 EXCAVATION

- A. Contractor shall excavate to the lines and grades shown on the construction drawings. Owner's representative shall inspect the excavation and approve prior to placement of leveling material or fill soils. Proof roll foundation area as directed to determine if remedial work is required.
- B. Over-excavation of deleterious soil or rock shall be replaced with reinforced and retained backfill meeting the specifications of section 2.01 above, and compacted to that stated in the design summary table within 2% of the optimum moisture content of the soil.

3.02 BASE LEVELING PAD

- A. Leveling pad material shall be placed to the lines and grades shown on the construction drawings, to a minimum thickness of 8 inches (150 mm) and extend laterally a minimum of 12" (150 mm) in front and behind the modular wall unit.
- B. Soil leveling pad materials shall be compacted to a minimum of 95 % Standard Proctor density per ASTM D-698.
- C. Leveling pad shall be prepared to insure full contact to the base surface of the concrete units. The first course of concrete LOCK+LOAD modules shall be placed on the level compacted foundation and the alignment and level checked,

3.03 MODULAR UNIT INSTALLATION

- A. First course of units shall be placed on the leveling pad at the appropriate line and grade. Alignment and level shall be checked in all directions and insure that all units are in full contact with the base and properly seated. Modules shall be placed with the top of the panel level and parallel to the wall face. The counterfort base installs horizontal and perpendicular to the face of the retaining wall.

- B. Place the front of units side-by-side. Do not leave gaps between adjacent units. Layout of corners and curves shall be in accordance with manufacturer's recommendations.
- C. Place and compact drainage fill within and behind wall units. Place and compact backfill soil behind drainage fill. Follow wall erection and drainage fill closely with structure backfill.

3.04 STRUCTURAL GEOGRID INSTALLATION

- A. Geogrid shall be oriented with the highest strength axis perpendicular to the wall alignment.
- B. Geogrid reinforcement shall be placed at the strengths, lengths, and elevations shown on the construction design drawings or as directed by the Engineer. Geogrid reinforcement shall be placed at the elevations and to the extent shown on the plans beginning at the back of the LOCK+LOAD panels and the top of the counterfort. The geogrid soil reinforcement shall be placed so that a minimum of 3 inches remains vertical and in contact with the panel after backfill is placed and compacted.
- C. The geogrid shall be laid horizontally in the direction perpendicular to the face of the retaining wall and parallel to the alignment of the "modules". The geogrid shall be pulled taut, free of wrinkles and anchored prior to backfill placement on the geogrid. The geogrid shall be laid horizontally on compacted backfill and attached to the modular wall units.
- D. Geogrid reinforcements shall be continuous throughout their embedment lengths and placed side-by-side to provide 100% coverage at each level. Spliced connections between shorter pieces of geogrid or gaps between adjacent pieces of geogrid are not permitted.

3.05 REINFORCED BACKFILL PLACEMENT

- A. Reinforced backfill shall be placed, spread, and compacted in such a manner that minimizes the development of slack in the geogrid and installation damage. All backfill shall be compacted to that stated in the design summary table or equivalent. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer and shall be within 2 percent of the optimum moisture content.
- B. Reinforced backfill shall be placed and compacted in lifts not to exceed 6 inches (150 mm) where hand compaction is used, or 8 - 10 inches (200 to 250 mm) where heavy compaction equipment is used. Lift thickness shall be decreased to achieve the required density as required.
- C. Connection, reinforced and retained backfill shall be placed and compacted in lifts not to exceed 8 inches where light compaction equipment (less than 1000lb vibrating plate) is used and not more than 16 inches where heavy compaction equipment is used. First – compact over tail of counterfort then to the panel back and finally away from the retaining wall structure toward the end of the geogrid.
- D. Reinforced backfill shall be compacted to 95% of the maximum density as determined by ASTM D698. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer and shall be dry of optimum, + 0% - 3%.
- E. The free draining "densely graded" module fill (5/8"->3/4" crushed rock, typical) placed in the first 24" behind the wall panel and over the counterforts shall be deemed compacted when eight passes (4 in each direction) with a minimum 750 lb vibrating plate compactor have been completed.
- F. Reinforced backfill shall be free of debris and meet the following gradation tested in accordance with ASTM D-422:

Sieve Size (Percent Passing)	2 inch (100%)
	3/4 inch (75%)
	No. 40 (60%)
	No.200 (15%)
Plasticity index	(PI) <15
Liquid limit	<40 per ASTM D-4318

- G. Tracked construction equipment shall not be operated directly upon the geogrid reinforcement. A minimum fill thickness of 6 inches (150 mm) is required prior to operation of tracked vehicles over the geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.
- H. Rubber tired equipment may pass over geogrid reinforcement at slow speeds, less than 10 MPH (15 KPH). Sudden braking and sharp turning shall be avoided.
- I. At the end of each day's operation, the Contractor shall slope the last lift of reinforced backfill away from the wall units to direct runoff away from wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

3.06 CAP INSTALLATION

- A. Cap units shall be glued to underlying units with an all-weather adhesive recommended by the manufacturer.

3.07 AS-BUILT CONSTRUCTION TOLERANCES

- A. Vertical alignment: $\pm 1.5"$ (40 mm) over any 10' (3 m) distance.
- B. Wall Batter: within 2 degrees of design batter.
- C. Horizontal alignment: $\pm 1.5"$ (40 mm) over any 10' (3 m) distance. Corners, bends & curves: ± 1 ft (300 mm) to theoretical location.
- D. Maximum horizontal gap between erected units shall be $\leq 1/2$ inch (13 mm).

3.08 FIELD QUALITY CONTROL

- A. Quality Assurance - The Owner shall/may engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction. This does not relieve the Contractor from securing the necessary construction control testing.
- B. Quality assurance should include foundation soil inspection. Verification of geotechnical design parameters, and verification that the contractor's quality control testing is adequate as a minimum. Quality assurance shall also include observation of construction for general compliance with design drawings and project specifications. Quality assurance is best performed by the site geotechnical engineer.
- C. Quality Control – The Contractor shall engage inspection and testing services to perform the minimum quality control testing described in the retaining wall design plans and specifications. Only qualified and experienced technicians and engineers shall perform testing and inspection services.
- D. Quality control testing shall include soil and backfill testing to verify soil types and compaction and verification that the retaining wall is being constructed in accordance with the design plans and project specifications.

END OF SECTION

SECTION 33 05 00
COMMON WORK RESULTS FOR UTILITIES

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Piping joining materials.
 - 2. Sleeves.
 - 3. Grout.
 - 4. Piping system common requirements.

1.02 DEFINITIONS

- A. Exposed Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions.
- B. Concealed Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

1.03 SUBMITTALS

- A. Welding certificates.

1.04 QUALITY ASSURANCE

- A. Steel Support Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Steel Piping Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
 - 1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
 - 2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

PART 2 PRODUCTS

2.01 PIPING JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
 - 1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch maximum thickness, unless otherwise indicated.
 - a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
 - b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
 - 2. AWWA C110, rubber, flat face, 1/8 inch thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.
- B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.
- C. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.
- D. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
- E. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing, unless otherwise indicated; and AWS A5.8, BAg1, silver alloy for refrigerant piping, unless otherwise indicated.
- F. Welding Filler Metals: Comply with AWS D10.12/D10.12M for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

- G. Solvent Cements for Joining Plastic Piping:
 - 1. ABS Piping: ASTM D 2235.
 - 2. CPVC Piping: ASTM F 493.
 - 3. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
 - 4. PVC to ABS Piping Transition: ASTM D 3138.

2.02 SLEEVES

- A. Galvanized-Steel Sheet Sleeves: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.
- B. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized, plain ends.
- C. Cast-Iron Sleeves: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- D. Molded PVC Sleeves: Permanent, with nailing flange for attaching to wooden forms.
- E. PVC Pipe Sleeves: ASTM D 1785, Schedule 40.
- F. Molded PE Sleeves: Reusable, PE, tapered-cup shaped, and smooth outer surface with nailing flange for attaching to wooden forms.

2.03 GROUT

- A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.
 - 1. Characteristics: Post hardening, volume adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
 - 2. Design Mix: 5000-psi, 28-day compressive strength.
 - 3. Packaging: Premixed and factory packaged.

PART 3 EXECUTION

3.01 PIPING INSTALLATION

- A. Install piping according to the following requirements and utilities Sections specifying piping systems.
- B. Drawings, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on the Coordination Drawings.
- C. Install piping to permit valve servicing.
- D. Install piping at indicated slopes.
- E. Install piping free of sags and bends.
- F. Install fittings for changes in direction and branch connections.
- G. Select system components with pressure rating equal to or greater than system operating pressure.
- H. Sleeves are not required for core-drilled holes.
- I. Permanent sleeves are not required for holes formed by removable PE sleeves.

3.02 PIPING JOINT CONSTRUCTION

- A. Join pipe and fittings according to the following requirements and utilities. Sections specifying piping systems.
- B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

- D. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- E. Welded Joints: Construct joints according to AWS D10.12/D10.12M, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.
- F. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
- G. Grooved Joints: Assemble joints with grooved-end pipe coupling with coupling housing, gasket, lubricant, and bolts according to coupling and fitting manufacturer's written instructions.
- H. Soldered Joints: Apply ASTM B 813 water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy (0.20 percent maximum lead content) complying with ASTM B 32.
- I. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.
- J. Pressure-Sealed Joints: Assemble joints for plain-end copper tube and mechanical pressure seal fitting with proprietary crimping tool to according to fitting manufacturer's written instructions.
- K. Plastic Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
 - 1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
 - 2. ABS Piping: Join according to ASTM D 2235 and ASTM D 2661 appendixes.
 - 3. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
 - 4. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
 - 5. PVC Nonpressure Piping: Join according to ASTM D 2855.
 - 6. PVC to ABS Nonpressure Transition Fittings: Join according to ASTM D 3138 Appendix.
- L. Plastic Pressure Piping Gasketed Joints: Join according to ASTM D 3139.
- M. Plastic Nonpressure Piping Gasketed Joints: Join according to ASTM D 3212.
- N. Plastic Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.
 - 1. Plain-End PE Pipe and Fittings: Use butt fusion.
 - 2. Plain-End PE Pipe and Socket Fittings: Use socket fusion.
- O. Bonded Joints: Prepare pipe ends and fittings, apply adhesive, and join according to pipe manufacturer's written instructions.

3.03 PIPING CONNECTIONS

- A. Make connections according to the following, unless otherwise indicated:
 - 1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
 - 2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.
 - 3. Install dielectric fittings at connections of dissimilar metal pipes.

3.04 GROUTING

- A. Clean surfaces that will come into contact with grout.
- B. Provide forms as required for placement of grout.
- C. Avoid air entrapment during placement of grout.
- D. Place grout, completely filling voids and provide smooth surface.
- E. Place grout around anchors.
- F. Cure placed grout.

END OF SECTION

SECTION 33 11 00
WATER UTILITY DISTRIBUTION PIPING

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes water-distribution piping and related components outside the building on the project private site for water service and fire-service mains.
- B. All work associated with municipal public water materials and installations within the City of Seaside public utility easement in the project access road shall be done per Specification Section 33 11 05 Public Water Mains & Appurtenances.

1.02 SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Valves and accessories
 - 2. Water meters and accessories
 - 3. Backflow preventers and assemblies.
 - 4. Fire hydrants.
 - 5. Fire department connections.
 - 6. Pipe.
- B. Field quality-control test reports.
- C. Operation and maintenance data for the following:
 - 1. Water meters
 - 2. Valves
 - 3. Backflow preventers
 - 4. Hydrants
- D. Shop Drawings: Detail precast concrete vault assemblies and indicate dimensions, method of field assembly, and components.

