



# **PCLS LAKEWOOD INTERIM LIBRARY SITE DEVELOPMENT**

## **PROJECT MANUAL**

Date: August 7, 2023

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### Section 000300- ADVERTISEMENT FOR BID

DATE OF ADVERTISEMENT: Daily Journal of Commerce, Seattle: August 7 and 12, 2023

NAME OF PROJECT: PCLS LAKEWOOD INTERIM LIBRARY  
SITE DEVELOPMENT

MANDATORY PRE-BID PAGE TURN: August 15, 2023, 1:00PM to 2:00PM  
Via Microsoft Teams at link below. If unable to attend, contact Architect to make other arrangements prior to August 11, 2023.

LAST SUBMISSION OF QUESTIONS: August 18, 2023, 4:00PM to Architect  
Answered by August 25, 2023

BIDS DUE: August 31, 2023, 2:00PM to  
[PMcBride@piercecounitylibrary.org](mailto:PMcBride@piercecounitylibrary.org)  
Or mailed to: PCLS, 3005 112<sup>th</sup> St E., Tacoma, WA 98446

DATE OF BID OPENING: August 31, 2023, 2:30PM at PCLS, 3005 112<sup>th</sup> St E.,  
Tacoma, WA 98446  
Or via Microsoft Teams at link below.

#### PROJECT DESCRIPTION:

Solicitation of bids to fully permit and construct site at 10202 Gravelly Lake Dr. SW, Lakewood, WA 98499 based on Design Documents and Project Manual dated August 7, 2023.

The scope of work includes site preparation and development of the 47,672 square foot parcel located at the southwest corner of Gravelly Lake Drive Southwest and Alfaretta Street Southwest in the city of Lakewood, Washington. Scope includes, but is not limited to bringing utilities to the building site from the right of way, grading, paving, landscaping, right of way improvements. Contractor is responsible for the construction of footings, stem walls, and utility stubs to support a new prefabricated library building. Site finish elements include a new public plaza with all associated stairs, ramps, railings, and benches, a new loading area and trash enclosure, and site lighting throughout. Schedule for work is to be completed with owner's contractor that is providing and installing the prefabricated library units.

Construction of site improvements will occur concurrently and in sequence with the delivery and installation of the prefabricated library building by the owner's contractor. Bid documents describe elements to be completed prior to arrival of prefabricated building as well as elements to be constructed after the prefabricated building has been set. Date of building install will be negotiated by owner, selected bidder, and prefabricated building contractor during the contracting process.

The Pierce County Library System (Owner) will receive electronic bids from qualified general contractors ONLY until 2:00PM, August 31, 2023 sent to Petra McBride at

[PMcBride@piercecountylibrary.org](mailto:PMcBride@piercecountylibrary.org). Hard bid submissions may also be submitted to 3005 112<sup>th</sup> Street East, Tacoma, WA 98446. BIDS RECEIVED AFTER 2:00PM WILL NOT BE ACCEPTED.

A public reading of the sealed bids, including Additives, Alternatives, Deductives and Unit Prices, if any, will be conducted at 2:30PM, August 31, 2023 in PCLS Processing & Administrative Center, 3005 112th Street East Tacoma, WA 98446, Meeting Room B. Optional virtual attendance via Microsoft Teams can also be used to view reading of the bids at: <https://teams.microsoft.com/l/meetup-join/>

[Join a Microsoft Teams Meeting by ID | Microsoft Teams](#)

Meeting ID: 231 690 702 586

Passcode: [jbgFvs](#)

#### TIMELINE OF EVENTS FOR BID OPENING

2:00PM	Sealed Base Bid, Additives, Alternates, Deductives, Unit Prices due
2:30PM	Public reading of sealed Base Bid and Additives, Alternates, Deductives

No bid will be considered unless accompanied by a certified or bank cashier's check, or by a bid bond from a state- licensed surety company in an amount of not less than five percent (5%) of the Base Bid including sales tax and Additives, made payable to PIERCE COUNTY LIBRARY SYSTEM.

Bid, Bid Bond and other enclosures shall be enclosed in an opaque, sealed envelope bearing the name and address of the Bidder and addressed to the Owner. Mark lower left corner of the envelope "PCLS Lakewood Library Bid – Site Development."

Bid documents will be available on August 7, 2023. **Plans, specifications, addenda, bidders list, and plan holders list for this project are available through Builder's Exchange of Washington's on-line plan room for the PCLS Lakewood Library. Free-of-charge access is provided to Prime Bidders, Subcontractors, and Vendors by going to <http://bxwa.com> and clicking on "Posted Projects", "Public Works", and "Pierce County Library System". Bidders are encouraged to "Register" in order to receive automatic email notification of future addenda and to be placed on the Bidders List. Contact Builders Exchange of Washington at (425) 258-1303 for assistance.**

Questions should be directed to the project architect **NO LATER THAN 4:00PM, August 18, 2023**: BuildingWork Architects, 159 Western Ave West, Suite 486, Seattle, WA 98119, attn: Kate Weiland, [kate@buildingwork.design](mailto:kate@buildingwork.design) and Maria Ribeiro, [maria@buildingwork.design](mailto:maria@buildingwork.design)

No bidder may withdraw its bid after the hour set for the opening thereof, unless and until the award of contract has been delayed for a period of sixty (60) days.

The Owner reserves the right to reject any and all bids and to waive any informalities. The Owner may also reject any bid for one or more of the following reasons:

- a. Liens, judgments, or claims from previous work,
- b. Evidence of financial insolvency and/or poor credit history,
- c. Lack of previous experience in performing contracts of similar scope and nature,
- d. Bidder has been placed on a State or Federal list of debarred or ineligible contractors.

DATES OF PUBLICATION IN DAILY JOURNAL OF COMMERCE, SEATTLE:

Monday, August 7, 2023  
Saturday, August 12, 2023

Pierce County Library System is an Equal Opportunity Employer.

**SECTION 001000 - INSTRUCTION TO BIDDERS**

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## **DEFINITIONS AND CONDITIONS**

### **DEFINITIONS**

The following terms, listed in alphabetical order, are defined as follows:

**ADDENDUM:** A written or graphic instrument, issued prior to the Bid opening to all Bidders and identified as an Addendum, which modifies or clarifies the Bid Documents.

**ADVERTISEMENT FOR BIDS:** A public notice published in the Official Newspaper of The Daily Journal of Commerce, Seattle soliciting Bids for the Work.

**AGREEMENT FORM:** The written agreement between the Owner and the Contractor setting forth the obligations of the parties there under including, but not limited to, the performance of the Work, the basis of payment and the Contract Time.

**ALTERNATE** A unit of Work or group of Bid items, identified separately in the Bid, which permits a choice of different methods or material of construction for performing the same work.

**ADDITIVE ALTERNATE:** A supplemental unit of work or group of Bid items, identified separately in the Bid that may, at the discretion of the Owner, be added to the Base Bid.

**DEDUCTIVE ALTERNATE:** A supplemental unit of work or group of Bid items, identified separately in the Bid that may, at the discretion of the Owner, be deducted from the Base Bid.

**ARCHITECT:** A licensed registered Architect of the State of Washington, acting directly or through duly authorized representatives in the administrative management of the Contract.

**BASE BID:** That amount stipulated in a bid for which the Bidder offers to do the Work and perform the Contract excluding Alternates and taxes collected separately pursuant to Washington State Excise Tax Rules. The terms "Proposal," "Bid Proposal," and like terms are synonymous.

**BID:** Those written amounts stipulated in a bid for which the Bidder offers to do the Work and perform the Contract including Alternates and taxes collected separately pursuant to Washington State Excise Tax Rules. The terms "Proposal," "Bid Proposal," and like terms are synonymous.

**BID DOCUMENTS:** The Advertisement for Bids, Instructions to Bidders, Bid Form, and the proposed Contract Documents, including any Addenda issued prior to Bid opening.

**BID FORM:** The Bid and the Affidavit included in the Bid Documents.

**BID GUARANTY:** Bid bond, cash, cashier's check or certified check accompanying the Bid as a guarantee that the Bidder will enter into an agreement with the Owner for performance of the Work if the Bidder is Awarded the Contract.

**BIDDER:** An individual, partnership, firm, corporation, or joint venture, submitting a Bid. When required by law or otherwise such individual, partnership, firm, corporation or joint venture shall be pre-qualified.

**CHANGE ORDER:** See Section 007000 Article 7.2.1.

**CONTRACT:** See Section 007000, Article 1.1.2

**CONTRACT BOND:** The approved form of security, furnished by the Contractor and the Contractor's Surety, guaranteeing completion of the Work and payment to persons supplying labor and materials in the prosecution of the Work. (SEE Section 006100).

**CONTRACT COMPLETION DATE:** See "DATES"

**CONTRACT DOCUMENTS:** See Section 007000, Article 1.1.1

**CONTRACT PRICE:**

1. **Awarded Contract Price:** The lump sum base bid for all items of Work, including accepted Alternates, and applicable taxes, upon which the Award is made.
2. **Revised Contract Price:** The Awarded Contract Price, at any time after Award but prior to the Completion Date, adjusted as a result of approved Change Orders.
3. **Final Contract Price:** The total amount of money payable to the Contractor under the terms and conditions of the Contract

**CONTRACT TIME:** See "DATES"

**CONTRACTOR:** The individual or entity contracting with the Owner to do the Work.

**DATES:** The following are Contract milestone dates:

1. **Bid Opening Date:** The date on which Bids for the Work are opened and read publicly.
2. **Award Date:** The date on which the Owner formally accepts for the Work, the lowest responsive Bid of a responsible Bidder and Awards the Contract.
3. **Contract Completion Date:** The date by which the Work is contractually required to be physically completed. The Contract Completion Date will be stated in the Notice to Proceed. The Architect will revise this date in writing whenever there is an extension of the Contract Time.
4. **Notice to Proceed Date:** The date stated in the Notice to Proceed on which the Contract Time begins.
5. **Substantial Completion Date:** The date the Architect determines the Owner has full and unrestricted use and benefit of the facilities, both from an operational and safety standpoint, and only minor incidental work, replacement of temporary substitute facilities, or correction or repair remain for the physical completion of the total Contract.
6. **Physical Completion Date:** The day all Work is physically complete on the Project. All documentation required by the Contract and required by law does not necessarily need to be furnished by the Contractor by this date.
7. **Final Completion Date:** The date, certified in writing by the Owner, when the Work specified in the Contract Documents is completed and all the obligations of the Contractor under the Contract are fulfilled. The Contractor must furnish all documentation required by the Contract and by law before this date is established.

DAY: Unless otherwise specified, Day(s) means Calendar Day(s).

1. Business Day: Any day other than Saturday, Sunday, or Holiday.
2. Calendar Day: The time period of twenty-four hours measured from midnight to the next midnight.
3. Non-Working Day: The following are Non-Working Days:
  - Saturday
  - Sunday
  - Holiday
  - A day the Contract specifically requires the Contractor to suspend the Work.
4. Working Day: A day not otherwise defined as a Non-Working Day.

DRAWING: See Section 007000 Article 1.1.5

FORM OF PROPOSAL: See "Bid".

HOLIDAY: A day designated by as exempt from labor. Pursuant to RCW 1.16.050. When any Holiday falls on a Sunday, the following Monday shall be considered a Holiday. When any Holiday falls on a Saturday, the preceding Friday shall be considered a Holiday. The Pierce County Library System recognizes the following Holidays:

- First day of January (New Year's Day)
- Third Monday of January (Martin Luther King, Jr.'s Birthday)
- Third Monday of February (President's Day)
- Last Monday of May (Memorial Day)
- Nineteenth day of June (Juneteenth)
- Fourth day of July (Independence Day)
- First Monday of September (Labor Day)
- Eleventh day of November (Veterans' Day)
- Fourth Thursday of November and the Friday immediately following (Thanksgiving Day)
- Twenty-fourth day of December (Christmas Eve)
- Twenty-fifth day of December (Christmas Day)

LIQUIDATED DAMAGE: See Section 007000 Article 8.2.4.