1.03 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Comply with requirements of utility company supplying water. Include tapping of water mains and backflow prevention.
 - 2. Comply with standards of authorities having jurisdiction for potable-water-service piping, including materials, installation, testing, and disinfection.
 - 3. Comply with standards of authorities having jurisdiction for fire-suppression water-service piping, including materials, hose threads, installation, and testing.
- B. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- C. Comply with ASTM F 645 for selection, design, and installation of thermoplastic water piping.
- D. Comply with FMG's "Approval Guide" or UL's "Fire Protection Equipment Directory" for fire-service-main products.
- E. NFPA Compliance: Comply with NFPA 24 for materials, installations, tests, flushing, and valve and hydrant supervision for fire-service-main piping for fire suppression.
- F. NSF Compliance:
 - 1. Comply with NSF 14 for plastic potable-water-service piping. Include marking "NSF-pw" on piping.
 - 2. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.

1.04 PROJECT CONDITIONS

- A. Interruption of Existing Water-Distribution Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water-distribution service according to requirements indicated:
 - 1. Notify Architect no fewer than two days in advance of proposed interruption of service.
 - 2. Do not proceed with interruption of water-distribution service without Architect's written permission.

1.05 COORDINATION

- A. Coordinate connection to water main with City of Seaside.

PART 2 PRODUCTS

2.01 PIPE AND FITTINGS

- A. High Density Polyethylene Pipe (diameters 4" or greater): DR 9, pressure class 250 psi per AWWA C901. Dimensions shall be per ASTM F714. Pipe shall be made from HDPE resin have a material designation code of PE4710. Material shall meet the requirements of ASTM D 3350 and shall have a minimum cell classification of PE445474C.
 - 1. HDPE pressure pipe shall be approved for potable water and shall meet the requirements of NSF 61.
 - 2. Pressure pipe shall be approved by Underwriter's Laboratory (UL) for Factory Mutual (FM).
 - 3. Pipe markings shall meet minimum requirements of AWWA C901 and shall identify the manufacturer, pipe size, DR, ASSA C901 and testing agency verification.
 - 4. Color identification shall be blue stripe designating potable water service.
 - 5. Butt fusion fittings shall meet the requirements of ASTM D3261 and shall have the same pressure class, resin material designation, cell classification and markings as the pipe.
- B. Flanged, Ductile-Iron Pipe (in Vaults): AWWA C151, with flanged fittings per ANSI B16.12. Pipe and fittings shall have cement mortar lining conforming to AWWA C104, standard thickness.
 - 1. Flanged Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
 - 2. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.
- C. PVC Schedule 40 Pipe (diameters less than 4"): ASTM D 1785.
 - 1. PVC, Schedule 40 Socket Fittings: ASTM D 2466.

2.02 JOINING MATERIALS

- A. Refer to Section 33 05 00 "Common Work Results for Utilities" for commonly used joining materials.
- B. Brazing Filler Metals: AWS A5.8, BCuP Series.
- C. Plastic Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.
- D. Flanges and adaptors for HDPE pipe shall have the same material designation, cell classification and pressure rating as the pipe.
- E. Fabricated flange adaptors for HDPE pipe shall be per ASTM F2206. Bolts, rods and nuts shall be manufactured from 304 stainless steel per AWWA C111.

2.03 SERVICE CONNECTIONS

- A. Service connections to HDPE pipe shall be electrofusion saddles with sidewall fusion branch saddles or tapping tees. Saddles shall be made from same material as the pipe.
- B. Saddles shall be made in accordance with ASTM D3261 or ASTM F2206. Tapping tees shall be made to ASTM D3261 or D2683.

2.04 PIPING SPECIALTIES

- A. Transition Fittings: Manufactured fitting or coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
- B. Tubular-Sleeve Pipe Couplings:
 - 1. Description: Metal, bolted, sleeve-type, reducing or transition coupling, with center sleeve, gaskets, end rings, and bolt fasteners and with ends of same sizes as piping to be joined.
 - a. Standard: AWWA C219.

2.05 GATE VALVES

- A. AWWA, Cast-Iron Gate Valves:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. American AVK Co.; Valves & Fittings Div.
 - b. American Cast Iron Pipe Co.; American Flow Control Div.
 - c. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
 - d. Crane Co.; Crane Valve Group; Stockham Div.
 - e. East Jordan Iron Works, Inc.
 - f. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
 - g. McWane, Inc.; Kennedy Valve Div.
 - h. McWane, Inc.; M & H Valve Company Div.
 - i. McWane, Inc.; Tyler Pipe Div.; Utilities Div.
 - j. Mueller Co.; Water Products Div.
 - k. NIBCO INC.
 - l. U.S. Pipe and Foundry Company.
 - 2. Nonrising-Stem, Resilient-Seated Gate Valves:
 - a. Description: Gray- or ductile-iron body and bonnet; with bronze or gray- or ductile-iron gate, resilient seats, bronze stem, and stem nut.
 - 1) Standard: AWWA C509.
 - 2) Minimum Pressure Rating: 200 psig.
 - 3) End Connections: Mechanical joint.
 - 4) Interior Coating: Complying with AWWA C550.
 - 3. Nonrising-Stem, Resilient Wedge Gate Valve:
 - a. Description: ductile iron body bonnet and wedge. The wedge shall be encapsulated in rubber.
 - 1) Standard: AWWA C515.
 - 2) Minimum pressure rating: 200 psig (1380 kPa).
 - 3) End Connections: Mechanical joint.
 - 4) Interior coating: Complying with AWWA C550.
 - 4. OS&Y, Rising Stem, Reduced Wall, Resilient-Seated Gate Valves.
 - a. Description: Ductile-iron body and bonnet; with bronze or gray- or ductile-iron gate, resilient seats, bronze stem, and stem nut.
 - 1) Standard: AWWA C515.
 - 2) Minimum Pressure Rating: 200 psig.

- 3) End Connections: Mechanical joint.
 - 4) Interior Coating: Complying with AWWA C550.
- 5. OS&Y, Rising-Stem, Resilient-Seated Gate Valves:
 - a. Description: Cast- or ductile-iron body and bonnet, with bronze or gray- or ductile-iron gate, resilient seats, and bronze stem.
 - 1) Standard: AWWA C509.
 - 2) Minimum Pressure Rating: 200 psig.
 - 3) End Connections: Flanged.
- B. Bronze Gate Valves:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Crane Co.; Crane Valve Group; Crane Valves.
 - b. Crane Co.; Crane Valve Group; Jenkins Valves.
 - c. Crane Co.; Crane Valve Group; Stockham Div.
 - d. Hammond Valve.
 - e. Milwaukee Valve Company.
 - f. NIBCO INC.
 - g. Red-White Valve Corporation.
 - 2. OS&Y, Rising-Stem Gate Valves:
 - a. Description: Bronze body and bonnet and bronze stem.
 - 1) Standards: UL 262 and FMG approved.
 - 2) Minimum Pressure Rating: 175 psig.
 - 3) End Connections: Threaded.
 - 3. Nonrising-Stem Gate Valves:
 - a. Description: Class 125, Type 1, bronze with solid wedge, threaded ends, and malleable-iron handwheel.
 - 1) Standard: MSS SP-80.

2.06 GATE VALVE ACCESSORIES AND SPECIALTIES

- A. Tapping-Sleeve Assemblies:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
 - b. East Jordan Iron Works, Inc.
 - c. Flowserve.
 - d. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
 - e. McWane, Inc.; Kennedy Valve Div.
 - f. McWane, Inc.; M & H Valve Company Div.
 - g. Mueller Co.; Water Products Div.
 - h. U.S. Pipe and Foundry Company.

2. Description: Sleeve and valve compatible with drilling machine.
 - a. Standard: MSS SP-60.
 - b. Tapping Sleeve: Cast- or ductile-iron or stainless-steel, two-piece bolted sleeve with flanged outlet for new branch connection. Include sleeve matching size and type of pipe material being tapped and with recessed flange for branch valve.
 - c. Valve: AWWA, cast-iron, nonrising-stem, resilient-seated gate valve with one raised face flange mating tapping-sleeve flange.
- B. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over valve and with a barrel approximately 5 inches in diameter.
 1. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.
- C. Indicator Posts: UL 789, FMG-approved, vertical-type, cast-iron body with operating wrench, extension rod, and adjustable cast-iron barrel of length required for depth of burial of valve.

2.07 CORPORATION VALVES AND CURB VALVES

- A. Manufacturers:
 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Amcast Industrial Corporation; Lee Brass Co.
 - b. Ford Meter Box Company, Inc. (The); Pipe Products Div.
 - c. Jones, James Company.
 - d. Master Meter, Inc.
 - e. McDonald, A. Y. Mfg. Co.
 - f. Mueller Co.; Water Products Div.
 - g. Red Hed Manufacturing & Supply.
- B. Service-Saddle Assemblies: Comply with AWWA C800. Include saddle and valve compatible with tapping machine.
 1. Service Saddle: Copper alloy with seal and AWWA C800, threaded outlet for corporation valve.
 2. Corporation Valve: Bronze body and ground-key plug, with AWWA C800, threaded inlet and outlet matching service piping material.
 3. Manifold: Copper fitting with two to four inlets as required, with ends matching corporation valves and outlet matching service piping material.
- C. Curb Valves: Comply with AWWA C800. Include bronze body, ground-key plug or ball, and wide tee head, with inlet and outlet matching service piping material.
- D. Service Boxes for Curb Valves: Similar to AWWA M44 requirements for cast-iron valve boxes. Include cast-iron telescoping top section of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over curb valve and with a barrel approximately 3 inches in diameter.
 1. Shutoff Rods: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and slotted end matching curb valve.

2.08 WATER METERS

- A. Water meters will be furnished by utility company.

B. Manufacturers:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. AMCO Water Metering Systems.
 - b. Badger Meter, Inc.
 - c. Carlon Meter.
 - d. Hays Fluid Controls; a division of ROMAC Industries Inc.
 - e. McCrometer.
 - f. Mueller Co.; Hersey Meters.
 - g. Neptune Technology Group Inc.
 - h. Sensus Metering Systems.

C. Displacement-Type Water Meters:

1. Description: With bronze main case.
 - a. Standard: AWWA C700.
 - b. Registration: Flow in cubic feet.

D. Compound-Type Water Meters:

1. Description: with bronze main case.
 - a. Standard: AWWA C702.
 - b. Registration: Flow in cubic feet.

2.09 BACKFLOW PREVENTERS

A. Reduced-Pressure-Principle Backflow Preventers:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Ames Fire & Waterworks; a division of Watts Regulator Co.
 - b. Conbraco Industries, Inc.
 - c. FEBCO; SPX Valves & Controls.
 - d. Flomatic Corporation.
 - e. Watts Water Technologies, Inc.
 - f. Wilkins; a Zurn company.
2. Standard: AWWA C511.
3. Operation: Continuous-pressure applications.
4. Pressure Loss: 12 psig maximum, through middle 1/3 of flow range.
5. Size: As shown on drawings.
6. Body: Cast iron with interior lining complying with AWWA C550 or that is FDA approved or stainless steel for NPS 2-1/2 and larger.
7. End Connections: flanged for NPS 2-1/2 and larger.
8. Configuration: Designed for horizontal, straight through flow.
9. Accessories:
 - a. Valves: Ball type with threaded ends on inlet and outlet of NPS 2 and smaller; OS&Y gate type with flanged ends on inlet and outlet of NPS 2-1/2 and larger.
 - b. Air-Gap Fitting: ASME A112.1.2, matching backflow preventer connection.

B. Double-Check, Backflow-Prevention Assemblies:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
 - a. Ames Fire & Waterworks; a division of Watts Regulator Co.
 - b. Conbraco Industries, Inc.
 - c. FEBCO; SPX Valves & Controls.
 - d. Flomatic Corporation.
 - e. Watts Water Technologies, Inc.
 - f. Wilkins; a Zurn company.
3. Standard: AWWA C510.
4. Operation: Continuous-pressure applications, unless otherwise indicated.
5. Pressure Loss: 5 psig maximum, through middle 1/3 of flow range.
6. Size: As shown on drawings.
7. Body: Cast iron with interior lining complying with AWWA C550 or that is FDA approved or stainless steel for NPS 2-1/2 and larger.
8. End Connections: Flanged for NPS 2-1/2 and larger.
9. Configuration: Designed for horizontal, straight through flow.
10. Accessories: Ball valves with threaded ends on inlet and outlet of NPS 2 and smaller; OS&Y gate valves with flanged ends on inlet and outlet of NPS 2-1/2 and larger.

C. Double-Check Detector, Backflow-Prevention Assemblies:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Ames Fire & Waterworks; a division of Watts Regulator Co.
 - b. Conbraco Industries, Inc.
 - c. FEBCO; SPX Valves & Controls.
 - d. Flomatic Corporation.
 - e. Watts Water Technologies, Inc.
 - f. Wilkins; a Zurn company.
2. Standard: AWWA C510.
3. Operation: Continuous-pressure applications, unless otherwise indicated.
4. Pressure Loss: 5 psig maximum, through middle 1/3 of flow range.
5. Size: As shown on drawings.
6. Body: Cast iron with interior lining complying with AWWA C550 or that is FDA approved or stainless steel] for NPS 2-1/2 and larger.
7. End Connections: Flanged for NPS 2-1/2 and larger.
8. By-pass meter reading: cubic feet/min.
9. Configuration: Designed for horizontal, straight through flow.
10. Accessories: Ball valves with threaded ends on inlet and outlet of NPS 2 and smaller; OS&Y gate valves with flanged ends on inlet and outlet of NPS 2-1/2 and larger.

2.10 WATER METER BOXES

- A. Water meter boxes will be furnished by Utility Company.
- B. Description: Concrete body with cast-iron cover or Polymer-concrete body and cover, with lettering "WATER METER" in cover; and with slotted, open-bottom base section of length to fit over service piping. Confirm with City of Seaside.

2.11 CONCRETE VAULTS

- A. Description: Precast, reinforced-concrete vault, designed for H-20 load designation according to ASTM C 857 and made according to ASTM C 858.
 - 1. Ladder: ASTM A 36/A 36M, steel or polyethylene-encased steel steps.
 - 2. Hatch: Diamond plate aluminum door. See plans for model number and/or size.
 - 3. Manhole: ASTM A 536, Grade 60-40-18, ductile-iron traffic frame and cover.
 - a. Dimension: 24-inch- minimum diameter, unless otherwise indicated.
 - 4. Drain: ASME A112.6.3, cast-iron floor drain with outlet of size indicated. Include body anchor flange, light-duty cast-iron grate, bottom outlet, and integral or field-installed bronze ball or clapper-type backwater valve.
 - 5. Riser extensions: Provide riser extensions matching vault size as necessary to match proposed grades.

2.12 FIRE HYDRANTS

- A. Dry-Barrel Fire Hydrants:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. American AVK Co.; Valves & Fittings Div.
 - b. American Cast Iron Pipe Co.; American Flow Control Div.
 - c. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
 - d. American Foundry Group, Inc.
 - e. East Jordan Iron Works, Inc.
 - f. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
 - g. McWane, Inc.; Kennedy Valve Div.
 - h. McWane, Inc.; M & H Valve Company Div.
 - i. Mueller Co.; Water Products Div.
 - j. Troy Valve; a division of Penn-Troy Manufacturing, Inc.
 - k. U.S. Pipe and Foundry Company.
 - 2. Description: Freestanding, with one NPS 4-1/2 and two NPS 2-1/2 outlets, 5-1/4-inch main valve, drain valve, and NPS 6 mechanical-joint inlet. Include interior coating according to AWWA C550. Hydrant shall have cast-iron body, compression-type valve opening against pressure and closing with pressure.
 - a. Standard: AWWA C502.
 - b. Pressure Rating: 150 psig minimum.
 - c. Outlet Threads: external hose thread used by local fire department. Include cast-iron caps with steel chains.
 - d. Exterior Finish: In conformance with local requirements.

2.13 FIRE DEPARTMENT CONNECTIONS

A. Fire Department Connections:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Elkhart Brass Mfg. Co., Inc.
 - b. Fire End & Croker Corporation.
 - c. Guardian Fire Equipment, Inc.
 - d. Kidde Fire Fighting.
 - e. Potter Roemer.
 - f. Reliable Automatic Sprinkler Co., Inc.
2. Description: Exposed, Freestanding, with cast-bronze body, thread inlets according to NFPA 1963 and matching local fire department hose threads, and threaded bottom outlet. Include lugged caps, gaskets, and chains; lugged swivel connection and drop clapper for each hose-connection inlet; 18-inch- high brass sleeve; and round escutcheon plate.
 - a. Standard: UL 405.
 - b. Connections: Two NPS 2-1/2 inlets and one NPS 4 outlet.
 - c. Inlet Alignment: Square.
 - d. Finish Including Sleeve: Polished bronze.
 - e. Escutcheon Plate Marking: "AUTO SPKR & STANDPIPE."
 - f. Exterior Finish: Red or orange OSHA safety colors.

PART 3 EXECUTION

3.01 EARTHWORK

- A. Refer to Section 31 20 00 "Earth Moving" for excavating, trenching, and backfilling.

3.02 PIPING APPLICATIONS

- A. General: Use pipe, fittings, and joining methods for piping systems according to the following applications.
- B. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used, unless otherwise indicated.
- C. Do not use flanges or unions for underground piping.
- D. Flanges, unions, and special fittings may be used, instead of joints indicated, on aboveground piping and piping in vaults.
- E. Underground potable water-service piping NPS 2 to NPS 4 shall be:
1. PVC, Schedule 40 socket fitting; and solvent-cemented joints.
- F. Aboveground and vault potable water-service piping NPS 4 shall be any of the following:
1. Hard copper tube, ASTM B 88, Type K; wrought-copper, solder-joint fittings; and brazed joints.
 2. Ductile-iron, flanged-end pipe; ductile-iron, flanged-end appurtenances; and flanged joints.
- G. Underground Fire-Service-Main Piping NPS 4 to NPS 10 shall be the following:
1. HDPE pipe, butt fusion pipe.
- H. Aboveground and Vault Fire-Service-Main Piping NPS 4 to NPS 10 shall be ductile-iron, flanged-end pipe; ductile-iron-pipe appurtenances; and flanged joints.

3.03 VALVE APPLICATIONS

- A. General Application: Use mechanical-joint-end valves for NPS 3 and larger underground installation. Use threaded- or flanged-end valves for installation in vaults. Use UL/FMG, nonrising-stem gate valves for installation with indicator posts. Use corporation valves and curb valves with ends compatible with piping, for NPS 2 and smaller installation.
- B. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
 - 1. Underground Valves, NPS 3 and Larger: AWWA, cast-iron, nonrising-stem, resilient - seated gate valves with valve box.
 - 2. Underground Valves, NPS 4 and Larger, for Indicator Posts: UL/FMG, cast-iron, nonrising-stem gate valves with indicator post.
 - 3. Use the following for valves in vaults and aboveground:
 - a. Gate Valves, NPS 2 and Smaller: Bronze, nonrising stem.
 - b. Gate Valves, NPS 3 and Larger: AWWA, cast iron, OS&Y rising stem, resilient seated.

3.04 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. See Section 33 05 00 "Common Work Results for Utilities" for piping-system common requirements.

3.05 PIPING INSTALLATION

- A. Water-Main Connection: Arrange with utility company for tap of size and in location indicated in water main.
- B. Water-Main Connection: Tap water main according to requirements of water utility company and of size and in location indicated.
- C. Make connections larger than NPS 2 with tapping machine according to the following:
 - 1. Install tapping sleeve and tapping valve according to MSS SP-60.
 - 2. Install tapping sleeve on pipe to be tapped. Position flanged outlet for gate valve.
 - 3. Use tapping machine compatible with valve and tapping sleeve; cut hole in main. Remove tapping machine and connect water-service piping.
 - 4. Install gate valve onto tapping sleeve. Comply with MSS SP-60. Install valve with stem pointing up and with valve box.
- D. Comply with NFPA 24 for fire-service-main piping materials and installation.
- E. Install ductile-iron, water-service piping according to AWWA C600 and AWWA M41.
- F. Install HDPE pipe according to ASTM D2321 or ASTM D2774 and AWWA Manual of Practice M55 in accordance with the pipe manufacturer's recommendations.
- G. Install PVC, AWWA pipe according to ASTM F 645 and AWWA M23.
- H. Bury piping with depth of cover over top at least 36 inches, with top at least 12 inches below level of maximum frost penetration.
- I. Extend water-service piping and connect to water-supply source and building-water-piping systems at outside face of building wall in locations and pipe sizes indicated.
 - 1. Terminate water-service piping at within 5 feet of building wall until building-water-piping systems are installed. Terminate piping with caps, plugs, or flanges as required for piping material. Make connections to building-water-piping systems when those systems are installed.
- J. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, mechanical restraints, and other supports.

3.06 JOINT CONSTRUCTION

- A. See Section 33 05 00 "Common Work Results for Utilities" for basic piping joint construction.
- B. Make pipe joints according to the following:
 - 1. Ductile-Iron Piping, Gasketed Joints for Water-Service Piping: AWWA C600 and AWWA M41.
 - 2. Ductile-Iron Piping, Gasketed Joints for Fire-Service-Main Piping: UL 194.
 - 3. HDPE Piping: See butt fusion requirements in Paragraph 2.1.
 - 4. PVC Piping Gasketed Joints: Use joining materials according to AWWA C900. Construct joints with elastomeric seals and lubricant according to ASTM D 2774 or ASTM D 3139 and pipe manufacturer's written instructions.
 - 5. Dissimilar Materials Piping Joints: Use adapters compatible with both piping materials, with OD, and with system working pressure.

3.07 ANCHORAGE INSTALLATION

- A. Anchorage, General: Install water-distribution piping with restrained joints. Anchorages and restrained-joint types that may be used include the following:
 - 1. Concrete thrust blocks.
 - 2. Locking mechanical joints.
 - 3. Set-screw mechanical retainer glands.
 - 4. Bolted flanged joints.
 - 5. Heat-fused joints.
 - 6. Pipe clamps and tie rods.
- B. Install anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches. Include anchorages for the following piping systems:
 - 1. Gasketed-Joint, Ductile-Iron, Water-Service Piping: According to AWWA C600.
 - 2. Gasketed-Joint, PVC Water-Service Piping: According to AWWA M23.
 - 3. Fire-Service-Main Piping: According to NFPA 24.
- C. Apply full coat of asphalt or other acceptable corrosion-resistant material to surfaces of installed ferrous anchorage devices.

3.08 VALVE INSTALLATION

- A. AWWA Gate Valves: Comply with AWWA C600 and AWWA M44. Install each underground valve with stem pointing up and with valve box.
- B. UL/FMG, Gate Valves: Comply with NFPA 24. Install each underground valve and valves in vaults with stem pointing up and with vertical cast-iron indicator post.
- C. Corporation Valves and Curb Valves: Install each underground curb valve with head pointed up and with service box.

3.09 WATER METER INSTALLATION

- A. Install water meters, piping, and specialties according to utility company's written instructions.
- B. Water Meters: Install displacement-type water meters, NPS 2 and smaller, in meter boxes with shutoff valves on water meter inlets. Include valves on water meter outlets and valved bypass around meters unless prohibited by authorities having jurisdiction.
- C. Water Meters: Install compound-type water meters, NPS 3 and larger, in meter vaults. Include shutoff valves on water meter inlets and outlets and valved bypass around meters. Support meters, valves, and piping on brick or concrete piers.

3.10 BACKFLOW PREVENTER INSTALLATION

- A. Install backflow preventers of type, size, and capacity indicated. Include valves and test cocks. Install according to requirements of plumbing and health department and authorities having jurisdiction.
- B. Do not install backflow preventers that have relief drain in vault or in other spaces subject to flooding.
- C. Do not install bypass piping around backflow preventers.
- D. Support NPS 2-1/2 and larger backflow preventers, valves, and piping near floor and on brick, concrete piers, or pipe supports.

3.11 WATER METER BOX INSTALLATION

- A. Install water meter boxes in paved areas flush with surface.
- B. Install water meter boxes in grass or earth areas with top 1 inch above surface.