MATERIAL: Any substance specified for use in the construction of the Project that enters into and forms a part of the finished Project. The substance shall be capable of being so used and shall be furnished for that purpose.

MATERIALMAN: A person or entity that furnishes a Material, supply, commodity, equipment, or manufactured or fabricated product and does not perform labor at the Project Site; a Supplier.

NOTICE: A written communication to the Owner, Architect, Contractor, or Surety relative to the Work.

NOTICE OF INTENT TO AWARD: The Owner's written Notice to the successful Bidder of their intention to accept the Bid.

NOTICE OF AWARD: The Owner's Written Notice to the successful Bidder accepting the Bid.

OWNER The Pierce County Library System or its authorized representative, also referred to as Project Manager.

PROJECT: See Section 007000, Article 1.

PROJECT MANUAL: See Section 007000, Article 1.

PROJECT SITE: The geographical location usually defined by legal boundary lines, where the Work is to be performed.

SUBCONTRACTOR: An individual or entity contractually obligated to the Contractor to perform a portion of the Work. Also see Supplier.

SUPPLIER: See "Materialman."

SURETY: A surety company that is bound with the Contractor to ensure faithful performance of the Contract, and payment of all laborers, mechanics, Subcontractors and Materialmen and all persons or entities that supply any such person with provisions and supplies for the carrying on of the Work.

UNIT PRICE: A fixed price for construction per unit of measurement.

WORK: See Section 007000, Article 1.

### **QUALIFICATIONS OF BIDDERS**

Bidders shall be qualified by experience, financing, equipment, and organization to do the work called for in the Contract Documents. The Owner reserves the right to take whatever action it deems necessary to ascertain the ability of a Bidder to perform the work satisfactorily. This action may include conducting an evaluation of a Bidder's qualifications and references prior to Award.

### **BID DOCUMENTS**

Information as to where Bid Documents can be obtained or reviewed will be found in the Advertisement for Bid (See Section 000300).

### **UNIT PRICES**

The quantities shown on the Form of Proposal Section 003000 Unit Prices, if any are estimates only and are stated only for Bid comparison purposes. The Owner does not warrant, expressly or by implication that actual quantities of the Work will correspond with those estimated. The Owner reserves the right to increase or decrease the amount of any item of Work associated with a Unit Price, or to make other changes in the Work as necessary. Payment will be made on the basis of the actual quantities of each item of Work completed in accordance with the Contract Documents.

Unit Prices must be submitted with the sealed bids. See Section 003000, Form of Proposal.

### **EXAMINATION OF BID DOCUMENTS AND PROJECT SITE**

#### **GENERAL**

Bidders shall carefully examine the Bid Documents. Submittal of a Bid shall be conclusive evidence that the Bidder has made these examinations and understands all requirements for the performance of the Work. By submitting a Bid, the Bidder further warrants, agrees and acknowledges that the Bidder:

has taken all steps necessary to ascertain the full scope, nature and location of the Work;  
has investigated and is satisfied as to the general and local conditions which can affect the Work or its cost, including but not limited to:

- conditions bearing upon acquisition, transportation, disposal, handling, and storage of materials;
- the availability of labor, materials, water, electric power, and roads;
- uncertainties of weather, river stages, tides, or similar physical conditions at the site;
- the conformation and condition of the site;
- the character of equipment and facilities needed preliminary to and during work performance;
- site and environmental conditions which by statute, law, or regulation require specific training and certifications for employees;

is satisfied as to the character, quality, and quantity of site development construction or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the Bid Documents and other information made a part of this Contract;

is satisfied as to the adequacy of the amount of time allowed for physical completion of the Contract.

Any failure of the Bidder to take the actions described and acknowledged above shall not relieve the Bidder from responsibility:

- for estimating properly the difficulty and cost of successfully performing the Work; and
- from proceeding to successfully perform the Work without additional expense to the Owner.

The Bidder agrees that the Owner shall not be liable to the Bidder for any claim whatsoever, including claims for additional payment or time, if the claim directly or indirectly results from the Bidder's failure to investigate and become sufficiently knowledgeable of the conditions under which the Contract is to be performed.

The Bidder shall be familiar and comply with all Federal, State, and local laws, ordinances, and regulations that might affect those engaged in the Work. The Bidder agrees not to assert and the Owner will not consider any plea of misunderstanding or ignorance of such requirements.

Bid prices shall reflect what the Bidder anticipates to be the cost of completing the Work, including methods, materials, labor, and equipment. The Bidder will not be compensated for any costs that exceed those in the Bid prices except as the Contract Documents may provide.

The Bidder is advised to include in its Bid the applicable costs required by Section 007000 - Article 11 related to insurance and bonds.

A claim will not be allowed because of any ambiguity in the Contract Documents if:

the Bidder discovers an ambiguity but fails to notify the Owner, or

the Bidder failed to discover any ambiguity that would have been discovered by a reasonably prudent Contractor in preparing its Bid.

Any prospective Bidder desiring an explanation or interpretation of the Bid Documents must request the explanation or interpretation in writing no later than **5 business days prior to the Bid Date**. Oral explanations, interpretations, or instructions given by anyone before Award will not be binding on the Owner. Any information given to a prospective Bidder concerning any of the Bid Documents will be furnished to all prospective Bidders as an Addendum if:

that information is deemed by the Owner to be necessary in submitting a Bid, or

the Owner concludes that the lack of information would be prejudicial to other prospective Bidders.

## **BID PROCEDURES**

### **FORM AND STYLE OF BID**

A Bid shall be submitted only on the Form of Proposal (SEE Section 003000) issued by the Owner. The Bid Form will identify the Project and may describe the Work by listing estimated quantities, units of measure, items of work, and Materials to be furnished.

Bids shall be completed by typing or shall be printed in ink by hand, preferably in black ink. A price shall be submitted for each Bid item listed.

Required certifications, as appropriate, shall be included on the Affidavit of the Bid Form.

The signer of the Bid shall initial any correction to a Bid made by interlineation, alteration, or erasure. The Bidder shall make no stipulation on the Bid Form nor qualify the Bid in any manner. A Bid shall be submitted for every Additive, Alternate, or Deductive identified in the Bid Form, unless otherwise specified.

A Bid by a corporation shall be executed in the corporate name, by the president or a vice president {or other corporate officer, accompanied by evidence of authority to sign}.

A Bid by a partnership {including a joint venture} shall be executed in the partnership name, and signed by a partner.

### **ADDENDA**

Questions regarding the meaning or intent of the Bid Documents shall be submitted to the Architect in writing. If the Architect determines it warranted, modifications or clarifications will be provided by Addenda. Only questions answered by formal written Addenda will be binding on the parties. Oral or other interpretations or clarifications will be without legal effect.

Addenda may be issued to modify or clarify the Bid Documents. Addenda will be posted on Builder's Exchange, mailed or faxed to persons or organizations to whom the Bid Documents were issued and who have registered with Builder's Exchange as Planholders. The Bidder shall acknowledge receipt of each Addendum by filling in the appropriate spaces on the Bid Form Affidavit.

The Bidder should always check with the Architect the day before Bids are opened to ensure all Addenda have been received. The address and telephone number of the Owner's office or other designated locations where copies of Bid Documents and addenda may be obtained is stated in the Advertisement for Bids.

### **BID GUARANTY**

A Bid shall be accompanied by:

a certified or cashier's check payable to the order of Pierce County Library System;

cash; or

a Bid Guaranty {See Section 004100}.

The cash, check, or bond shall be for a sum of not less than five percent of the maximum Bid amount that could be Awarded, including sales tax and Additives, if applicable. A Bid will not be accepted or considered unless accompanied by such check, cash, or Bid bond.

If a Bid bond accompanies a Bid, a Surety company authorized to do business in the State of Washington shall furnish the Bid bond. In order to be authorized to do business in the state of Washington, the Surety must be registered with the Washington State Insurance Commissioner and the Surety's name must appear on the current list of authorized insurance companies published by the Office of the Insurance Commissioner.

Bid bonds shall contain the following:

the name and nature of the improvement;

the Pierce County Library System named as obligee;

the amount of the Bid bond stated either as a dollar figure or as a percentage that represents five percent of the maximum Bid amount that could be Awarded;

the signature of the Bidder's officer empowered to sign official statements. The signature of the person authorized to submit the Bid should agree with the signature on the bond, and the title of the person must accompany the said signature; and

the signature of the Surety's officer empowered to sign the bond and the power of attorney.

### **NONCOLLUSION REQUIREMENT**

The Bidder, by signing and having the Bid Form notarized, swears, deposes and says that the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free, competitive bidding in the preparation and submission of a Bid to the Owner for consideration in the Award of a Contract for the Work.

### **BID SUBMITTAL**

#### **GENERAL**

The Bid Form shall be submitted at the time and place specified in the Advertisement for Bids. The Bid Form, together with the Bid Guaranty and such other documentation as is required, shall be enclosed as attachments marked with the Project name and the Bidder's name and address, and be addressed to:

[PMcBride@piercecountylibrary.org](mailto:PMcBride@piercecountylibrary.org)

Attention: Petra McBride, Manager of Executive Office Admin  
ph: 253-548-3420  
Subject: PCLS Lakewood Interim Library Site Development

The Bidder shall assume full responsibility for the timely delivery at the location designated in the Advertisement for Bids for receipt of Bids. A Bid submitted or delivered after the time fixed for receipt of Bids will not be accepted.

#### **CHANGE OF BID SUBMITTAL DATE**

The Owner reserves the right to change the date and time for Bid submittal. Notification of the change will be by Addendum.

### **SUBCONTRACTOR LIST**

Pursuant to RCW 39.30.060, on a public works contract that is estimated to cost \$1 million or more, the Bidder is required to:

... submit as part of the bid, or within one hour after the published bid submittal time, the names of the subcontractors with whom the bidder, if awarded the contract, will subcontract for performance of the work of heating, ventilation and air conditioning, plumbing as described in chapter 18.106 RCW, and electrical as described in chapter 19.28 RCW, or to name itself for the work. The bidder shall not list more than one subcontractor for each category of work identified, unless subcontractors vary with bid alternates, in which case the bidder must indicate which subcontractor will be used for which alternate. Failure of the bidder to submit as part of the bid the names of such subcontractors or to name itself to perform such work or the naming of two or more subcontractors to perform the same work shall render the bidders' bid nonresponsive and, therefore, void. The requirement of this section to name the bidder's proposed heating, ventilation and air conditioning, plumbing, and electrical subcontractors applies only to proposed heating, ventilation and air conditioning, plumbing, and electrical subcontractors who will contract directly with the general contractor submitting the bid to the public entity.

### **MODIFICATION OR WITHDRAWAL OF BID**

After submitting a Bid, the Bidder may withdraw or revise it if:

- the Bidder submits a written request signed by an authorized person; and
- the Owner receives the request before the time for receipt of Bids.

If the request for modification or withdrawal is by telegram, written confirmation over the signature of the Bidder shall be mailed and postmarked on or before the time designated for receipt of Bids.

The original Bid, as revised in writing, and received prior to the time designated for receipt of Bids, will be acceptable as the official Bid.

A Bid may not be modified, withdrawn, or canceled by the Bidder after the time for Bid submittal unless the Award is delayed for a period exceeding the limit set forth for Award or a Bidder's claim of error is upheld by the Owner.