3.12 CONCRETE VAULT INSTALLATION

- A. Install precast concrete vaults according to ASTM C 891 and manufacturer's recommendations.

3.13 FIRE HYDRANT INSTALLATION

- A. General: Install each fire hydrant with separate gate valve in supply pipe, anchor with restrained joints or thrust blocks, and support in upright position.
- B. AWWA Fire Hydrants: Comply with AWWA M17.

3.14 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. See Section 33 05 00 "Common Work Results for Utilities" for piping connections to valves and equipment.
- C. Connect water-distribution piping to utility water main. Use tapping sleeve and tapping valve or saddle fitting.
- D. Connect water-distribution piping to interior domestic water and fire-suppression piping.

3.15 FIELD QUALITY CONTROL

- A. Piping Tests: Conduct piping tests before joints are covered and after concrete thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.
- B. Hydrostatic Tests HDPE Piping Systems: Leak tests of HDPE water system shall be conducted in accordance with ASTM F2164. The pipeline shall be filled slowly with potable water and all trapped air bled off. The main should undergo a hydrostatic pressure test using the pressure at the lowest elevation in the system at 150 psi. The pressure shall remain constant for 4-hour period by adding make-up water. After 4-hour period is completed, the pressure shall remain steady within 5% of a target of 150 psi for one hour.
- C. Hydrostatic Tests PVC or Ductile Piping Systems: Test at not less than one-and-one-half times working pressure for four hours.
 - 1. Increase pressure in 50-psig increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psig. Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within allowed limits.
- D. Prepare reports of testing activities.

3.16 CLEANING

- A. Clean and disinfect water-distribution piping as follows:
 - 1. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.

2. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in NFPA 24 for flushing of piping. Flush piping system with clean, potable water until dirty water does not appear at points of outlet.
 3. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in AWWA C651 or do as follows:
 - a. Fill system or part of system with water/chlorine solution containing at least 50 ppm of chlorine; isolate and allow to stand for 24 hours.
 - b. Drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 ppm of chlorine; isolate and allow to stand for 3 hours.
 - c. After standing time, flush system with clean, potable water until no chlorine remains in water coming from system.
 - d. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedure if biological examination shows evidence of contamination.
- B. Prepare reports of purging and disinfecting activities.

END OF SECTION

SECTION 33 11 05
PUBLIC WATER MAINS & APPURTENANCES

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes all work associated with municipal public water materials and installations within the City of Seaside public utility easement in the project access road and associated branches.
- B. Private water-distribution piping and related components outside the building on the project private site for water service and fire-service mains shall be done per Section 33 11 00 Water Utility Distribution Piping.

1.02 SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Valves and accessories
 - 2. Water meters and accessories
 - 3. Fire hydrants.
 - 4. Pipe.
- B. Field quality-control test reports.
- C. Operation and maintenance data for the following:
 - 1. Water meters
 - 2. Valves
 - 3. Hydrants
- D. Shop Drawings: Detail precast concrete vault assemblies and indicate dimensions, method of field assembly, and components.

1.03 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Comply with requirements of utility company supplying water. Include tapping of water mains and backflow prevention.
 - 2. Comply with standards of authorities having jurisdiction for potable-water-service piping, including materials, installation, testing, and disinfection.
 - 3. Comply with standards of authorities having jurisdiction for fire-suppression water-service piping, including materials, hose threads, installation, and testing.
- B. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- C. Comply with ASTM F 645 for selection, design, and installation of thermoplastic water piping.
- D. Comply with FMG's "Approval Guide" or UL's "Fire Protection Equipment Directory" for fire-service-main products.
- E. NFPA Compliance: Comply with NFPA 24 for materials, installations, tests, flushing, and valve and hydrant supervision for fire-service-main piping for fire suppression.
- F. NSF Compliance:
 - 1. Comply with NSF 14 for plastic potable-water-service piping. Include marking "NSF-pw" on piping.
 - 2. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.

1.04 PROJECT CONDITIONS

- A. Interruption of Existing Water-Distribution Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water-distribution service according to requirements indicated:
 - 1. Notify Architect no fewer than two days in advance of proposed interruption of service.
 - 2. Do not proceed with interruption of water-distribution service without Architect's written permission.

1.05 COORDINATION

- A. Coordinate connection to water main with City of Seaside.

PART 2 PRODUCTS

2.01 PIPE AND FITTINGS

- A. High Density Polyethylene Pipe (diameters 4 in. or greater): DR 11, pressure class 200 psi per AWWA C906. Dimensions shall be per ASTM F714. Pipe shall be made from HDPE resin have a material designation code of PE3408. Material shall meet the requirements of ASTM D 3350 and shall have a minimum cell classification of PE445474C.
 - 1. HDPE pressure pipe shall be approved for potable water and shall meet the requirements of NSF 61.
 - 2. Pressure pipe shall be approved by Underwriter's Laboratory (UL) for Factory Mutual (FM).
 - 3. Pipe markings shall meet minimum requirements of AWWA C906 and shall identify the manufacturer, pipe size, DR, AWWA C906 and testing agency verification.
 - 4. Color identification shall be blue stripe designating potable water service.
 - 5. Butt fusion fittings shall meet the requirements of ASTM D3261 and shall have the same pressure class, resin material designation, cell classification and markings as the pipe.

2.02 JOINING MATERIALS

- A. Flanges and adaptors for HDPE pipe shall have the same material designation, cell classification and pressure rating as the pipe.
- B. Fabricated flange adaptors for HDPE pipe shall be per ASTM F2206. Bolts, rods and nuts shall be manufactured from 304 stainless steel per AWWA C111.

2.03 SERVICE CONNECTIONS

- A. Service connections to HDPE pipe shall be electrofusion saddles with sidewall fusion branch saddles or tapping tees. Saddles shall be made from same material as the pipe.
- B. Saddles shall be made in accordance with ASTM D3261 or ASTM F2206. Tapping tees shall be made to ASTM D3261 or D2683.

2.04 PIPING SPECIALTIES

- A. Transition Fittings: Manufactured fitting or coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
- B. Tubular-Sleeve Pipe Couplings:
 - 1. Description: Metal, bolted, sleeve-type, reducing or transition coupling, with center sleeve, gaskets, end rings, and bolt fasteners and with ends of same sizes as piping to be joined.
 - a. Standard: AWWA C219.

2.05 GATE VALVES

- A. AWWA, Cast-Iron Gate Valves:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. American AVK Co.; Valves & Fittings Div.
 - b. American Cast Iron Pipe Co.; American Flow Control Div.

- c. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
 - d. Crane Co.; Crane Valve Group; Stockham Div.
 - e. East Jordan Iron Works, Inc.
 - f. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
 - g. McWane, Inc.; Kennedy Valve Div.
 - h. McWane, Inc.; M & H Valve Company Div.
 - i. McWane, Inc.; Tyler Pipe Div.; Utilities Div.
 - j. Mueller Co.; Water Products Div.
 - k. NIBCO INC.
 - l. U.S. Pipe and Foundry Company.
2. Nonrising-Stem, Resilient-Seated Gate Valves:
- a. Description: Gray- or ductile-iron body and bonnet; with bronze or gray- or ductile-iron gate, resilient seats, bronze stem, and stem nut.
 - 1) Standard: AWWA C509.
 - 2) Minimum Pressure Rating: 200 psig.
 - 3) End Connections: Mechanical joint.
 - 4) Interior Coating: Complying with AWWA C550.
3. Nonrising-Stem, Resilient Wedge Gate Valve:
- a. Description: ductile iron body bonnet and wedge. The wedge shall be encapsulated in rubber.
 - 1) Standard: AWWA C515.
 - 2) Minimum pressure rating: 200 psig (1380 kPa).
 - 3) End Connections: Mechanical joint.
 - 4) Interior coating: Complying with AWWA C550.

2.06 GATE VALVE ACCESSORIES AND SPECIALTIES

- A. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over valve and with a barrel approximately 5 inches in diameter.
1. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.

2.07 CORPORATION VALVES AND CURB VALVES

- A. Manufacturers:
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- a. Amcast Industrial Corporation; Lee Brass Co.
 - b. Ford Meter Box Company, Inc. (The); Pipe Products Div.
 - c. Jones, James Company.
 - d. Master Meter, Inc.
 - e. McDonald, A. Y. Mfg. Co.
 - f. Mueller Co.; Water Products Div.
 - g. Red Hed Manufacturing & Supply.

- B. Curb Valves: Comply with AWWA C800. Include bronze body, ground-key plug or ball, and wide tee head, with inlet and outlet matching service piping material.
- C. Service Boxes for Curb Valves: Similar to AWWA M44 requirements for cast-iron valve boxes. Include cast-iron telescoping top section of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over curb valve and with a barrel approximately 3 inches in diameter.
 - 1. Shutoff Rods: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and slotted end matching curb valve.

2.08 WATER METERS

- A. Water meters will be furnished by utility company.
- B. Manufacturers:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. AMCO Water Metering Systems.
 - b. Badger Meter, Inc.
 - c. Carlon Meter.
 - d. Hays Fluid Controls; a division of ROMAC Industries Inc.
 - e. McCrometer.
 - f. Mueller Co.; Hersey Meters.
 - g. Neptune Technology Group Inc.
 - h. Sensus Metering Systems.
- C. Displacement-Type Water Meters:
 - 1. Description: With bronze main case.
 - a. Standard: AWWA C700.
 - b. Registration: Flow in cubic feet.
- D. Compound-Type Water Meters:
 - 1. Description: with bronze main case.
 - a. Standard: AWWA C702.
 - b. Registration: Flow in cubic feet.

2.09 WATER METER BOXES

- A. Water meter boxes will be furnished by Utility Company.
- B. Description: Concrete body with cast-iron cover or Polymer-concrete body and cover, with lettering "WATER METER" in cover; and with slotted, open-bottom base section of length to fit over service piping. Confirm with City of Seaside.

2.10 CONCRETE VAULTS

- A. Description: Precast, reinforced-concrete vault, designed for H-20 load designation according to ASTM C 857 and made according to ASTM C 858.
 - 1. Ladder: ASTM A 36/A 36M, steel or polyethylene-encased steel steps.
 - 2. Hatch: Diamond plate aluminum door. See plans for model number and/or size.
 - 3. Manhole: ASTM A 536, Grade 60-40-18, ductile-iron traffic frame and cover.
 - a. Dimension: 24-inch- minimum diameter, unless otherwise indicated.
 - 4. Drain: ASME A112.6.3, cast-iron floor drain with outlet of size indicated. Include body anchor flange, light-duty cast-iron grate, bottom outlet, and integral or field-installed bronze ball or clapper-type backwater valve.

5. Riser extensions: Provide riser extensions matching vault size as necessary to match proposed grades.

2.11 FIRE HYDRANTS

A. Dry-Barrel Fire Hydrants:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. American AVK Co.; Valves & Fittings Div.
 - b. American Cast Iron Pipe Co.; American Flow Control Div.
 - c. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
 - d. American Foundry Group, Inc.
 - e. East Jordan Iron Works, Inc.
 - f. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
 - g. McWane, Inc.; Kennedy Valve Div.
 - h. McWane, Inc.; M & H Valve Company Div.
 - i. Mueller Co.; Water Products Div.
 - j. Troy Valve; a division of Penn-Troy Manufacturing, Inc.
 - k. U.S. Pipe and Foundry Company.
2. Description: Freestanding, with one NPS 4-1/2 and two NPS 2-1/2 outlets, 5-1/4-inch main valve, drain valve, and NPS 6 mechanical-joint inlet. Include interior coating according to AWWA C550. Hydrant shall have cast-iron body, compression-type valve opening against pressure and closing with pressure.
 - a. Standard: AWWA C502.
 - b. Pressure Rating: 150 psig minimum.
 - c. Outlet Threads: external hose thread used by local fire department. Include cast-iron caps with steel chains.
 - d. Exterior Finish: In conformance with local requirements.