### **ADDITIVES. ALTERNATES. DEDUCTIVES**

The Owner reserves the right to arrange the Bid Form with Alternates, Additives, or Deductives, if such be to the Owner's advantage. The Bidder shall Bid on all Alternates, Additives, or Deductives set forth in the Bid Form unless otherwise specified in the Project Manual.

Alternate Bids must be submitted with the Bid.

### **PUBLIC OPENING OF BIDS**

Bids will be opened and read as indicated in the Advertisement for Bids (See Section 000300).

### **IRREGULAR BIDS**

A Bid will be considered irregular and non-responsive, and will be rejected if:

- The Bidder has not been prequalified when so required.

The authorized Bid Form is not used or is altered.

The completed Bid Form contains any unauthorized addition, deletion, alternate Bid, or condition.

The Bidder adds provisions reserving the right to accept or reject the Award or to enter into the Contract.

A price per unit cannot be determined, where applicable.

For Projects estimated to cost \$1,000,000 or more, the Bidder did not comply with the Subcontractor list requirements.

The Bid does not constitute a definite and unqualified offer to meet the material terms of the Bid invitation.

A Bid may be considered irregular and may be rejected if:

The Bid Guaranty is insufficient or improper.

Any of the unit prices are excessively unbalanced (either above or below the amount of a reasonable Bid} to the potential detriment of the Owner.

Receipt of Addenda is not acknowledged.

A member of a partnership and the partnership submit a Bid for the same Project (in such an instance, both Bids may be rejected}.

The entries in the Bid Form are not typewritten or entered in ink.

The Bid is not properly executed.

The Bidder did not Bid on all Additives, Deductives, or Alternates, when required.

The Bid does not include a unit price for every Bid item.

### **DISQUALIFICATIONS OF BIDDERS**

A Bidder may be deemed not responsible and its Bid rejected if:

More than one Bid is submitted for the same Project from a Bidder under the same or different names.

Evidence of collusion exists with any other Bidder, potential Bidder or party. Participants in collusion will be restricted from submitting further Bids.

A Bidder, in the opinion of the Owner, is not qualified for the work specified, or if the Bid exceeds the authorized prequalification amount as may have been determined by a prequalification or pre-Award evaluation of the Bidder.

An unsatisfactory performance record exists as shown by past or current work for the Owner, or for others, as judged from the standpoint of conduct of the work, environmental and safety compliance records, workmanship, progress, affirmative action, or equal employment opportunity practices.

There is uncompleted work (for the Owner or others) which might hinder or prevent the prompt physical completion of the Work Bid upon.

The Bidder failed to settle bills for labor or materials on past or current contracts.

The Bidder has failed to complete a public contract or has been convicted of a crime arising from a previous public contract.

The Bidder is unable, financially or otherwise, to perform the Work.

A Bidder is not authorized to do business in the State of Washington (not registered in accordance with Chapter 18.27 RCW).

For any other reason deemed proper by the Owner.

## **AWARD OF CONTRACT**

### **BID TABULATION**

The Base Bid, including the summation of additive alternates, the summation of deductive alternates, will be used for award purposes, and to fix the awarded contract price and the amount of the contract bond. Owner reserves the right to reject or accept any alternate(s) and to award the bid based on the Base Bid plus any combination of Additive and/or Deductive Alternates.

### **CLAIM OF ERROR**

A Bidder who wishes to claim error after the Bids have been opened and tabulated shall submit a signed and notarized affidavit, accompanied by original worksheets used in the preparation of the Bid, requesting relief from the responsibilities of Award. The affidavit shall describe the specific error(s) and certify that the worksheets are the originals used in the preparation of the Bid. The affidavit and the worksheets shall be submitted to the following by 5:00 p.m. on the next Business Day after Bid opening or the claim will not be considered.

Pierce County Library System  
Processing and Administration Center  
3005 112<sup>th</sup> St. E.  
Tacoma, WA 98446-2215  
Attention: Petra McBride, Manager of Exec Office Admin,  
[PMcBride@piercecountylibrary.org](mailto:PMcBride@piercecountylibrary.org)  
Ph: 253-548-3420

The Architect will review the certified work sheets to determine the validity of the claimed error and make recommendation to the Owner. If the Owner concurs in the claim of error, the Bidder will be relieved of responsibility and the Bid Guaranty of the Bidder will be returned. Thereafter, at the discretion of the Owner, all Bids may be rejected or Award made to the next lowest responsive, responsible Bidder.

### **PRE-AWARD INFORMATION**

The Owner will evaluate all Bids to determine the lowest responsive, responsible Bidder. This evaluation may include investigations to establish the responsibility, qualifications and financial ability of the Bidder to do the Work.

A Bidder whose Bid is under consideration for Award shall, upon request, promptly complete and submit Section 001100 Pre-award Bidder Information. Documented information shall be submitted within 7-days after receipt of a written request from the Owner.

In addition, a Bidder under consideration for Award may be required to furnish:

- a complete statement as to the origin, composition, and manufacture of any and all Materials to be used in the Project, together with samples which may in turn be subjected to tests to determine their quality and fitness for the Work;

- a breakdown of costs assigned to any Bid item; and

- such additional information as the Owner may request to assist the Owner in ascertaining the Bidder's general ability to perform the Work.

## **RIGHTS OF THE OWNER**

In addition to such other rights as may be reserved elsewhere in the Contract Documents, the Owner reserves the right to:

Reject any or all Bids,

Waive informalities in the Bidding,

Accept the lowest responsive Bid of a responsible Bidder,

Correct arithmetical errors in a Bid,

Re-advertise for Bids,

Revise or cancel the Work,

Require the Work be done in another way if, in the opinion of the Owner, the best interest of the public will be served, and

Award such Additives, Deductives, or Alternates, as may be set forth in the Bid Form.

## **AWARD OF CONTRACT**

The Owner reserves the right to Award such Additives, Deductives or Alternates as may be set forth in the Bid Form.

If a Contract is to be awarded, the Owner will endeavor to Award the same to the lowest, responsive, Bidder within 60 days after the Bid Opening Date. If a Contract is not awarded within that 60-day Award period, all Bids will expire and will not be considered further unless the Owner deems it necessary to try to secure an extension of the time period for Bid evaluation and the allowable period for Award. In such event, prior to the end of the 60-day Award period, the Owner shall issue an invitation to the apparent low Bidder and such other Bidders as the Owner, in the exercise of its discretion, deems appropriate, to extend the period each such Bid is valid and capable of Owner acceptance.

The following conditions shall apply to each such extension:

the extension shall be by mutual consent between the Owner and the Bidder;

the extension shall be documented in writing in a form acceptable to the Owner; and,

the written extension shall be received by the Owner prior to the expiration of the initial 60-day period for Award.

A Notice of Award will be mailed to the successful Bidder following the Owner's Award.

## **EXECUTION OF CONTRACT**

### **GENERAL**

The Owner is prohibited by RCW 39.06.010 from executing a contract with a contractor who is not registered or licensed under Washington law. If required by the City of Lakewood, the Contractor and Subcontractors performing work within the City of Lakewood must acquire a City of Lakewood Business License.

At the Owner's request, the Contractor shall submit legible copies of the Contractor's State of Washington Contractor's Registration and City of Lakewood Business License to the Owner, prior to Notice of Award of Contract.

### **TIME TO EXECUTE AGREEMENT FORM**

The original and one copy of the Project Manual, including the unsigned "Standard Form of Agreement between Contractor and Owner for Construction of Buildings," AIA Document No. A101, 2007 edition, issued by the American Institute of Architects, will be available for signature by the successful Bidder at:

Pierce County Library System  
Processing and Administration Center 3005 112<sup>th</sup> St. E.  
Tacoma, WA 98446-2215  
Attention: Christina Neville-Neil, Facilities Project Manager  
Ph: 253-548-3475

The documents will be ready on the first Business Day following Notice of Intent to Award, or shortly thereafter. See Section 005000 Standard Form of Agreement for a draft copy of AIA Document A101-2007.

The successful Bidder shall sign and return to the Pierce County Library System Processing and Administration Center within **7 calendar days** of the Notice of Intent to Award:

- the original of the Agreement Form (See Section 005000 Standard Form of Agreement);
- the Performance and Payment Bond (See Section 006100 Performance and Payment Bond); and
- acceptable evidence of insurance (See Section 007000 General Conditions - Article 11 Insurance and Bonds).

The above time limit may be extended by mutual agreement between the Owner and the successful Bidder.

The Owner will forward the Notice of Award and a copy of the fully executed Agreement Form to the successful Bidder for incorporation into the successful Bidder's copy of the Project Manual.

No work shall begin within the Project limits or within sites furnished by the Owner until the successful Bidder has received the fully executed Agreement Form and has been given the Notice to Proceed. The Contractor shall bear all risks for any work begun prior to the issuance of the Notice to Proceed.

## **PAYMENT AND PERFORMANCE BOND**

See Section 006100, Payment and Performance Bond.

If Contractor is submitting their own form, it must be submitted to the Owner for approval.

## **RECORDS RETENTION**

The contractor shall, within seven days of Contract Award, collect copies of all documents and written materials relating to the Project on which he relied in arriving at his bid, seal the copies in a package, and deliver the sealed package to an escrow company or similar third party approved by the Owner. The conditions of the escrow shall be that the sealed package will be kept safe and unopened until the Owner certifies that the Project has achieved Final Completion and that the Contractor has signed a satisfactory release of Claims arising from the Project. However, if the Contractor asserts a claim against the Owner as to which the bid materials are relevant evidence, the package shall be opened at the Owner's request and the Owner shall be allowed to review and copy all of the contents.

## **FAILURE TO EXECUTE THE CONTRACT**

The Bidder's Bid Guaranty will be forfeited if the Bidder to whom the Award was made fails to:

- execute the Agreement Form within the required time period;
- furnish satisfactory bond(s) and insurance(s) within the required time period; or
- refuses to enter into a Contract with the Owner.

The Owner may then Award the Contract to the second lowest responsible Bidder.

If the second lowest responsive, responsible Bidder fails to execute the Agreement Form, and furnish satisfactory bond(s) and insurance(s) within 7 **days** after Award has been made to the second Bidder, or within the time period mutually agreed upon by the Owner and second Bidder, the second Bidder's Bid Guaranty will also be forfeited. The Owner may issue Notices of Award successively in a like manner to the remaining lowest responsive, responsible Bidders until the Agreement Form is executed and bond(s) and insurance(s) furnished, by a responsible Bidder, or the remaining Bids are rejected.

The time for the successful Bidder to execute the Agreement Form and return the Project Manual and furnish satisfactory bond(s) and insurance(s) may be extended if requested by the Bidder, and the Owner deems circumstances warrant the extension.

## **RETURN OF BID GUARANTY**

After the Agreement Form has been executed and the required bond(s) and insurance(s) approved by the Owner, the Bid Guaranty in the form of cash or check will be returned to the successful Bidder. A Bid Guaranty in the form of a Bid Bond from the successful Bidder shall be filed with the executed Contract. A Bid Guaranty in the form of cash or check will be returned to each unsuccessful Bidder after Contract Award or after all Bids have been rejected. Bid Bonds of unsuccessful Bidders will be retained for 30-days after the Contract has been executed, and then disposed of, unless return is requested by an unsuccessful Bidder.