PART 3 EXECUTION

3.01 EARTHWORK

- A. Refer to Oregon Department of Transportation (ODOT) Oregon Standard Specifications for Construction (OSSC), 2018, Part 01100.

3.02 PIPING APPLICATIONS

- A. General: Use pipe, fittings, and joining methods for piping systems according to the following applications.
- B. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used, unless otherwise indicated.
- C. Do not use flanges or unions for underground piping.
- D. Flanges, unions, and special fittings may be used, instead of joints indicated, on aboveground piping and piping in vaults.
- E. Underground Fire-Service-Main Piping NPS 4 to NPS 10 shall be the following:
 1. HDPE pipe, butt fusion pipe.

3.03 VALVE APPLICATIONS

- A. General Application: Use mechanical-joint-end valves for NPS 3 and larger underground installation. Use threaded- or flanged-end valves for installation in vaults. Use UL/FMG,

nonrising-stem gate valves for installation with indicator posts. Use corporation valves and curb valves with ends compatible with piping, for NPS 2 and smaller installation.

- B. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
1. Underground Valves, NPS 3 and Larger: AWWA, cast-iron, nonrising-stem, resilient - seated gate valves with valve box.
 2. Underground Valves, NPS 4 and Larger, for Indicator Posts: UL/FMG, cast-iron, nonrising-stem gate valves with indicator post.
 3. Use the following for valves in vaults and aboveground:
 - a. Gate Valves, NPS 2 and Smaller: Bronze, nonrising stem.
 - b. Gate Valves, NPS 3 and Larger: AWWA, cast iron, OS&Y rising stem, resilient seated.

3.04 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. See ODOT OSSC Part 01100 for piping-system common requirements.

3.05 PIPING INSTALLATION

- A. See ODOT OSSC Part 01100 for piping-system common requirements.
- B. Install HDPE pipe according to ASTM D2321 or ASTM D2774 and AWWA Manual of Practice M55 in accordance with the pipe manufacturer's recommendations.
- C. Bury piping with depth of cover over top at least 36 inches, with top at least 12 inches below level of maximum frost penetration.

3.06 JOINT CONSTRUCTION

- A. See ODOT OSSC Part 01100 for piping-system common requirements.
- B. Make pipe joints according to the following:
1. HDPE Piping: See butt fusion requirements in Paragraph 2.1.

3.07 ANCHORAGE INSTALLATION

- A. Anchorage, General: Install water-distribution piping with restrained joints. Anchorages and restrained-joint types that may be used include the following:
1. Concrete thrust blocks.
 2. Heat-fused joints.

3.08 VALVE INSTALLATION

- A. AWWA Gate Valves: Comply with AWWA C600 and AWWA M44. Install each underground valve with stem pointing up and with valve box.

3.09 WATER METER INSTALLATION

- A. Install water meters, piping, and specialties according to utility company's written instructions.
- B. Water Meters: Install displacement-type water meters, NPS 2 and smaller, in meter boxes with shutoff valves on water meter inlets. Include valves on water meter outlets and valved bypass around meters unless prohibited by authorities having jurisdiction.
- C. Water Meters: Install compound-type water meters, NPS 3 and larger, in meter vaults. Include shutoff valves on water meter inlets and outlets and valved bypass around meters. Support meters, valves, and piping on brick or concrete piers.

3.10 WATER METER BOX INSTALLATION

- A. Install water meter boxes in paved areas flush with surface.
- B. Install water meter boxes in grass or earth areas with top 1 inch above surface.

3.11 CONCRETE VAULT INSTALLATION

- A. Install precast concrete vaults according to ASTM C 891 and manufacturer's recommendations.

3.12 FIRE HYDRANT INSTALLATION

- A. General: Install each fire hydrant with separate gate valve in supply pipe, anchor with restrained joints or thrust blocks, and support in upright position.
- B. AWWA Fire Hydrants: Comply with AWWA M17.

3.13 FIELD QUALITY CONTROL

- A. Piping Tests: Conduct piping tests before joints are covered and after concrete thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.
- B. Hydrostatic Tests HDPE Piping Systems: Hydrostatic and leak tests of HDPE water system shall be conducted in accordance with ODOT OSSC Section 01140.
- C. Prepare reports of testing activities.

3.14 CLEANING

- A. Clean and disinfect water-distribution piping per ODOT OSSC Section 01140.
- B. Prepare reports of purging and disinfecting activities.

END OF SECTION

SECTION 33 31 00
SANITARY UTILITY SEWERAGE PIPING

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: gravity-flow, non-pressure sanitary sewerage outside the building, with the following components:
 - 1. Pipe and fittings.
 - 2. Nonpressure and pressure couplings.
 - 3. Cleanouts.
 - 4. Manholes.
 - 5. Grease interceptor vault.

1.02 PERFORMANCE REQUIREMENTS

- A. Gravity-Flow, Nonpressure, Drainage-Piping Pressure Rating: 10-foot head of water.

1.03 SUBMITTALS

- A. Product Data: For the following:
 - 1. Cleanouts
 - 2. Pipe material.
 - 3. Mechanical plugs.
- B. Shop Drawings: For manholes. Include plans, elevations, sections, details, and frames and covers.
- C. Coordination Drawings: Show pipe sizes, locations, and elevations. Show other piping in same trench and clearances from sewer system piping. Indicate interface and spatial relationship between manholes, piping, and proximate structures.
- D. Field quality-control reports.

1.04 PROJECT CONDITIONS

- A. Site information: Research public utility records and verify existing utility locations prior to ordering any materials. Notify the Architect immediately if any discrepancies are found in the project survey.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
 - 2. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.02 PIPING MATERIALS

- A. Refer to Part 3 "Piping Applications" Article for applications of pipe, fitting, and joining materials.

2.03 DUCTILE-IRON, GRAVITY SEWER PIPE AND FITTINGS

- A. Pipe: ASTM A 746, for push-on joints.
- B. Standard Fittings: AWWA C110, ductile or gray iron, for push-on joints.
- C. Compact fittings: AWWA C153, for push-on joints.
- D. Gaskets: AWWA C11, rubber.

2.04 PVC PIPE AND FITTINGS

A. PVC Sewer Piping, NPS 15 and Smaller:

1. Pipe, NPS 15 and Smaller: ASTM D 3034, SDR 35, PVC Type PSM sewer pipe with bell-and-spigot ends for solvent-cemented or gasketed joints.
2. Fittings: ASTM D 3034, PVC with bell ends.
3. Gaskets: ASTM F 477, elastomeric seals.

2.05 NONPRESSURE-TYPE TRANSITION COUPLINGS

- A. Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground nonpressure piping. Include ends of same sizes as piping to be joined and corrosion-resistant-metal tension band and tightening mechanism on each end.
- B. Sleeve Materials:
 - 1. For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
 - 2. For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.
- C. Unshielded, Flexible Couplings:
 - 1. Description: Elastomeric sleeve with stainless-steel shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.
- D. Ring-Type, Flexible Couplings: Elastomeric compression seal with dimensions to fit inside bell of larger pipe and for spigot of smaller pipe to fit inside ring.

2.06 CLEANOUTS

- A. Cleanouts: At grade cleanouts shall have an adjustable sleeve-type housing, a threaded brass plug with counter sunk slot, and cast iron frame and cover.
- B. PVC Cleanouts: PVC body with PVC threaded plug. Include PVC sewer pipe fittings and riser to cleanout.

2.07 MANHOLES

- A. Standard Precast Concrete Manholes:
 - 1. Description: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for sealant joints rubber gasketed joints.
 - 2. Diameter: 48 inches minimum unless otherwise indicated.
 - 3. Ballast: Increase thickness of precast concrete sections or add concrete to base section, as required to prevent flotation if site conditions warrant and/or as shown in plans.
 - 4. Base Section: 6-inch minimum thickness for floor slab and 5 inch minimum thickness for walls and base riser section; with separate base slab or base section with integral floor.
 - 5. Riser Sections: 5-inch minimum thickness, of length to provide depth indicated.
 - 6. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated; with top of cone of size that matches grade rings.
 - 7. Gaskets: ASTM C 443 (ASTM C443M), rubber or preformed plastic.
 - 8. Joint Sealant: ASTM C 990, bitumen or butyl rubber.
 - 9. Resilient Pipe Connectors: ASTM C 923, cast or fitted into manhole walls, for each pipe connection.
 - 10. Steps: Individual FRP steps or ASTM A 615/A 615M, deformed, 1/2-inch steel reinforcing rods encased in ASTM D 4101, PP, wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12-inch intervals. Omit steps if total depth from floor of manhole to finished grade is less than 60 inches.

11. Adjusting Rings: Interlocking rings, with level or sloped edge in thickness and diameter matching manhole frame and cover, and with height as required to adjust manhole frame and cover to indicated elevation and slope. Include sealant recommended by ring manufacturer.
 12. Grade Rings: Reinforced-concrete rings, 6- to 9-inch total thickness, with diameter matching manhole frame and cover, and with height as required to adjust manhole frame and cover to indicated elevation and slope.
- B. Manhole Frames and Covers:
1. Description: Ferrous; 23-inch ID by 3- to 7-inch riser, with 3 ¼ -inch- minimum-width flange and 24 ¾-inch- diameter cover. Include indented top design with lettering cast into cover, using wording equivalent to "SANITARY SEWER."
 2. Material: ASTM A 536, Grade 60-40-18 ductile iron designed for heavy duty service unless otherwise indicated.

2.08 CONCRETE

- A. General: Cast-in-place concrete complying with ACI 318, ACI 350/350R, and the following:
1. Cement: ASTM C 150, Type II.
 2. Fine Aggregate: ASTM C 33, sand.
 3. Coarse Aggregate: ASTM C 33, crushed gravel.
 4. Water: Potable.
- B. Portland Cement Design Mix: 3000 psi minimum, with 0.45 maximum water/cementitious materials ratio.
1. Reinforcing Fabric: ASTM A 185/A 185M, steel, welded wire fabric, plain.
 2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (420 MPa) deformed steel.
- C. Manhole Channels and Benches: Factory or field formed from concrete. Portland cement design mix, 3000 psi minimum, with 0.45 maximum water/cementitious materials ratio. Include channels and benches in manholes.
1. Channels: Concrete invert, formed to same width as connected piping, with height of vertical sides to three-fourths of pipe diameter. Form curved channels with smooth, uniform radius and slope.
 - a. Invert Slope: Uniform slope through manhole to match invert elevations per plans, minimum 2 percent.
 2. Benches: Concrete, sloped to drain into channel.
 - a. Slope: 8 percent.
- D. Ballast and Pipe Supports: Portland cement design mix, 3000 psi minimum, with 0.58 maximum water/cementitious materials ratio.
1. Reinforcing Fabric: ASTM A 185/A 185M, steel, welded wire fabric, plain.
 2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (420 MPa) deformed steel.

PART 3 EXECUTION

3.01 EARTHWORK

- A. Excavating, trenching, and backfilling are specified in Section 31 20 00 "Earth Moving."

3.02 PIPING APPLICATIONS

- A. Pipe couplings and fittings with pressure ratings at least equal to piping rating may be used in applications below, unless otherwise indicated.
1. Use nonpressure-type flexible couplings where required to join gravity-flow, nonpressure sewer piping, unless otherwise indicated.
 - a. Unshielded flexible couplings for same or minor difference OD pipes.

- b. Unshielded, increaser/reducer-pattern, flexible couplings for pipes with different OD.
 - c. Ring-type flexible couplings for piping of different sizes where annular space between smaller piping's OD and larger piping's ID permits installation.
- B. Gravity-flow, Nonpressure Sewer Piping: Use any of the following pipe materials for each size range.
 - 1. NPS 4 to NPS 15: PVC sewer pipe and fittings gaskets, and gasketed joints.

3.03 PIPING INSTALLATION

- A. Install tracer wire directly over piping and at outside edges of underground structures. See Section 31 20 00 "Earth Moving" for tracer wire material requirements.
- B. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground sanitary sewer piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.
- C. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for using lubricants, cements, and other installation requirements.
- D. Install manholes for changes in direction unless fittings are indicated. Use fittings for branch connections unless direct tap into existing sewer is indicated.
- E. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
- F. Install gravity-flow, nonpressure, sewer piping according to the following:
 - 1. Install piping pitched down in direction of flow, at minimum slope of 2 percent unless otherwise indicated.
 - 2. Install piping with 36-inch minimum cover unless otherwise indicated..
 - 3. Install PVC corrugated sewer piping according to ASTM D 2321 and ASTM F 1668.
 - 4. Install PVC Type PSM sewer piping according to ASTM D 2321 and ASTM F 1668.
- G. Clear interior of piping and manholes of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed. Place plug in end of incomplete piping at end of day and when work stops.
- H. Protect existing piping and structures to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.
- I. Install backwater valves in piping where indicated.

3.04 PIPE JOINT CONSTRUCTION

- A. Basic piping joint construction is specified in Section 33 05 00 "Common Work Results for Utilities." Where specific joint construction is not indicated, follow piping manufacturer's written instructions.
- B. Join gravity-flow, non-pressure, drainage piping according to the following:
 - 1. Join PVC corrugated sewer piping according to ASTM D 2321.
 - 2. Join PVC Type PSM sewer piping according to ASTM D 2321 and ASTM D 3034 for elastomeric-seal joints or ASTM D 3034 for elastomeric-gasket joints.
 - 3. Join dissimilar pipe materials with non-pressure-type, flexible couplings.
 - 4. Join ductile-iron, gravity sewer piping according to AWWA C600 for push-on joints.

- C. Pipe couplings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.
 - 1. Use nonpressure flexible couplings where required to join gravity-flow, nonpressure sewer piping unless otherwise indicated.
 - a. Unshielded flexible couplings for pipes of same or slightly different OD.
 - b. Unshielded, increaser/reducer-pattern, flexible couplings for pipes with different OD.
 - c. Ring-type flexible couplings for piping of different sizes where annular space between smaller piping's OD and larger piping's ID permits installation.

3.05 MANHOLE INSTALLATION

- A. General: Install manholes complete with appurtenances and accessories indicated.
- B. Install precast concrete manhole sections with sealants according to ASTM C 891.
- C. Form continuous concrete channels and benches between inlets and outlet.
- D. Set tops of frames and covers flush with finished surface for manholes that occur in pavements.

3.06 CONCRETE PLACEMENT

- A. Place cast-in-place concrete according to ACI 318.

3.07 CLEANOUT INSTALLATION

- A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use pipe fittings in sewer pipes at branches for cleanouts, and use PVC pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.
 - 1. Use Light-Duty, top-loading classification cleanouts in areas.
 - 2. Use Medium-Duty, top-loading classification cleanouts in earth, unpaved foot-traffic or paved foot-traffic areas.
 - 3. Use Heavy-Duty, top-loading classification cleanouts in vehicle-traffic service areas.
- B. Set cleanout frames and covers in earth in cast-in-place-concrete block, per the Detail. Set with tops 1 inch above surrounding grade.
- C. Set cleanout frames and covers in concrete pavement and roads with tops flush with pavement surface.

3.08 CONNECTIONS

- A. Connect nonpressure, gravity-flow drainage piping to building's sanitary building drain. Use transition fitting to join dissimilar piping materials.
- B. Connect force-main piping to building's sanitary force mains specified in Section 221316 "Sanitary Waste and Vent Piping." Terminate piping where indicated.
- C. Make connections to existing piping and underground manholes.
 - 1. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe, install wye fitting into existing piping, and encase entire wye fitting plus 6-inch overlap with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.
 - 2. Make branch connections from side into existing piping, NPS 4 to NPS 20. Remove section of existing pipe, install wye fitting into existing piping, and encase entire wye with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.
 - 3. Make branch connections from side into existing piping, NPS 21 or larger, or to underground manholes by core drilling into existing unit. Make connection into existing pipe using an "Inserta-Tee" fitting per the manufacturer's recommendations or approved equal. Make connection to existing manhole using round rubber gasket installed on the pipe per the manufacturer's instructions. Cut end of connection pipe passing through the manhole wall to conform to the shape of and be flush with the inside wall unless otherwise indicated. The opening around the gasket shall be grouted to a watertight seal. Existing

manhole inverts, flow lines, channels, etc. shall be chipped out and re-grouted to accommodate the new pipe.

- a. Use concrete that will attain a minimum 28-day compressive strength of 3000 psi unless otherwise indicated.
 - b. Use epoxy-bonding compound as interface between new and existing concrete and piping materials.
4. Protect existing piping and manholes to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.
- D. Make connections to existing piping and underground structures so finished Work complies with requirements specified for new Work.

3.09 FIELD QUALITY CONTROL

- A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.
1. Submit separate report for each system inspection.
 2. Defects requiring correction include the following:
 - a. Alignment: Less than full diameter of inside of pipe is visible between structures.
 - b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
 - c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
 - d. Infiltration: Water leakage into piping.
 - e. Exfiltration: Water leakage from or around piping.
 3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
 4. Reinspect and repeat procedure until results are satisfactory.
- B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.
1. Do not enclose, cover, or put into service before inspection and approval.
 2. Test completed piping systems according to requirements of authorities having jurisdiction.
 3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
 4. Submit separate report for each test.
 5. Hydrostatic Tests: Test sanitary sewerage according to requirements of authorities having jurisdiction and the following:
 - a. Fill sewer piping with water. Test with pressure of at least 10-foot head of water, and maintain such pressure without leakage for at least 15 minutes.
 - b. Allowable leakage is maximum of 50 gal. /inch of nominal pipe size per mile of pipe, during 24-hour period.
 - c. Close openings in system and fill with water.
 - d. Purge air and refill with water.
 - e. Disconnect water supply.
 - f. Test and inspect joints for leaks.
 - g. Option: Test concrete gravity sewer piping according to ASTM C 924.
 6. Air Tests: Test sanitary sewerage according to requirements of authorities having jurisdiction, UNI-B-6, and the following:
 - a. Option: Test plastic gravity sewer piping according to ASTM F 1417.

- 7. Manholes: Perform hydraulic test according to ASTM C 969.
- C. Leaks and loss in test pressure constitute defects that must be repaired.
- D. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

3.10 CLEANING

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

END OF SECTION

SECTION 33 41 00
STORM UTILITY DRAINAGE PIPING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes gravity-flow non-pressure storm drainage outside the building, with the following components:
 - 1. Pipe and fittings.
 - 2. Trench Drains.
 - 3. Manholes.
 - 4. Cleanouts.
 - 5. Nonpressure transition couplings.
 - 6. Catch basins.
 - 7. Area Drains.
 - 8. Pipe outlets.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Cleanouts.
 - 2. Inlets.
 - 3. Pipe.
 - 4. Fittings.
 - 5. Drains.
 - 6. Trench Drains.
- B. Shop Drawings:
 - 1. Precast Concrete Manholes: Include plans, elevations, sections, details, frames, and covers.
 - 2. Catch basins and area drains. Include plans, elevations, sections, details, frames, covers, and grates.
 - 3. Cast-in-place concrete manholes, including frames and covers.
 - 4. Pre-cast concrete structures, including frames and covers.
- C. Field quality-control reports.

1.3 PROJECT CONDITIONS

- A. Interruption of Existing Storm Drainage Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:
 - 1. Notify Architect no fewer than two days in advance of proposed interruption of service.
 - 2. Do not proceed with interruption of service without Architect's written permission.
- B. Site Information: Research public utility records, and verify existing utility locations prior to ordering any materials. Notify Architect immediately if any discrepancies are found in the project Survey.

PART 2 PRODUCTS

2.1 PE PIPE AND FITTINGS (UNDERGROUND DETENTION PIPING)

- A. Corrugated PE N-12 Dual-Wall Drainage Pipe and Fittings NPS 3 to NPS 10: AASHTO M 252M, Type S, with smooth waterway for coupling joints.
 - 1. Watertight Couplings: AASHTO M 252M, corrugated, matching tube and fittings.
- B. Corrugated PE N-12 Dual-Wall Drainage Pipe and Fittings NPS 12 to NPS 60: AASHTO M 294M, Type S, with smooth waterway for coupling joints.
 - 1. Watertight Couplings: AASHTO M 294M, corrugated, matching pipe and fittings.

2.2 PVC PIPE AND FITTINGS (CONVEYANCE PIPING)

- A. PVC Sewer Pipe and Fittings, NPS 15 and Smaller: ASTM D 3034, SDR 35 with bell-and-spigot ends for gasketed joints with ASTM F 477, elastomeric seals.
- B. PVC Sewer Pipe and Fittings, NPS 18 and Larger: ASTM F 679, with bell-and-spigot ends for gasketed joints with ASTM F 477, elastomeric seals.
- C. PVC Service Pipe and Fittings: ASTM E 1785 Schedule 40 pipe, with plain ends for solvent-cement joints with ASTM D 2466, Schedule 40 socket-type fittings.

2.3 NONPRESSURE TRANSITION COUPLINGS

- A. Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground nonpressure piping. Include ends of same sizes as piping to be joined, and corrosion-resistant-metal tension band and tightening mechanism on each end.
- B. Sleeve Materials:
 - 1. For Concrete Pipes: ASTM C 443, rubber.
 - 2. For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
 - 3. For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.
- C. Unshielded, Flexible Couplings:
 - 1. Description: Elastomeric sleeve with stainless-steel shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.
- D. Shielded, Flexible Couplings:
 - 1. Description: ASTM C 1460, elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.
- E. Ring-Type, Flexible Couplings:
 - 1. Description: Elastomeric compression seal with dimensions to fit inside bell of larger pipe and for spigot of smaller pipe to fit inside ring.

2.4 CLEANOUTS

- A. Cast-Iron Cleanouts:
 - 1. Description: Cleanouts: At grade cleanouts shall have an adjustable sleeve-type housing, a threaded brass plug with counter sunk slot, and cast iron frame and cover.
 - 2. Top-Loading Classification(s): Medium Duty and Heavy Duty.
 - 3. Sewer Pipe Fitting and Riser to Cleanout: ASTM A 74, Service class, cast-iron soil pipe and fittings.
- B. Plastic Cleanouts:
 - 1. Description: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping.

2.5 MANHOLES

A. Standard Precast Concrete Manholes:

1. Description: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for sealant joints.
2. Diameter: 48 inches minimum unless otherwise indicated.
3. Ballast: Increase thickness of precast concrete sections or add concrete to base section as required to prevent flotation, if site conditions warrant and/or as shown in the plans.
4. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.
5. Riser Sections: 4-inch minimum thickness, and lengths to provide depth indicated.
6. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated, and top of cone of size that matches grade rings.
7. Resilient Pipe Connectors: ASTM C 923, cast or fitted into manhole walls, for each pipe connection.
8. Steps: Individual FRP steps, wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12- to 16-inch intervals.
9. Adjusting Rings: Interlocking rings with level or sloped edge in thickness and diameter matching manhole frame and cover, and of height required to adjust manhole frame and cover to indicated elevation and slope. Include sealant recommended by ring manufacturer.
10. Grade Rings: Reinforced-concrete rings, 6- to 9-inch total thickness, to match diameter of manhole frame and cover, and height as required to adjust manhole frame and cover to indicated elevation and slope.

B. Manhole Frames and Covers:

1. Description: Ferrous; 23-inch ID by 6- to 10-inch riser with 3.5-inch- minimum width flange and 25-inch- diameter cover. Include indented top design with lettering cast into cover, using wording equivalent to "STORM SEWER."
2. Material: ASTM A 536, Grade 60-40-18 ductile iron unless otherwise indicated.

2.6 CONCRETE

A. General: Cast-in-place concrete according to ACI 318, ACI 350/350R, and the following:

1. Cement: ASTM C 150, Type II.
2. Fine Aggregate: ASTM C 33, sand.
3. Coarse Aggregate: ASTM C 33, crushed gravel.
4. Water: Potable.