## **APPEALS**

Any protest of an intended Award must be filed by 5:00 P.M. on the fifth Business Day from the date of Bid opening. An appeal of a notice that a Bid is non-responsive or a Bidder is not responsible must be filed by 5:00 PM on the third Business Day of such notification. All such protests or appeals shall be filed with:

PCLS LAKEWOOD INTERIM LIBRARY  
SITE DEVELOPMENT

August 7, 2023  
PROJECT MANUAL

Pierce County Library System  
Processing and Administration Center  
3005 112<sup>th</sup> St. E.  
Tacoma, WA 98446-2215  
Attention: Christina Neville-Neil, Facilities Project Manager  
[CNeville-neil@piercecountylibrary.org](mailto:CNeville-neil@piercecountylibrary.org)  
Ph: 253-548-3475

**END OF SECTION 001000**

**Section 001100- PREAWARD BIDDER INFORMATION**

**REQUIRED INFORMATION**

The following worksheets are to be completed only by Bidder whose Bid is under consideration for Award, upon request of the Owner and within 3 calendar days of the request.

Pre-award Bidder Information

Questions regarding this information should be directed to:

Christina Neville-Neil, Facilities Project Manager  
Pierce County Library System  
Phone: (253) 548-3475  
[CNeville-neil@piercecountylibrary.org](mailto:CNeville-neil@piercecountylibrary.org)

Submit all items within 3 business days of the request to:

Pierce County Library System  
3005 112<sup>th</sup> St. E  
Tacoma, WA 98446-2215  
Attn: Christina Neville-Neil, Facilities Project Manager  
[CNeville-Neil@piercecountylibrary.org](mailto:CNeville-Neil@piercecountylibrary.org)

1. PREAWAR.D BIDDER INFORMATION

Firm name: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Telephone no.: \_\_\_\_\_

2. Bidder has been in business continuously from \_\_\_\_\_ to \_\_\_\_\_ (indicate in years).
3. Bidder has had experience in work comparable in value and scope with that required under the proposed contract:
- a. as a prime contractor for \_\_\_\_\_ years;
  - b. as a subcontractor for \_\_\_\_\_ years.
4. List two projects of the Bidder, completed in the last five (5) years, that are similar in character and in magnitude to that required in the proposed contract:

a. Project 1  
Year \_\_\_\_\_  
Owner \_\_\_\_\_  
Project Name \_\_\_\_\_  
Location \_\_\_\_\_  
Contract Amount \$ \_\_\_\_\_

b. Project 2  
Year \_\_\_\_\_  
Owner \_\_\_\_\_  
Project Name \_\_\_\_\_  
Location \_\_\_\_\_  
Contract Amount \$ \_\_\_\_\_

5. Furnish references for information concerning the work as listed above (list references corresponding to the projects listed in No. 4 above):
- a. Project 1  
Name \_\_\_\_\_  
Contact \_\_\_\_\_
  - b. Project 2  
Name \_\_\_\_\_  
Contact \_\_\_\_\_

6. List the supervisory personnel to be employed by the Bidder and available for work on this Project:
- a. Project Manager \_\_\_\_\_

Furnish a detailed resume of the qualifications, previous employers and experience of the Supervisory personnel proposed to be assigned to this Project:

7. The following subcontractors are proposed to be employed for major portions of the construction.

Major portions include any subcontract over 1% of total contract).

Name	Trade	% of Total Contract
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

- a. Named subcontractors must be competent in their fields of work. General Contractor assumes responsibility for quality of work performed by subcontractors.
  - b. If Contractor proposes to perform any of listed items with own staff, so state on this form and demonstrate competence in those fields of work.
  - c. In the event any of these subcontractors are not approved, Contractor agrees to propose other subcontractors for listed work, until Owner/Architect approves, and further agrees that approved subcontractors may not be changed without Owner's written consent.
8. Enclose a copy of Bidder's last annual financial statement or balance sheet showing assets, liabilities and net worth.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name and Title

\_\_\_\_\_  
Date

## **SECTION 002010 - BIDDER'S CHECKLIST**

### **1. REQUIRED FORMS FOR BID**

The Bidder shall submit the following forms, which must be executed in full and submitted with the proposal.

- a. Form of Proposal, fully filled out and signed by authorized individual and notarized. (use Form in Section 003000)
- b. Bid Guaranty, Bond or Bid Deposit (refer to Section 004100)
- c. Statement of Bidder's Qualifications (refer to Section 004513)
- d. Non-Collusion Certificate (refer to Section 004519)

### **2. PRE-AWARD BIDDER INFORMATION**

Bidder shall submit the following form:

- a. Pre-Award Bidder Information (refer to Section 001100)

### **3. AGREEMENT FORMS**

The following forms are to be executed and the following Certificates of Insurance are to be provided after the Contract is awarded and prior to Notice to Proceed.

- a. Payment and Performance Bond
- b. Certificate of Insurance
- c. Certificate of Builders Risk
  - i. "All Risk" Insurance

**END OF SECTION 002010**

## **SECTION 003000 - FORM OF PROPOSAL**

The undersigned, having carefully examined the Contract Documents entitled

### **PCLS LAKEWOOD INTERIM LIBRARY SITE DEVELOPMENT**

including Volume 1 of the Project Manual and the Drawings similarly entitled, as well as the preliminary site development drawings of the proposed work, and being familiar with all of the conditions affecting the construction of the proposed project, hereby proposes to furnish all labor, materials and supplies, insurance and bonds, and to construct the Project and perform all work as required by and in strict accordance with the Contract Documents and all addenda at the prices stated below.

**All work related to the PCLS LAKEWOOD INTERIM LIBRARY SITE DEVELOPMENT project, as required by the contract documents and all addenda.**

#### **BASE BID:**

The undersigned agrees to perform the Work described in the Contract and as modified by all addenda for the Lump Sum of

---

(Write out dollar amount in space above.) (Do not include Washington State Sales Tax.)

Dollars (\$ \_\_\_\_\_ )

Amounts shall be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.

#### **STATE SALES TAX**

None of the above bids include Washington State Sales Tax.

#### **CONTRACT**

If the undersigned be notified of the acceptance of this proposal within sixty (60) days of the time set for the opening of bids, the undersigned agrees to execute a contract for the above Work, for a compensation computed from the above named sums, in the "Standard Form of Agreement between Owner and Contractor," AIA Document No. A101, 2007 edition, issued by the American Institute of Architects and to give bonds as required by the Contract Documents (see Section 005000 Standard Form of Agreement).

#### **TIME OF COMPLETION**

The undersigned hereby agrees to commence work under this Contract on or before a date to be specified in a written "Notice to Proceed," and to Substantially Complete the Work no later than or no earlier than **120** calendar days after the date of "Notice to Proceed." Final Completion shall be **120** calendar days after the date of "Notice to Proceed."

As required in Section 007000 General Conditions Article 3.10, the "Baseline" schedule must show the Substantial Completion Date as an activity. The Substantial Completion Date shall be calculated by adding the calendar days noted above to the date of the Notice to Proceed. Baseline schedules indicating a Substantial Completion date different than the date, as calculated using this method, will not be accepted.

**ANTICIPATED PROJECT TIMELINE** (Preliminary; final dates may vary):

<u>Milestone</u>	<u>Date</u>
Bid Opening:	August 31, 2023
Bid Review/Award (by PCLS):	August 31-September 5, 2023
Notice of Intent to Award (by PCLS):	September 5, 2023
Contract Negotiation:	September 5-8, 2023
Contract Signing:	September 8, 2023
Bond Procurement:	September 8, 2023
Notice to Proceed/Kick-off meeting:	September 11, 2023
Foundation Complete	October 13, 2023
Substantial Completion:	January 8, 2024
Punchlist review (by architects):	January 8, 2024
Punchlist completion (by Contractor):	January 26, 2024
Closeout documents (by Contractor):	January 26, 2024
Final Acceptance/COO:	TBD

### **LIQUIDATED DAMAGES**

The undersigned further agrees to pay as fixed, agreed liquidated damages, but not as a penalty, the sum of \$500 per calendar day, as described in Section 0072600 Addendum to AIA A101 and A201 - 2007 Contract.

### **REINSTATEMENT OF UNACCEPTED ALTERNATES**

The undersigned further agrees that the Owner shall have the right to reinstate, at the bid price, any alternate bid not incorporated into the Contract if the Owner so notifies the Contractor within thirty (30) calendar days after the signing of the Contract.

### **BID GUARANTY**

The undersigned further agrees that the certified or bank cashier's check or bid bond (See Section 004100 Bid Guaranty) payable to the Owner, accompanying this proposal, in the amount of five percent (5%) of the base bid is the measure of liquidated damages which the Owner will sustain by the failure of the undersigned to execute and deliver the above-named Contract and the associated performance bond, and that if the undersigned defaults in executing that Contract and in furnishing the performance bond within ten (10) days of written notification of the award of the Contract to the Contractor, then the amount of the check or bid bond shall be due and forfeited to the Owner. If this proposal is not accepted within sixty (60) days after the opening of bids, or if the undersigned executes and delivers said Contract and performance bond, the check shall be returned to the Contractor or this bid bond shall become null and void.

### **ADDENDA**

Receipt of Addenda numbered \_\_\_\_\_ through \_\_\_\_\_ is hereby acknowledged.

---

Bidder Signature

---

Legal name of Bidder

\_\_\_\_\_  
By, Title

\_\_\_\_\_  
State of Washington Contractor's  
Registration No.

\_\_\_\_\_  
Street or Building Address

\_\_\_\_\_  
State of Washington Worker's  
Compensation No.

\_\_\_\_\_  
City, State, Zip

\_\_\_\_\_  
Federal Tax ID No.

\_\_\_\_\_  
Telephone

\_\_\_\_\_  
City of Lakewood Business License No.  
(if required by City of Lakewood)

**Other documents required to be submitted with bid (refer to other specification sections):**

- 00 45 13      Statement of Bidder's Qualifications
- 00 45 19      Non-Collusion Certificate

**ACKNOWLEDGEMENT OF PRINCIPAL OF BIDDER, IF A CORPORATION**

State of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) ss:

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ before me personally came and appeared \_\_\_\_\_ to me known, who being by me duly sworn, did depose and say that they reside at

\_\_\_\_\_ of

\_\_\_\_\_ of  
the corporation described in and which executed the foregoing instrument; that they know the seal of said corporation; that one of the impressions affixed to said instrument is an impression of such seal; that it was so affixed by order of the directors of said corporation; and that they signed their name thereto by like order.

\_\_\_\_\_  
(SEAL)  
My Commission Expires: \_\_\_\_\_



**ACKNOWLEDGEMENT OF PRINCIPAL OF BIDDER, IF A SOLE PROPRIETORSHIP**

State of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) ss:

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ before me personally came and appeared to me known, and known to me to be one of the members of the firm of, described in and who executed the foregoing instrument, and they acknowledged to me that they executed the same as and for the act and deed of said firm.

\_\_\_\_\_  
(SEAL)  
My Commission Expires: \_\_\_\_\_

**SUBCONTRACTOR LIST: required only for bids over \$1,000,000**

See Section 001000 Instructions to Bidders -Subcontractor List for instructions. If additional space is required, provide same information on separate sheet.

<u>Firm Name</u>	<u>Designated Work</u>
1) _____	_____
2) _____	_____
3) _____	_____
4) _____	_____
5) _____	_____
6) _____	_____
7) _____	_____
8) _____	_____
9) _____	_____
10) _____	_____
11) _____	_____
12) _____	_____
13) _____	_____
14) _____	_____
15) _____	_____

\_\_\_\_\_  
Signed by

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Name of Bidder/Firm Submitting Bid (Title)

**SECTION 004100 - BID GUARANTY**

The Bid Guaranty or "Bid Bond" AIA Document A310 will be used as the Bid Guaranty form for this project unless a certified or cashier's check is submitted as a bid guarantee. Copies of the form are available from the American Institute of Architects, 1735 New York Ave. NW, Washington, D.C. 20006 or from AIA Chapter offices in many cities. The Southwest Washington Chapter AIA office is located at 708 Broadway, Tacoma, (253) 627-4006; the Seattle Chapter AIA office is located at 1010 Western Ave, Seattle, (206) 667-9184.