B. Manhole Channels and Benches: Factory or field formed from concrete. Portland cement design mix, 3000 psi minimum, with 0.45 maximum water/cementitious materials ratio. Include channels and benches in manholes.

1. Channels: Concrete invert, formed to same width as connected piping, with height of vertical sides to three-fourths of pipe diameter. Form curved channels with smooth, uniform radius and slope.
 - a. Invert Slope: 1 percent through manhole.
2. Benches: Concrete, sloped to drain into channel.
 - a. Slope: 4 percent.

- C. Ballast and Pipe Supports: Portland cement design mix, 3000 psi minimum, with 0.58 maximum water/cementitious materials ratio.
 - 1. Reinforcing Fabric: ASTM A 185/A 185M, steel, welded wire fabric, plain.
 - 2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (420 MPa) deformed steel.

2.7 POLYMER-CONCRETE TRENCH DRAINS

- A. General Requirements for Polymer-Concrete, Channel Drainage Systems: Modular system of precast, polymer-concrete channel sections, grates, and appurtenances; designed so grates fit into channel recesses without rocking or rattling. Include quantity of units required to form total lengths indicated.
- B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - 1. ACO USA.
 - 2. Poly-Cast.
 - 3. Zurn.
 - 4. Approved equal.
- C. Polymer-Concrete Systems:
 - 1. Channel Sections:
 - a. Interlocking-joint, precast, modular units with end caps.
 - b. 4-inch inside width and deep, rounded bottom, and with outlets in quantities, sizes, and locations indicated.
 - c. Extension sections necessary for required depth.
 - d. Frame: Include ductile iron or steel frame for grate.
 - 2. Grates:
 - a. Manufacturer's designation "Heavy Duty," with slots or perforations that fit recesses in channels.
 - b. Material: Ductile iron.
 - 3. Covers: Solid gray iron if indicated.
 - 4. Locking Mechanism: Manufacturer's standard device for securing grates to channel sections.
 - 5. Invert: Sloped with built-in invert slope of .6%.
- D. Drainage Specialties: Precast, polymer-concrete units.
 - 1. In-line Catch Basins:
 - a. 24-inch deep polymer-concrete body, with outlets in quantities and sizes indicated.
 - b. ADA iron.
- E. Supports, Anchors, and Setting Devices: Manufacturer's standard unless otherwise indicated.
- F. Channel-Section Joining and Fastening Materials: As recommended by system manufacturer.

2.8 CATCH BASINS AND AREA DRAINS

- A. Trapped Catch Basins: 1/4-inch, H-20 Rated steel plate bituminous coated as manufactured by Lynch, Gratemaster, Gibson Steel Basins, or approved equivalent. Reinforced concrete collars shall be installed per the Drawings.
- B. Frames and Grates: ASTM A 536, Grade 60-40-18, ductile iron designed for heavy-duty service H-20, structural loading. Include flat grate with small square or short-slotted drainage openings.
 - 1. Size: 28 by 28 inches minimum unless otherwise indicated.

2. Grate Free Area: Approximately 50 percent unless otherwise indicated.
- C. Nyloplast Catch Basins:
 1. Description: Round catch basin structure as indicated on the Contract Drawings.
 2. Material: Structure shall be made out of PVC meeting ASTM D 1784. Joint tightness shall conform to ASTM D 3212. Flexible elastomeric seals shall conform to ASTM F 477.
 3. Grates: Grates and frames shall be ductile iron and made specifically for each basin so as to provide a round bottom flange that closely matches the diameter of the catch basin. Grates shall be capable of supporting H-20 wheel loading for traffic areas or hold loading for pedestrian areas. Metal shall conform to ASTM A 536 grade 70-50-05 for ductile iron and be painted black.
 4. Reinforced concrete collar shall be installed per the drawings.

2.9 PIPE OUTLETS

- A. Head Walls: Cast-in-place reinforced concrete, with apron and tapered sides as shown on Plans.
- B. Riprap Basins: as shown on Plans.

2.10 CONCRETE DITCH INLETS

- A. Ditch Inlets: Made with 30° face opening, of materials and dimensions as shown on the Drawings.

2.11 DETENTION

- A. Stormwater detention system as shown on Plans.

PART 3 EXECUTION

3.1 EARTHWORK

1. Excavation, trenching, and backfilling are specified in Section 31 20 00 "Earth Moving." Install tracer wire directly over piping and at outside edges of underground structures. See section 31 20 00 "Earth Moving" for tracer wire material requirements.

3.2 PIPING INSTALLATION

- A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.
- B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
- C. Install manholes for changes in direction unless fittings are indicated. Use fittings for branch connections unless direct tap into existing sewer is indicated.
- D. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
- E. When installing pipe under streets or other obstructions that cannot be disturbed, use pipe-jacking process or microtunneling.
- F. Install gravity-flow, nonpressure drainage piping according to the following:
 1. Install piping pitched down in direction of flow at a minimum slope of 1 percent, unless otherwise indicated.
 2. Install piping with 36-inch minimum cover, unless otherwise indicated.
 3. Install ductile-iron piping and special fittings according to AWWA C600 or AWWA M41.
 4. Install PE corrugated sewer piping according to ASTM D 2321.

5. Install PVC sewer piping according to ASTM D 2321 and ASTM F 1668.
 6. Install nonreinforced-concrete sewer piping according to ASTM C 1479 and ACPA's "Concrete Pipe Installation Manual."
 7. Install reinforced-concrete sewer piping according to ASTM C 1479 and ACPA's "Concrete Pipe Installation Manual."
 8. Install piping below frost line.
 9. Install hub-and-spigot cast iron piping according to CISPI's "Cast Iron Soil Pipe and Fittings" handbook.
 10. Install hubless cast iron piping according to CISPI 301 and CISPI's "Cast Iron Soil Pipe and Fittings" handbook.
- G. Clear interior of piping and manholes of dirt and superfluous material as work progresses.

3.3 PIPE JOINT CONSTRUCTION

- A. Basic pipe joint construction is specified in Division 33 Section "Common Work Results for Utilities." Where specific joint construction is not indicated, follow piping manufacturer's written instructions.
- B. Join gravity-flow, nonpressure drainage piping according to the following:
1. Join ductile-iron culvert piping according to AWWA C600 for push-on joints.
 2. Join ductile-iron piping and special fittings according to AWWA C600 or AWWA M41.
 3. Join corrugated PE piping according to ASTM D 3212 for push-on joints.
 4. Join PVC corrugated sewer piping according to ASTM D 2321 and ASTM D 3034 for elastomeric-seal joints.
 5. Join nonreinforced-concrete sewer piping according to ASTM C 14 and ACPA's "Concrete Pipe Installation Manual" for rubber-gasketed joints.
 6. Join reinforced-concrete sewer piping according to ACPA's "Concrete Pipe Installation Manual" for rubber-gasketed joints.
 7. Join dissimilar pipe materials with non-pressure-type flexible couplings.
 8. Join hub-and-spigot cast iron soil piping with gasketed joints according to CISPI's "Cast Iron Soil Pipe and Fittings" handbook for compression joints.
 9. Join hubless cast iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings" handbook for hubless-coupling joints.
- C. Pipe couplings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.
1. Use non-pressure flexible couplings where required to join gravity-flow, non-pressure sewer piping unless otherwise indicated.
 - a. Unshielded flexible couplings for pipes of same or slightly different OD.
 - b. Unshielded, increaser/reducer-pattern, flexible couplings for pipes with different OD.
 - c. Ring-type flexible couplings for piping of different sizes where annular space between smaller piping's OD and larger piping's ID permits installation.

3.4 CLEANOUT INSTALLATION

- A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use PVC fittings in sewer pipes at branches for cleanouts and PVC pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.
1. Use Medium-Duty, top-loading classification cleanouts in earth, unpaved foot-traffic or paved foot-traffic areas.
 2. Use Heavy-Duty, top-loading classification cleanouts in vehicle-traffic service areas.

- B. Set cleanout frames and covers in earth in cast-in-place concrete block, as indicated on plans. Set with tops 1 inch above surrounding earth grade.
- C. Set cleanout frames and covers in concrete pavement and roads with tops flush with pavement surface.

3.5 MANHOLE INSTALLATION

- A. General: Install manholes, complete with appurtenances and accessories indicated.
- B. Install precast concrete manhole sections with sealants according to ASTM C 891.
- C. Where specific manhole construction is not indicated, follow manhole manufacturer's written instructions.
- D. Set tops of frames and covers flush with finished surface of manholes that occur in pavements. Set tops 1 inch above finished surface elsewhere unless otherwise indicated.

3.6 CATCH BASIN INSTALLATION

- A. Set frames and grates to elevations indicated.

3.7 NYLOPLAST CATCH BASIN INSTALLATION

- A. Set frames and grates to elevations indicated per the manufacturer's recommendations.

3.8 STORMWATER OUTLET INSTALLATION

- A. Construct riprap as indicated.

3.9 CONCRETE PLACEMENT

- A. Place cast-in-place concrete according to ACI 318.

3.10 CONNECTIONS

- A. Connect non-pressure, gravity-flow drainage piping in building's storm building drains specified in Section 22 14 13 "Facility Storm Drainage Piping."
- B. Make connections to existing piping and underground manholes.
 - 1. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe; install wye fitting into existing piping; and encase entire wye fitting, plus 6-inch overlap, with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.
 - 2. Make branch connections from side into existing piping, NPS 4 to NPS 20. Remove section of existing pipe, install wye fitting into existing piping, and encase entire wye with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.
 - 3. Make branch connections from side into existing piping, NPS 21 or larger, or to underground manholes and structures by cutting into existing unit and creating an opening large enough to allow 3 inches of concrete to be packed around entering connection. Cut end of connection pipe passing through pipe or structure wall to conform to shape of and be flush with inside wall unless otherwise indicated. On outside of pipe, manhole, or structure wall, encase entering connection in 6 inches of concrete for minimum length of 12 inches to provide additional support of collar from connection to undisturbed ground.
 - a. Use concrete that will attain a minimum 28-day compressive strength of 3000 psi unless otherwise indicated.
 - b. Use epoxy-bonding compound as interface between new and existing concrete and piping materials.
 - 4. Protect existing piping, manholes, and structures to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

- C. Pipe couplings and expansion joints with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.
 - 1. Use nonpressure-type flexible couplings where required to join gravity-flow, nonpressure sewer piping unless otherwise indicated.
 - a. Unshielded flexible couplings for same or minor difference OD pipes.
 - b. Unshielded, increaser/reducer-pattern, flexible couplings for pipes with different OD.
 - c. Ring-type flexible couplings for piping of different sizes where annular space between smaller piping's OD and larger piping's ID permits installation.

3.11 IDENTIFICATION

- A. Install green tracer wire directly over piping and at outside edges of underground structure. See Section 31 20 00 "Earth Moving" for tracer wire material requirements.

3.12 FIELD QUALITY CONTROL

- A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.
 - 1. Submit separate reports for each system inspection.
 - 2. Defects requiring correction include the following:
 - a. Alignment: Less than full diameter of inside of pipe is visible between structures.
 - b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
 - c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
 - d. Infiltration: Water leakage into piping.
 - e. Exfiltration: Water leakage from or around piping.
 - 3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
 - 4. Reinspect and repeat procedure until results are satisfactory.
- B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.
 - 1. Do not enclose, cover, or put into service before inspection and approval.
 - 2. Test completed piping systems according to requirements of authorities having jurisdiction.
 - 3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
 - 4. Submit separate report for each test.
 - 5. Gravity-Flow Storm Drainage Piping: Test according to requirements of authorities having jurisdiction, UNI-B-6, and the following:
 - a. Option: Test plastic piping according to ASTM F 1417.
 - b. Option: Test concrete piping according to ASTM C 924.
- C. Leaks and loss in test pressure constitute defects that must be repaired.
- D. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

END OF SECTION

**SECTION 33 46 00
SUBDRAINAGE**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes subdrainage systems for retaining walls, foundations, footings, underslab areas and site slopes and cutoff trenches:
 - 1. Perforated-wall pipe and fittings.
 - 2. Geotextile filter fabrics.
 - 3. Drainage Panels.
 - 4. Backwater valves.