**END OF SECTION 004100**

**SECTION 004513 - STATEMENT OF BIDDER'S QUALIFICATIONS**

1. Firm Name: \_\_\_\_\_  
Firm Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Telephone No.: \_\_\_\_\_ Fax No.: \_\_\_\_\_

3. Washington State License No.: \_\_\_\_\_ Expires: \_\_\_\_\_

4. Number of years engaged in contracting business under above name: \_\_\_\_\_

5. The Firm submitting this proposal is a:

- Sole Proprietorship
- Partnership
- Corporation

6. The names and titles of the principal officers of the corporation submitting this proposal, or of the partnership, or of all persons interested in this proposal as principals are as follows:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**NOTE:** Signatories of this proposal must be identified above. Failure to identify the Signatories will be cause for considering the proposal irregular and for subsequent rejection of the bid.

7. General character of work performed by Bidder: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

8. Approximate value of work currently under contract: \$ \_\_\_\_\_

9. Bank Reference: \_\_\_\_\_

- 
10. Name of Bidder's Field Superintendent proposed for this project (attach resume which contains pertinent experience):
-

11. List of similar projects completed by the Bidder within the last ten (10) years (use additional sheets if necessary):

<b>Project Name</b>	<b>Owner</b>	<b>Owner's Representative</b>	<b>Owner's Phone No.</b>	<b>Completion Date of Construction</b>	<b>Contractor's Field Superintendent</b>

The undersigned certifies that the preceding information is true and correct.

By: \_\_\_\_\_  
 Signature

\_\_\_\_\_  
 Print Name

\_\_\_\_\_  
 Title

Date: \_\_\_\_\_

**END OF SECTION 004513**

**SECTION 004519 – NON-COLLUSION CERTIFICATE**

STATE OF WASHINGTON    )  
  ) ss.  
COUNTY OF PIERCE        )

The undersigned, being duly sworn, deposes says that the person, firm, association, co-partnership or corporation herein named, has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in the preparation and submission of a proposal to the Pierce County Library System for consideration in the award of a contract on the improvement described as follows:

Name of Project: **PCLS LAKEWOOD INTERIM LIBRARY SITE DEVELOPMENT**

Name of firm: \_\_\_\_\_

Signature of authorized member: \_\_\_\_\_

Signed and sworn to before me this

\_\_\_\_\_ Day of \_\_\_\_\_, 20\_\_\_\_.

NOTARY SEAL

\_\_\_\_\_  
Notary Public

**SECTION 005000 - STANDARD FORM OF AGREEMENT**

The "Standard Form of Agreement Between Owner and Contractor" AIA Document A101-2007 will be used as the form of agreement for this project. Copies of the form are available from the American Institute of Architects, 1735 New York Ave. NW, Washington, D.C. 20006 or from AIA Chapter offices in many cities. The Southwest Washington Chapter AIA office is located at 708 Broadway, Tacoma, (253) 627-4006; the Seattle Chapter AIA office is located at 1010 Western Ave, Seattle, (206) 448-4938.

**END OF SECTION 005000**

**SECTION 006100 - PAYMENT AND PERFORMANCE BOND PIERCE COUNTY LIBRARY SYSTEM**

**Bond No.** \_\_\_\_\_

We, \_\_\_\_\_ ("Principal"), and  
(Insert full legal name of Vendor / Contractor)

\_\_\_\_\_ ,  
a \_\_\_\_\_ corporation  
(Insert legal name of Surety and its state of incorporation)

authorized to transact surety business in the State of Washington, ("Surety"), are held and firmly bound unto **Pierce County Library System** ("Library"), as Obligee, in an amount equal to the total compensation and expense reimbursement payable to Principal for satisfactory completion of Principal's work under Contract No. \_\_\_\_\_ between Principal and Library, which total is **initially** \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), lawful money of the United States of America, for the payment of which sum Principal and Surety bind themselves, their heirs, legal representatives, successors and assigns, jointly and severally, firmly by these presents. Said contract (hereinafter referred to as "the Contract") is for \_\_\_\_\_ and is made a part hereof by this reference. The Contract includes the original agreement as well as all documents attached thereto or made a part thereof and all addenda, amendments, change orders, and any other document modifying, adding to or deleting from said Contract any portion thereof.

This Bond is executed in accordance with the laws of the State of Washington and is subject to all provisions thereof and the Charter and ordinances of Library insofar as they are not in conflict therewith, and is entered into for the use and benefit of Library, and all laborers, mechanics, subcontractors, and materialmen, and all persons who supply such person or persons, or subcontractors, with provisions or supplies for the carrying on of the work covered by the Contract.

**THE CONDITION OF THIS OBLIGATION** is such that if Principal faithfully performs all the provisions of the Contract and pays all laborers, mechanics, and subcontractors and materialmen, and all persons who supply such person or persons, or subcontractors, with provisions and supplies for the carrying on of such work; and pays all other just debts incurred in the performance of such work (provided, however, that the conditions of this obligation shall not apply to any money loaned or advanced to any such contractor or subcontractor or other person in the performance of such work); and to the extent permitted by law indemnifies, defends, and holds Library harmless from all cost and damage by reason of Principal's default, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

**THE PARTIES FURTHER ACKNOWLEDGE AND AGREE AS FOLLOWS:**

- (1) Surety hereby consents to, and waives notice of any extension of time made by Library, and any and all other alterations, change orders, and modifications of the Contract including but not limited to increases in the balance of the Contract price. In the event of any increase in the balance of the Contract price, the penal sum of this bond shall be increased by an equal sum.
- (2) Surety recognizes that the Contract includes provisions for additions, deletions, and modifications to the work or Contract Time and the amounts payable to Principal (i.e., Vendor/Contractor). No such change or any combination thereof shall void or impair Surety's obligation hereunder.
- (3) Whenever Library has declared Principal (i.e., Vendor/Contractor) to be in default and Library has

given Surety written notice of such declaration, Surety shall promptly (in no event more than thirty (30) days following receipt of such notice) specify, in written notice to Library, which of the following actions Surety intends to take to remedy such default, and thereafter shall:

- (a) Remedy the default within fifteen (15) days after its notice to Library; or
- (b) Assume within fifteen (15) days following its notice to Library, full responsibility for the completion of the Contract in accordance with all of its provisions, and become entitled to payment of the balance of the Contract sum as provided in the Contract; or
- (c) Pay City upon completion of the Contract, in cash, the cost of completion together with all other reasonable costs and expenses incurred by Library as a result of Principal's (i.e., Vendor/ Contractor's) default, including but not limited to those incurred by Library to mitigate its losses, which may include but are not limited to attorneys' fees and the cost of efforts to complete the work prior to Surety's exercising any option available to it under this Bond; or
- (d) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon a determination by Library and Surety jointly of the lowest responsible bidder, arrange for one or more agreements between such bidder and Library, and make available as work progresses (even though there is a default or a succession of defaults under such agreement(s) for completion arranged for under this paragraph) sufficient funds to pay the cost of completion of the Contract less the balance of the Contract price, but not exceeding, including other costs and damages for which Surety may be liable hereunder, the penal sum of this Bond. The term "balance of the Contract price," as used in this paragraph, shall mean the total amount payable by Library to Principal (i.e., Vendor/Contractor) under the Contract, less the amount properly paid by Library to Principal (i.e., Vendor/Contractor).

In addition to (a) through (d) above, Surety shall pay Library all other reasonable costs and expenses incurred by Library as a result of Principal's (i.e. Vendor/Contractor's) default, and prior to Surety's exercising any option available to Surety under this bond.

- (4) If Library commences suit and obtains judgment against Surety for recovery hereunder, then Surety, in addition to such judgment, shall pay all costs and attorneys' fees incurred by Library in enforcement of Library's rights hereunder. Surety agrees to be bound by the laws of the State of Washington and subject to the jurisdiction of the State of Washington. The venue for any action arising out of or in connection with this bond shall be in Pierce County, Washington.
- (5) No right or action shall accrue on this Bond to or for the use of any person or corporation other than Pierce County Library System and, to the extent required under RCW Chapter 39, all laborers, mechanics, subcontractors, and materialmen, and all persons who supply such person or persons, or subcontractors, with provisions or supplies for the carrying on of the work covered by the Contract.
- (6) Nothing of whatever kind or nature whatsoever that will not discharge the Principal shall operate as a discharge or a release of liability of the Surety, any law, rule of equity, or usage relating to the liability of sureties to the contrary notwithstanding.
- (7) No rider, amendment, or other document modifies this Bond except the following, which by this reference, is incorporated herein: \_\_\_\_\_.
- (8) Surety shall give to Principal and to Library not less than sixty (60) days' prior written notice by certified mail, return receipt requested, of the effective date of the expiration or cancellation of this bond. Notice to Library shall be sent to: Pierce County Library System, Processing and Administration Center, 3005 11th St. E., Tacoma, WA 98446-2215. Attention: Christina Neville-Neil, project manager.

- (9) Principal must provide Library with a replacement bond, acceptable to Library, not less than thirty (30) days before the effective date of this bond's expiration or cancellation as specified in the Surety's notice provided pursuant to Condition (8) above.

**SURETY QUALIFICATIONS:** Every Surety named on this bond must either appear on the United States Treasury Department's most current list (Circular 570 as amended or superseded) or have a current rating of at least A-: VII in A. M. Best's Key Rating Guide. Additionally, every Surety named on this bond must be authorized by the Washington State Insurance Commissioner to transact business as a surety in the State of Washington.

**INSTRUCTIONS FOR SIGNATURES:** This bond must be signed by the president or a vice-president of a corporation; the managing general partner of a partnership; managing joint venturer of a joint venture; entity; a general partner of a limited liability partnership (LLP"); or the owner(s) of a sole proprietorship. If the bond is signed by any other representative, the Principal must attach written proof of that signer's authority to bind the Principal, identifying and quoting the provision in the corporate articles of incorporation, bylaws, Board resolution, partnership agreement, certificate of formation, power of attorney, or other document authorizing delegation of signature authority to such signer, and confirmation acceptable to the Pierce County Library System Attorney's Office that such delegation was in effect on the date the bond was signed.

**A NOTARY PUBLIC MUST ACKNOWLEDGE EACH SIGNATURE ON THIS BOND.**

Bond No. \_\_\_\_\_

**FOR THE SURETY:**

By \_\_\_\_\_

*(Signature of Attorney-in-Fact)*

\_\_\_\_\_  
*(Type or print name of Attorney-in-Fact)*

\_\_\_\_\_  
*(Type or print telephone number of Attorney-in-Fact)*

**FOR THE PRINCIPAL:**

By \_\_\_\_\_

*(Signature of authorized signer for Principal)*

\_\_\_\_\_  
*(Type or print name of signer for Principal)*

\_\_\_\_\_  
*(Type or print telephone number of signer for Principal)*

STATE OF \_\_\_\_\_ )

\_\_\_\_\_ ) SS: **ACKNOWLEDGMENT FOR PRINCIPAL**  
COUNTY OF \_\_\_\_\_ )

I certify that I know or have satisfactory evidence that \_\_\_\_\_ is the person who appeared before me, said person acknowledged that he/she signed this bond, and on oath stated that he/she was authorized to execute that bond on behalf of the Principal as the Principal's free and voluntary act for the uses and purposes mentioned therein.

WITNESS my hand and official seal hereto affixed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
*(signature of Notary Public)*

\_\_\_\_\_  
*(Print or type name of Notary Public)*

Notary Public in and for the state of \_\_\_\_\_ residing at \_\_\_\_\_.

My commission expires \_\_\_\_\_.

**SEAL**



## **SECTION 007000 · GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION**

### **AIA Document A201 - 2017 MODIFIED**

The following General Conditions of the Contract for Construction are based on the AIA Document A201- 2017. An addendum to AIA A101 and A201 - 2017 follows. See 007300 for Supplemental Conditions.

The following version of the General Conditions of the Contract for Construction AIA Document A201- 2017 are printed with a draft watermark on each page. Bidders should treat this document as the final document subject to any addenda issued during the bid period and bid accordingly. A final unchanged document will be printed and issued to the low bidder without the draft watermark.

**END OF SECTION 007000**

# DRAFT AIA® Document A101® - 2017

## Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

**AGREEMENT** made as of the « » day of « » in the year « »  
(In words, indicate day, month and year.)

**BETWEEN** the Owner:  
(Name, legal status, address and other information)

« »  
« »  
« »  
« »

and the Contractor:  
(Name, legal status, address and other information)

« »  
« »  
« »  
« »

for the following Project:  
(Name, location and detailed description)

« »  
« »  
« »

The Architect:  
(Name, legal status, address and other information)

« »  
« »  
« »  
« »

The Owner and Contractor agree as follows.

**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.

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

The parties should complete A101®-2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®-2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

**ELECTRONIC COPYING** of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

**TABLE OF ARTICLES**

- 1 THE CONTRACT DOCUMENTS**
- 2 THE WORK OF THIS CONTRACT**
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION**
- 4 CONTRACT SUM**
- 5 PAYMENTS**
- 6 DISPUTE RESOLUTION**
- 7 TERMINATION OR SUSPENSION**
- 8 MISCELLANEOUS PROVISIONS**
- 9 ENUMERATION OF CONTRACT DOCUMENTS**

**EXHIBIT A INSURANCE AND BONDS**

**ARTICLE 1 THE CONTRACT DOCUMENTS**

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

**ARTICLE 2 THE WORK OF THIS CONTRACT**

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

**ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION**

**§ 3.1** The date of commencement of the Work shall be:

*(Check one of the following boxes.)*

- [ « » ] The date of this Agreement.
- [ « » ] A date set forth in a notice to proceed issued by the Owner.
- [ « » ] Established as follows:  
*(Insert a date or a means to determine the date of commencement of the Work.)*  
 [ « » ]

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

**§ 3.2** The Contract Time shall be measured from the date of commencement of the Work.

**§ 3.3 Substantial Completion**

**§ 3.3.1** Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

*(Check one of the following boxes and complete the necessary information.)*

- [ « » ] Not later than « » ( « » ) calendar days from the date of commencement of the Work.

[ « » ] By the following date: « »

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

#### ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be « » (\$ « »), subject to additions and deductions as provided in the Contract Documents.

#### § 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement. (Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance

§ 4.3 Allowances, if any, included in the Contract Sum: (Identify each allowance.)

Item	Price

§ 4.4 Unit prices, if any:

(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)

§ 4.5 Liquidated damages, if any:

(Insert terms and conditions for liquidated damages, if any.)

« »

§ 4.6 Other:

(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

« »

## ARTICLE 5 PAYMENTS

### § 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« »

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the « » day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the « » day of the « » month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than « » ( « » ) days after the Architect receives the Application for Payment.

*(Federal, state or local laws may require payment within a certain period of time.)*

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

### § 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

*(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)*

« »

§ 5.1.7.1.1 The following items are not subject to retainage:  
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

« »

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:  
(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

« »

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:  
(Insert any other conditions for release of retainage upon Substantial Completion.)

« »

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 Except with the Owner’s prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

## § 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor’s responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner’s final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect’s final Certificate for Payment, or as follows:

« »

## § 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.  
(Insert rate of interest agreed upon, if any.)

« » % « »

## ARTICLE 6 DISPUTE RESOLUTION

### § 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.  
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

« »

« »

« »

« »

**§ 6.2 Binding Dispute Resolution**

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

*(Check the appropriate box.)*

Arbitration pursuant to Section 15.4 of AIA Document A201–2017

Litigation in a court of competent jurisdiction

Other *(Specify)*

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

**ARTICLE 7 TERMINATION OR SUSPENSION**

**§ 7.1** The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

**§ 7.1.1** If the Contract is terminated for the Owner’s convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:

*(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner’s convenience.)*

**§ 7.2** The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

**ARTICLE 8 MISCELLANEOUS PROVISIONS**

**§ 8.1** Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

**§ 8.2** The Owner’s representative:

*(Name, address, email address, and other information)*

**§ 8.3** The Contractor’s representative:

*(Name, address, email address, and other information)*

**§ 8.4** Neither the Owner’s nor the Contractor’s representative shall be changed without ten days’ prior notice to the other party.

**§ 8.5 Insurance and Bonds**

**§ 8.5.1** The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

**§ 8.5.2** The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

**§ 8.6** Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

*(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)*

« »

**§ 8.7 Other provisions:**

« »

**ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS**

**§ 9.1** This Agreement is comprised of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction
- .4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:

*(Insert the date of the E203-2013 incorporated into this Agreement.)*

« »

**.5 Drawings**

Number	Title	Date

**.6 Specifications**

Section	Title	Date	Pages

**.7 Addenda, if any:**

Number	Date	Pages

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

**.8 Other Exhibits:**

*(Check all boxes that apply and include appropriate information identifying the exhibit where required.)*

[ « » ] AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:  
*(Insert the date of the E204-2017 incorporated into this Agreement.)*

« »

[ « » ] The Sustainability Plan:

Title	Date	Pages

[ « » ] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

**.9** Other documents, if any, listed below:

*(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™-2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)*

« »

This Agreement entered into as of the day and year first written above.

\_\_\_\_\_  
**OWNER** (Signature)

« »« »

\_\_\_\_\_  
(Printed name and title)

\_\_\_\_\_  
**CONTRACTOR** (Signature)

« »« »

\_\_\_\_\_  
(Printed name and title)

# DRAFT AIA® Document A101® – 2017

## Exhibit A

### *Insurance and Bonds*

This Insurance and Bonds Exhibit is part of the Agreement, between the Owner and the Contractor, dated the « » day of « » in the year « »  
(In words, indicate day, month and year.)

for the following **PROJECT**:  
(Name and location or address)

« »  
« »

**THE OWNER:**  
(Name, legal status and address)

« »  
« »

**THE CONTRACTOR:**  
(Name, legal status and address)

« »  
« »

#### TABLE OF ARTICLES

- A.1 GENERAL
- A.2 OWNER'S INSURANCE
- A.3 CONTRACTOR'S INSURANCE AND BONDS
- A.4 SPECIAL TERMS AND CONDITIONS

#### ARTICLE A.1 GENERAL

The Owner and Contractor shall purchase and maintain insurance, and provide bonds, as set forth in this Exhibit. As used in this Exhibit, the term General Conditions refers to AIA Document A201™-2017, General Conditions of the Contract for Construction.

#### ARTICLE A.2 OWNER'S INSURANCE

##### § A.2.1 General

Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under this Article A.2 and, upon the Contractor's request, provide a copy of the property insurance policy or policies required by Section A.2.3. The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.

##### § A.2.2 Liability Insurance

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

##### § A.2.3 Required Property Insurance

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**User Notes:**

**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.

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

This document is intended to be used in conjunction with AIA Document A201®-2017, General Conditions of the Contract for Construction. Article 11 of A201®-2017 contains additional insurance provisions.

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**§ A.2.3.1** Unless this obligation is placed on the Contractor pursuant to Section A.3.3.2.1, the Owner shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The Owner's property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion and thereafter as provided in Section A.2.3.1.3, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees.

**§ A.2.3.1.1 Causes of Loss.** The insurance required by this Section A.2.3.1 shall provide coverage for direct physical loss or damage, and shall not exclude the risks of fire, explosion, theft, vandalism, malicious mischief, collapse, earthquake, flood, or windstorm. The insurance shall also provide coverage for ensuing loss or resulting damage from error, omission, or deficiency in construction methods, design, specifications, workmanship, or materials. Sub-limits, if any, are as follows:

*(Indicate below the cause of loss and any applicable sub-limit.)*

Causes of Loss	Sub-Limit

**§ A.2.3.1.2 Specific Required Coverages.** The insurance required by this Section A.2.3.1 shall provide coverage for loss or damage to falsework and other temporary structures, and to building systems from testing and startup. The insurance shall also cover debris removal, including demolition occasioned by enforcement of any applicable legal requirements, and reasonable compensation for the Architect's and Contractor's services and expenses required as a result of such insured loss, including claim preparation expenses. Sub-limits, if any, are as follows:

*(Indicate below type of coverage and any applicable sub-limit for specific required coverages.)*

Coverage	Sub-Limit

**§ A.2.3.1.3** Unless the parties agree otherwise, upon Substantial Completion, the Owner shall continue the insurance required by Section A.2.3.1 or, if necessary, replace the insurance policy required under Section A.2.3.1 with property insurance written for the total value of the Project that shall remain in effect until expiration of the period for correction of the Work set forth in Section 12.2.2 of the General Conditions.

**§ A.2.3.1.4 Deductibles and Self-Insured Retentions.** If the insurance required by this Section A.2.3 is subject to deductibles or self-insured retentions, the Owner shall be responsible for all loss not covered because of such deductibles or retentions.

**§ A.2.3.2 Occupancy or Use Prior to Substantial Completion.** The Owner's occupancy or use of any completed or partially completed portion of the Work prior to Substantial Completion shall not commence until the insurance company or companies providing the insurance under Section A.2.3.1 have consented in writing to the continuance of coverage. The Owner and the Contractor shall take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of insurance, unless they agree otherwise in writing.

**§ A.2.3.3 Insurance for Existing Structures**

If the Work involves remodeling an existing structure or constructing an addition to an existing structure, the Owner shall purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, "all-risks" property insurance, on a replacement cost basis, protecting the existing structure against direct physical loss or damage from the causes of loss identified in Section A.2.3.1, notwithstanding the undertaking of the Work. The Owner shall be responsible for all co-insurance penalties.

**§ A.2.4 Optional Extended Property Insurance.**

The Owner shall purchase and maintain the insurance selected and described below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. For each type of insurance selected, indicate applicable limits of coverage or other conditions in the fill point below the selected item.)

[  ] **§ A.2.4.1 Loss of Use, Business Interruption, and Delay in Completion Insurance**, to reimburse the Owner for loss of use of the Owner's property, or the inability to conduct normal operations due to a covered cause of loss.

[  ] **§ A.2.4.2 Ordinance or Law Insurance**, for the reasonable and necessary costs to satisfy the minimum requirements of the enforcement of any law or ordinance regulating the demolition, construction, repair, replacement or use of the Project.

[  ] **§ A.2.4.3 Expediting Cost Insurance**, for the reasonable and necessary costs for the temporary repair of damage to insured property, and to expedite the permanent repair or replacement of the damaged property.

[  ] **§ A.2.4.4 Extra Expense Insurance**, to provide reimbursement of the reasonable and necessary excess costs incurred during the period of restoration or repair of the damaged property that are over and above the total costs that would normally have been incurred during the same period of time had no loss or damage occurred.

[  ] **§ A.2.4.5 Civil Authority Insurance**, for losses or costs arising from an order of a civil authority prohibiting access to the Project, provided such order is the direct result of physical damage covered under the required property insurance.

[  ] **§ A.2.4.6 Ingress/Egress Insurance**, for loss due to the necessary interruption of the insured's business due to physical prevention of ingress to, or egress from, the Project as a direct result of physical damage.

[  ] **§ A.2.4.7 Soft Costs Insurance**, to reimburse the Owner for costs due to the delay of completion of the Work, arising out of physical loss or damage covered by the required property insurance: including construction loan fees; leasing and marketing expenses; additional fees, including those of architects, engineers, consultants, attorneys and accountants, needed for the completion of the construction, repairs, or reconstruction; and carrying costs such as property taxes, building permits, additional interest on loans, realty taxes, and insurance premiums over and above normal expenses.