1.02 SUBMITTALS

- A. Product Data:
 - 1. For geotextile filter fabrics.
 - 2. Perforated pipe.
 - 3. Solid-wall pipe.
 - 4. Drainage panels.
 - 5. Backwater Valves.
- B. Inspection report.

PART 2 - PRODUCTS

2.01 PIPING MATERIALS

- A. Refer to Part 3 "Piping Applications" for applications of pipe, fitting, and joining materials.

2.02 PERFORATED-WALL PIPES AND FITTINGS

- A. Perforated PVC Sewer pipe per ASTM D3034. Gasketed joints.
- B. Perforated schedule 40 PVC Sewer Pipe and Fittings: ASTM D 1785, D2665 or F891, solvent welded joints.

2.03 SOLID-WALL PIPES AND FITTINGS

- A. PVC Schedule 40 Sewer Pipe and fittings: ASTM D 1785, F 1488, or D2665 with solvent welded fittings (ASTM D 2665, or DF 1866).

2.04 SPECIAL PIPE COUPLINGS

- A. Comply with ASTM C1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground nonpressure piping. Include ends of the same sizes as piping to be joined and corrosion-resistant metal tension band and tightening mechanism on each end.

2.05 CLEANOUTS

- A. Cast-Iron Cleanouts: ASME A112.36.2M; with round-flanged, cast-iron housing; and secured, scoriated, Medium-Duty Loading class, cast-iron cover. Include cast-iron ferrule and countersunk, brass cleanout plug.
- B. PVC Cleanouts: ASTM D 3034, PVC cleanout threaded plug and threaded pipe hub.

2.06 DRAINAGE PANELS

- A. Molded-Sheet Drainage Panels: Prefabricated geocomposite, 36 to 60 inches wide with drainage core faced with geotextile filter fabric.
 - 1. Available Manufacturers:
 - a. American Wick Drain Corporation.
 - b. Cosella-Dorken.

- c. Eljen Corp.
 - d. Greenstreak, Inc.
 - e. JDR Enterprises, Inc.
 - f. LINQ Industrial Fabrics, Inc.
 - g. Midwest Diversified Technologies Incorporated.
 - h. TC Mirafi.
 - i. Approved equal.
2. Filter Fabric: Fabric of PP or polyester fibers or combination of both, with flow rate range from 110 to 330 gpm/sq. ft. when tested according to ASTM D 4491.
- a. Style: Flat.

2.07 SOIL MATERIALS

- A. Backfill, drainage course, and satisfactory soil materials are specified in Division 31 Section 31 20 00 "Earth Moving."

2.08 GEOTEXTILE FILTER FABRICS

- A. Description: Fabric of PP or polyester fibers or combination of both, with flow rate range from 110 to 330 gpm/sq. ft. when tested according to ASTM D 4491.
- B. Structure Type: Nonwoven, needle-punched continuous filament.
- 1. Style(s): Flat and sock.

2.09 BACKWATER VALVES

- A. PVC Backwater Valve: PVC Body with extendable riser pipe.
- 1. Available Manufacturers:
 - a. Clean Check.
 - b. Rector Seal.
 - c. Mainline.
 - d. Approved equal

PART 3 - EXECUTION

3.01 EARTHWORK

- A. Excavating, trenching, and backfilling are specified in Division 31 Section 31 20 00 "Earth Moving."

3.02 PIPING APPLICATIONS

- A. Underground Subdrainage Piping outside of 5' of building envelop:
- 1. Perforated PVC sewer pipe and fittings for loose, bell-and-spigot joints, ASTM D3034.
- B. Underground Subdrainage Piping within 5' of building, under-slab and perimeter footing drains:
- 1. Perforated PVC sewer pipe and fittings, ASTM D1785 Schedule 40, socket welded joints.
- C. Header Piping:
- 1. PVC Schedule sewer pipe and fittings, couplings and coupled joints.

3.03 CLEANOUT APPLICATIONS

- A. In Underground Subdrainage Piping:
- 1. At Grade in Earth: PVC Cleanouts.
 - 2. At Grade in Pave Areas: PVC cleanouts.
- B. In Underslab Subdrainage Piping:
- 1. In Equipment Rooms and Unfinished Areas: Cast-iron cleanouts. Refer to Division 22 "Plumbing Piping Specialties."

2. In Finished Areas: Cast-iron cleanouts. Refer to Division 22 "Plumbing Piping Specialties."

3.04 FOUNDATION DRAINAGE INSTALLATION

- A. Lay flat-style geotextile filter fabric in trench and overlap trench sides.
- B. Place supporting layer of drainage course over compacted subgrade and geotextile filter fabric, to compacted depth of not less than 4 inches.
- C. Encase pipe with sock-style geotextile filter fabric before installing pipe. Connect sock sections with adhesive or tape.
- D. Install drainage piping as indicated in Part 3 "Piping Installation" Article for foundation subdrainage.
- E. Add drainage course to width of at least 6 inches on side away from wall and to top of pipe to perform tests. Refer to Part 3 "Field Quality Control."
- F. After satisfactory testing, cover drainage piping to width of at least 6 inches on side away from footing and above top of pipe to within 12 inches of finish grade.
- G. Install drainage course and wrap top of drainage course with flat-style geotextile filter fabric.
- H. Place layer of flat-style geotextile filter fabric over top of drainage course, overlapping edges at least 4 inches.
- I. Install vertical drainage panels as follows:
 - 1. Coordinate placement with other drainage materials.
 - 2. Lay perforated drainage pipe at base of footing. Install as indicated in Part 3 "Piping Installation." Do not install aggregate.
 - 3. Separate 4 inches of fabric at beginning of roll and cut away 4 inches of core. Wrap fabric around end of remaining core.
 - 4. Wrap bottom of panel around drainage pipe.
 - 5. Attach panel to wall at horizontal mark and at beginning of pipe. Place core side of panel against wall. Use concrete nails from 2 to 6 inches below top of panel, approximately 48 inches apart. Construction adhesives, metal stick pins, or double-sided tape may be used instead of nails. Do not penetrate waterproofing. Before using adhesives, discuss with waterproofing manufacturer.
 - 6. If additional panels are required on same row, cut away 4 inches of installed panel core, install new panel against installed panel, and overlap new panel with installed panel fabric.
 - 7. If additional panels are required, overlap lower panel with 4 inches of fabric.
 - 8. Cut panel as necessary to keep top 12 inches below finish grade.
 - 9. For inside corners, bend panel. For outside corners, cut core to provide 3 inches for overlap.
- J. Place backfill material over compacted drainage course. Place material in loose-depth layers not exceeding 6 inches. Thoroughly compact each layer. Final backfill to finish elevations and slope away from building.

3.05 UNDERSLAB DRAINAGE INSTALLATION

- A. Excavate for underslab drainage system after subgrade material has been compacted but before drainage course has been placed. Include horizontal distance of at least 6 inches between drainage pipe and trench walls. Grade bottom of trench excavations to required slope, and compact to firm, solid bed for drainage system.
- B. Lay flat-style geotextile filter fabric in trench and overlap trench sides.
- C. Place supporting layer of drainage course over compacted subgrade and geotextile filter fabric, to compacted depth of not less than 4 inches.
- D. Encase pipe with sock-style geotextile filter fabric before installing pipe. Connect sock sections with adhesive or tape.

- E. Install drainage piping as indicated in Part 3 "Piping Installation" for underslab subdrainage.
- F. Add drainage course to width of at least 6 inches on side away from wall and to top of pipe to perform tests. Refer to Part 3 "Field Quality Control."
- G. After satisfactory testing, cover drainage piping with drainage course to elevation of bottom of slab, and compact and wrap top of drainage course with flat-style geotextile filter fabric.

3.06 PIPING INSTALLATION

- A. Install piping beginning at low points of system, true to grades and alignment indicated, with unbroken continuity of invert. Bed piping with full bearing in filtering material. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions and other requirements indicated.
 - 1. Foundation Subdrainage: Install piping level and with a minimum cover of 4 inches below matt slab unless otherwise indicated.
 - 2. Underslab Subdrainage: Install piping pitched down in direction of flow, at a minimum slope of 0.5 percent.
 - 3. Retaining-Wall Subdrainage: When water discharges at end of wall into stormwater piping system, install piping level and with a minimum cover of 36 inches unless otherwise indicated.
 - 4. Lay perforated pipe with perforations down.
 - 5. Excavate recesses in trench bottom for bell ends of pipe. Lay pipe with bells facing upslope and with spigot end entered fully into adjacent bell.
- B. Use increasers, reducers, and couplings made for different sizes or materials of pipes and fittings being connected. Reduction of pipe size in direction of flow is prohibited.
- C. Install PE piping according to ASTM D 2321.
- D. Install PVC piping according to ASTM D 2321.

3.07 PIPE JOINT CONSTRUCTION

- A. Join PE pipe, tubing, and fittings with couplings for soil-tight joints according to AASHTO's "Standard Specifications for Highway Bridges," Division II, Section 26.4.2.4, "Joint Properties."
- B. Join perforated PE pipe and fittings with couplings for soil-tight joints according to AASHTO's "Standard Specifications for Highway Bridges," Division II, Section 26.4.2.4 "Joint Properties"; or according to ASTM D 2321 with loose banded, coupled, or push-on joints.
- C. Join PVC pipe and fittings according to ASTM D 3034 with elastomeric seal gaskets according to ASTM D 2321.
- D. Join perforated PVC pipe and fittings according to ASTM D 2729, with loose bell-and-spigot joints.
- E. Special Pipe Couplings: Join piping made of different materials and dimensions with special couplings made for this application. Use couplings that are compatible with and fit materials and dimensions of both pipes.

3.08 BACKWATER VALVE INSTALLATION

- A. Comply with requirements for backwater valves specified in Section 33 41 00 "Storm Utility Drainage Piping."
- B. Install horizontal backwater valves in header piping downstream from perforated subdrainage piping.
- C. Install horizontal backwater valves in piping cleanouts or vaults or where indicated.

3.09 CLEANOUT INSTALLATION

- A. Comply with requirements for cleanouts specified in Section 33 41 00 "Storm Utility Drainage Piping."

- B. Cleanouts for Foundation and Retaining-Wall Subdrainage:
 - 1. Install cleanouts from piping to grade. Locate cleanouts at beginning of piping run and at changes in direction. Install fittings so cleanouts open in direction of flow in piping.
 - 2. In vehicular-traffic areas, use NPS 4 PVC pipe and fittings for piping branch fittings and riser extensions to cleanout. Set cleanout frames and covers in a cast-in-place concrete anchor, as shown on Drawings. Set top of cleanout flush with grade.
 - 3. In non-vehicular-traffic areas, use NPS 4 PVC pipe and fittings for piping branch fittings and riser extensions to cleanout. Set cleanout frames and covers in a cast-in-place concrete anchor, as shown on Drawings. Set top of cleanout 1 inch above grade.
- C. Cleanouts for Underslab Subdrainage:
 - 1. Install cleanouts and riser extensions from piping to top of slab. Locate cleanouts at beginning of piping run and at changes in direction. Install fittings so cleanouts open in direction of flow in piping.
 - 2. Use NPS 4 cast-iron soil pipe and fittings for piping branch fittings and riser extensions to cleanout flush with top of slab.

3.10 CONNECTIONS

- A. Connect low elevations of subdrainage system to building's solid-wall-piping storm drainage system.

3.11 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 - 1. After installing drainage course to top of piping, test drain piping with water to ensure free flow before backfilling.
 - 2. Remove obstructions, replace damaged components, and repeat test until results are satisfactory.
- B. Drain piping will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

3.12 CLEANING

- A. Clear interior of installed piping and structures of dirt and other superfluous material as work progresses. Maintain swab or drag in piping and pull past each joint as it is completed. Place plugs in ends of uncompleted pipe at end of each day or when work stops.

END OF SECTION