### **§ A.2.5 Other Optional Insurance.**

The Owner shall purchase and maintain the insurance selected below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance.)

[ « » ] § A.2.5.1 **Cyber Security Insurance** for loss to the Owner due to data security and privacy breach, including costs of investigating a potential or actual breach of confidential or private information. *(Indicate applicable limits of coverage or other conditions in the fill point below.)*

« »

[ « » ] § A.2.5.2 **Other Insurance**  
*(List below any other insurance coverage to be provided by the Owner and any applicable limits.)*

Coverage	Limits

**ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS**

**§ A.3.1 General**

**§ A.3.1.1 Certificates of Insurance.** The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article A.3 at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section A.3.2.1 and Section A.3.3.1. The certificates will show the Owner as an additional insured on the Contractor's Commercial General Liability and excess or umbrella liability policy or policies.

**§ A.3.1.2 Deductibles and Self-Insured Retentions.** The Contractor shall disclose to the Owner any deductible or self-insured retentions applicable to any insurance required to be provided by the Contractor.

**§ A.3.1.3 Additional Insured Obligations.** To the fullest extent permitted by law, the Contractor shall cause the commercial general liability coverage to include (1) the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, CG 20 32 07 04.

**§ A.3.2 Contractor's Required Insurance Coverage**

**§ A.3.2.1** The Contractor shall purchase and maintain the following types and limits of insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:  
*(If the Contractor is required to maintain insurance for a duration other than the expiration of the period for correction of Work, state the duration.)*

« »

**§ A.3.2.2 Commercial General Liability**

**§ A.3.2.2.1** Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than « » (\$ « » ) each occurrence, « » (\$ « » ) general aggregate, and « » (\$ « » ) aggregate for products-completed operations hazard, providing coverage for claims including

- .1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;
- .2 personal injury and advertising injury;
- .3 damages because of physical damage to or destruction of tangible property, including the loss of use of such property;
- .4 bodily injury or property damage arising out of completed operations; and

.5 the Contractor's indemnity obligations under Section 3.18 of the General Conditions.

§ A.3.2.2 The Contractor's Commercial General Liability policy under this Section A.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

- .1 Claims by one insured against another insured, if the exclusion or restriction is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim.
- .2 Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor.
- .3 Claims for bodily injury other than to employees of the insured.
- .4 Claims for indemnity under Section 3.18 of the General Conditions arising out of injury to employees of the insured.
- .5 Claims or loss excluded under a prior work endorsement or other similar exclusionary language.
- .6 Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language.
- .7 Claims related to residential, multi-family, or other habitational projects, if the Work is to be performed on such a project.
- .8 Claims related to roofing, if the Work involves roofing.
- .9 Claims related to exterior insulation finish systems (EIFS), synthetic stucco or similar exterior coatings or surfaces, if the Work involves such coatings or surfaces.
- .10 Claims related to earth subsidence or movement, where the Work involves such hazards.
- .11 Claims related to explosion, collapse and underground hazards, where the Work involves such hazards.

§ A.3.2.3 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, with policy limits of not less than « » (\$ « ») per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.

§ A.3.2.4 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella insurance policies result in the same or greater coverage as the coverages required under Section A.3.2.2 and A.3.2.3, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ A.3.2.5 Workers' Compensation at statutory limits.

§ A.3.2.6 Employers' Liability with policy limits not less than « » (\$ « ») each accident, « » (\$ « ») each employee, and « » (\$ « ») policy limit.

§ A.3.2.7 Jones Act, and the Longshore & Harbor Workers' Compensation Act, as required, if the Work involves hazards arising from work on or near navigable waterways, including vessels and docks

§ A.3.2.8 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.

§ A.3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.

§ A.3.2.10 Coverage under Sections A.3.2.8 and A.3.2.9 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.

§ A.3.2.11 Insurance for maritime liability risks associated with the operation of a vessel, if the Work requires such activities, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.

§ A.3.2.12 Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than « » (\$ « » ) per claim and « » (\$ « » ) in the aggregate.

§ A.3.3 Contractor's Other Insurance Coverage

§ A.3.3.1 Insurance selected and described in this Section A.3.3 shall be purchased from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

*(If the Contractor is required to maintain any of the types of insurance selected below for a duration other than the expiration of the period for correction of Work, state the duration.)*

« »

§ A.3.3.2 The Contractor shall purchase and maintain the following types and limits of insurance in accordance with Section A.3.3.1.

*(Select the types of insurance the Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. Where policy limits are provided, include the policy limit in the appropriate fill point.)*

[ « » ] § A.3.3.2.1 Property insurance of the same type and scope satisfying the requirements identified in Section A.2.3, which, if selected in this section A.3.3.2.1, relieves the Owner of the responsibility to purchase and maintain such insurance except insurance required by Section A.2.3.1.3 and Section A.2.3.3. The Contractor shall comply with all obligations of the Owner under Section A.2.3 except to the extent provided below. The Contractor shall disclose to the Owner the amount of any deductible, and the Owner shall be responsible for losses within the deductible. Upon request, the Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below:  
*(Where the Contractor's obligation to provide property insurance differs from the Owner's obligations as described under Section A.2.3, indicate such differences in the space below. Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)*

« »

[ « » ] § A.3.3.2.2 Railroad Protective Liability Insurance, with policy limits of not less than « » (\$ « » ) per claim and « » (\$ « » ) in the aggregate, for Work within fifty (50) feet of railroad property.

[ « » ] § A.3.3.2.3 Asbestos Abatement Liability Insurance, with policy limits of not less than « » (\$ « » ) per claim and « » (\$ « » ) in the aggregate, for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos-containing materials.

[ « » ] § A.3.3.2.4 Insurance for physical damage to property while it is in storage and in transit to the construction site on an "all-risks" completed value form.

[ « » ] § A.3.3.2.5 Property insurance on an "all-risks" completed value form, covering property owned by the Contractor and used on the Project, including scaffolding and other equipment.

[ « » ] § A.3.3.2.6 Other Insurance  
*(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)*

Coverage

Limits

**§ A.3.4 Performance Bond and Payment Bond**

The Contractor shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located, as follows:  
*(Specify type and penal sum of bonds.)*

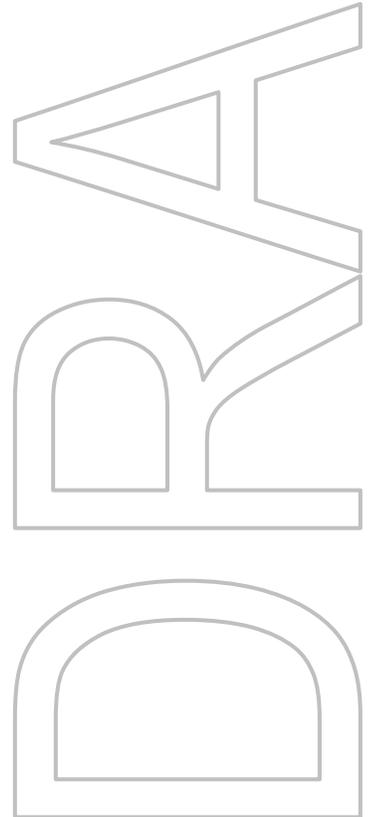
Type	Penal Sum (\$0.00)
Payment Bond	[Redacted]
Performance Bond	[Redacted]

Payment and Performance Bonds shall be AIA Document A312™, Payment Bond and Performance Bond, or contain provisions identical to AIA Document A312™, current as of the date of this Agreement.

**ARTICLE A.4 SPECIAL TERMS AND CONDITIONS**

Special terms and conditions that modify this Insurance and Bonds Exhibit, if any, are as follows:

<< >> [Redacted]



## ADDENDUM TO AIA A101 AND A201-2017 CONTRACT

Pierce County Library System ("**Owner**") and \_\_\_\_\_ ("**Contractor**") are entering into a Construction Contract with respect to the upcoming **PCLS Lakewood Interim Library Site Development** (the "**Project**"). The Project's contract documents include AIA Document A101-2017 (Stipulated Sum Contract) ("**A101**") and AIA Document A201-2017 (General Conditions Contract) ("**A201**") (collectively, the "**Contract**"). Set forth below are provisions that modify the Contract, which modifications will apply to the Contract between the Contractor and Owner with respect to the Project. Section numbers below refer to the section numbers in the A201 and A101, respectively, as marked.

1. Article 3; Date of Commencement and Substantial Completion. A new provision, **§3.4**, is hereby added to the **A101**:

*§3.4 Liquidated Damages for Contractor Delay. The parties hereby acknowledge and agree that substantial completion must be obtained by January 8, 2024 (the "Substantial Completion Date") or Owner will be damaged with respect to loss of income from the Project. The parties further acknowledge that Owner's damages would be difficult or impossible to determine but the parties have agreed that the sum of Five Hundred Dollars (\$500) per day is a fair and reasonable amount to reflect the damages which Owner will incur as a result of any delay in substantial completion beyond the Substantial Completion Date. Consequently, if substantial completion has not occurred by that date, and has not occurred within thirty (30) days after written notice by Owner to Contractor of such failure, then Contractor shall pay Owner liquidated damages in the amount of Five Hundred Dollars (\$500) per day (measured from the end of the 30-day notice) until substantial completion has in fact been accomplished.*

2. Article 5; Payments. The following provisions are hereby amended in Article 5 of the **A101** as follows:

- a. **§5.2.2.** The words, "as follows" in §5.2.2 are hereby deleted and replaced with:

*"Once all of the items described in §5.2.1 have been satisfied, whichever is later. "*

- b. **§5.2.2.** The following language is to be added to the end of §5.2.1 of **A101**:

*In addition to the conditions to final payment set forth above and in A201, prior to final payment to Contractor, Contractor shall provide owner with the following:*

*A. Final lien release from all subcontractors;*

*B. Contractor's affidavit setting forth that the subcontractors named in such affidavit are all of the subcontractors who have performed the Work and that each of the same have been paid in full, In the event any subcontractor has not been paid in full, then said affidavit shall state the amount to be paid from the final payment or from the amount held or to be withheld from such subcontractor and the reason for such withholding;*

*C. A final lien waiver from the Contractor; and*

*D. A final certificate of occupancy from all authorities having jurisdiction as may be*

*required for occupancy by the Owner to operate its business from this location.*

3. Article 8; Miscellaneous Provisions.

a. **§8.6 Other provisions.** The following subsections are added to **A101 §8.6**:

**§8.6.1** *For any change orders, the parties agree that a reasonable factor for overhead and profit is eight percent (8%) of the increased costs in the change order.*

**§8.6.2 Section 3.7.1 of A201** is hereby modified to confirm that Contractor shall apply for and obtain all applicable building permits, other permits, fees, licenses, inspections needed, and a permanent Certificate of Occupancy for the building. The parties acknowledge that the cost of such items are included in the Contract Sum set forth in §4.1 of A101.

**§8.6.3 Section 9.3.3 of A201** is hereby modified by deleting the words "*to the best of the Contractor's knowledge, information and belief.*"

**§8.6.4 Section 9.3.3 of A201** is hereby modified by adding the following additional provisions:

*Contractor warrants that no Work, material or equipment covered by an Application for Payment will have been acquired by the Contractor, or by any other person performing Work at the site or furnishing materials and equipment for the Project, subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof or an encumbrance thereon is retained or otherwise imposed by the seller or the supplier. The Contractor further warrants good title to all materials, supplies and equipment installed or incorporated in the Work and agrees, upon completion of all Work, to deliver the premises, together with all improvements and appurtenances constructed or placed thereon by it, to the Owner, free from any liens, claims or charges.*

**§8.6.5 Section 10.3 of A201** is modified by inserting the following additional provision as new section **§10.3.7**:

**§10.3.7** *Except as called for in the Project specifications or pursuant to Owner's written direction, Contractor shall not cause or permit any chemical or hazardous substance to be generated, treated or disposed of on the Project. Contractor will not cause or permit any condition on the Project site that would cause the Project site or any part thereof, to be deemed a hazardous waste treatment, storage or disposal facility requiring a permit, interim status or any other special authorization under the Resource Conservation and Recovery Act or any other environmental law. As used herein, the term "Hazardous Substance" means any hazardous, toxic or dangerous substance, waste or material which is or becomes regulated under any federal, state or local statute, ordinance, rule, regulation or other law now or hereafter in effect pertaining to environmental protection, contamination or clean up, including without limitation any substance, waste or material which now or hereafter is (A) designated as a "hazardous substance" under or pursuant to the Federal Water Pollution Control Act (33 US. C. §1251 et seq.), (B) defined as a "hazardous waste" under or pursuant to the Resource Conservation and Recovery Act (42 US. C. §6901 et seq.), (C) defined as a "hazardous substance" in (or for purposes of) the Comprehensive Environmental Response, Compensation and Liability Act (42 US.C. §9601 et seq.), or (D) defined or listed as a*

*"hazardous substance" under or pursuant to The Model Toxics Control Act of the State of Washington (RCW Chapter 70.105D). The Contractor shall indemnify the Owner for the cost and expenses the Owner incurs as a result of Contractor's breach of the provisions of this section.*

**§8.6.6** *Contractor agrees that if a lien for labor or material furnished to or with respect to the Work is filed, then, upon Owner's written request, Contractor will cause such lien to be discharged or bonded against in the form of a bond equal to two times the amount of the claim. If the Contractor fails to so bond or discharge the lien within ten (10) days following receipt of written request from Owner, then Owner shall have the right to satisfy such lien or to take such other action as Owner deems prudent to remove the lien.*

**§8.6.7** Attorneys Fees. *In the event any party hereto, or his, her, or its authorized representative, successor, or assign, institutes suit to enforce or interpret this Agreement or for any breach thereof, the substantially prevailing party in such suit or proceeding will be entitled to an award of his, her, or its reasonable costs, expenses and attorneys' fees incurred, both at the trial and appellate court levels, before and after judgment.*

**§8.6.8** **Section 1.6 of the A201** form is hereby amended to read as follows:

*§1.6 If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall use the AL4 E201-2017 form to establish necessary protocols governing such transmissions, to supplement or modify terms already provided in the Agreement. Any transmissions pursuant to a license shall be without additional license fees.*

**§8.6.9** **Section 2.2.5 of the A201** form is hereby amended by adding "Upon request," at the beginning of that section.

**§8.6.10** *The last sentence of §5.4.1 and all of §5.4.3 of A201 form are hereby deleted.*

**§8.6.11** **Section 3.18.2 of the A201** form is hereby amended by adding the following:

*Contractor's obligation to indemnify Owner under this section includes the obligation to indemnify for losses resulting from death or injury to Contractor's employees, and Contractor accordingly hereby waives any and all immunities it now has or may hereafter have under any industrial insurance act, or other workers compensation, disability benefit or similar act, to the extent such immunity would preclude a claim for indemnification by Owner. This waiver is for the exclusive benefit of the Owner is not intended, nor will it be construed, to be for the benefit of any employee of Contractor or for the benefit of any other party. This waiver has been mutually negotiated by the parties.*

**§8.6.12** *If Owner does not use an Architect, then the role of the Architect under the contract documents will be performed by the Owner.*

**§8.6.13** The following language in §9.5.3 of **A201** is hereby deleted: "If the Architect withholds certification for payment under §9.5.1.3,...". In its place the following language is added:

*"Regardless of whether the Architect withholds its certification for payment under*

*Sections 9.5.1.2 or 9.5.1.3, if the conditions described in Sections 9.5.1.2 or 9.5.1.3 exists, ... "*

**§8.6.14** Any references to "fiduciary" in §11.3.10 of **A201** are hereby removed.

**§8.6.15** Sections 15.3.2 and 15.4.1 of the **A201** are hereby amended to delete the requirement to use "*American Arbitration Association in accordance with its Construction Industry Arbitration Rules*" and the same are hereby replaced with the requirement to use, "*JAMS in Seattle, Washington, in accordance with its Construction Arbitration Rules ...*".

To the extent that this Amendment conflicts with any of the provision of the other contract documents, then the provisions of this Addendum will apply.

Owner:

**PIERCE COUNTY LIBRARY SYSTEM**

By: \_\_\_\_\_  
Its: \_\_\_\_\_

Contractor:

\_\_\_\_\_

By: \_\_\_\_\_  
Its: \_\_\_\_\_

## **SECTION 007300 - SUPPLEMENTAL CONDITIONS**

These Supplemental Conditions form a part of, and are incorporated in the Contract Documents and modify, delete, add, and replace provisions of the General Conditions. Provisions not altered remain in effect. All terms defined elsewhere in the Contract Documents shall have the same meaning in these Supplemental Conditions.

### **PERMITS, FEES AND NOTICES**

The owner will pay for the following permits and fees relating to the permanent structures and utilities for the Project:

Land use permit and plan checking fees, including SEPA and design review,

Site development and foundation permit and plan checking fees,

City sewer permit, related site development/engineering fees, city agency installation fees, capacity expansion fees, and added facility expansion fees,

Water service hook-up fees,

Gas service hook-up fees,

General telephone and cable charges.

**Obtaining and paying for all other permits is the responsibility of the contractor.**

### **TIME OF COMPLETION AND LIQUIDATED DAMAGES**

The Work shall be commenced on the effective date specified in the Notice to Proceed and shall be substantially complete within the period specified in the Form of Proposal. For failure to achieve Substantial Completion of the Work within the time provided, Contractor shall pay Owner **\$500** for each calendar day from the date when Substantial Completion should have been achieved to the date Substantial Completion is actually achieved. The provisions of the General Conditions for liquidated damages remain in effect.

Refer to Form of Proposal for anticipated project timeline.

### **PERMITS REQUIRED**

The following items of work will be permitted by Contractor, including, but not limited to;

- A. Structure, Building Foundation
- B. Utilities
- C. All associated permits, from City of Lakewood, AHJ, and State L & I, as required.

**END OF SECTION 007300**

## **SECTION 007800 - PREVAILING WAGE RATES**

Prevailing wage rates must be paid on all work performed on this Contract, in accordance with Washington State Department of Labor and Industries regulations. Bidders are responsible for verifying all requirements and regulations. Contact the Department for complete information.

- In general, transportation of prefabricated components to the site and all work performed on the site must be paid at site rates for Pierce County.
- Construction work on prefabricated components performed in the factory are paid at Prevailing Wage factory rates.

Current versions of Washington State Prevailing Wage Rates and Benefit Code Key for Public Works Contracts, Pierce County are available on-line. Check website for updates:

[www.lni.wa.gov](http://www.lni.wa.gov)

**END OF SECTION 007800**

## **SECTION 008000 - CONSTRUCTION FORMS**

These forms will be used to facilitate the Project and Contractors will be required to utilize them when appropriate. Copies of these forms are available from the American Institute of Architects, 1735 New York Ave. NW, Washington, D.C. 20006 or from AIA Chapter offices in many cities. The Southwest Washington Chapter AIA office is located at 708 Broadway, Tacoma, (253) 627-4006; the Seattle Chapter AIA office is located at 1010 Western Ave, Seattle, (206) 448-4938.

They include but are not limited to the following:

**Change Order Form (AIA-Doc G701)**

**Application and Certification for Payment (AIA Doc G702 & 703)**

**Proposal Request (AIA-Doc G709)**

**Construction Change Directive (AIA-Doc G714)**

**Architect's Supplemental Instructions (ASI)**

**END OF SECTION 008000**

## SECTION 011100 - SUMMARY OF WORK

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. The Scope of Work includes, but is not limited to:
  - a. Site preparation and development of the 47,672 square foot parcel located at the southwest corner of Gravelly Lake Drive Southwest and Alfaretta Street Southwest in the city of Lakewood, Washington. Scope includes, but is not limited to bringing utilities to the building site from the right of way, grading, paving, landscaping, right of way improvements. Contractor is responsible for the construction of footings, stem walls, and utility stubs to support a new prefabricated library building. Site finish elements include a new public plaza with all associated stairs, ramps, railings, and benches, a new loading area and trash enclosure, and site lighting throughout. Schedule for work is to be completed with owner's contractor that is providing and installing the prefabricated library units.
  - b. Construction of site improvements will occur concurrently and in sequence with the delivery and installation of the prefabricated library building by the owner's contractor. Bid documents describe elements to be completed prior to arrival of prefabricated building as well as elements to be constructed after the prefabricated building has been set. Date of building install will be negotiated by owner, selected bidder, and prefabricated building contractor during the contracting process.
  - c. Business license (endorsement) with City of Lakewood, submittals, revisions and procurement, including coordination with State L&I, City of Lakewood and all other jurisdictions having authority. Owner will pay building permit fees associated with review by City of Lakewood. All other license and permit fees are the responsibility of the bidder.
  - d. Shop drawing submittals and revisions as required for Architect review and acceptance;
  - e. Coordination with utility providers on timeline, sequencing, and requirements of systems.
  - f. Procurement of final permit sign-offs and Certificate of Occupancy, following installation (by others) of Owner-provided systems and equipment.
  
- B. Related Sections:
  - 1. Section 007000 - General Conditions of the Contract
  - 2. Section 013310 - Submittal Procedures
  - 3. Section 015700 - Temporary Control
  - 4. Section 017700 - Contract Closeout

#### 1.02 CONTRACT

- A. See Section 005000, Standard Form of Agreement.

#### 1.03 WORK SEQUENCE

- A. Coordinate with Owner's vendors and subcontractors who will perform field installation work at the Library, following substantial completion, and schedule punchlist completion work to incorporate vendor and separate subcontractor installation requirements.
  
- B. Site work is to be sequenced to provide foundations, footings, and utility stub-ins for prefabricated building to be placed according to schedule. Protection of any other work

completed prior to prefabricated building install is the responsibility of the bidder.

#### 1.04 COOPERATION AND COORDINATION

- A. Coordinate and schedule work of workers and subcontractors to expedite progress of the Project.
- B. Subcontractor Instructions: Notify subcontractors to become familiar with specified requirements.

#### 1.05 CONTRACTOR'S USE OF SITE

- A. Contractor will have full use of the site for all described site work prior to arrival of prefabricated building units. Once prefabricated units have been placed, contractor will be required to coordinate site access with owner's Building Manufacturer for concurrent work.
- B. Coordinate use of site under direction of Architect and Owner's Representative.
  - 1. In particular, comply with restrictions and requirements of Owner's separate Building Manufacturer, City of Lakewood and adjacent property owners for operations.
- C. Assume full responsibility for the protection and safekeeping of Products under this Contract.
- D. Assume full responsibility for the protection and safekeeping of Owner's property and the property of Owner's employees and visitors in the project facilities following Substantial Completion during Owner's construction activities.
- E. Assume full responsibility for the site in the area of construction prior to Final Completion.
- F. Do not allow any storage of combustible materials in any mechanical or electrical equipment room.

#### 1.06 CONSTRUCTION STAGING AREA

- A. Coordinate use of site with the Owner prior to utilization of area. Providing barriers and security for site is Contractor's responsibility.

#### 1.07 ROUGH-IN UTILITIES IN CRAWL SPACE

- A. Protect all utility rough-ins prior to connections to prefabricated building.

#### 1.08 OBJECTIONS TO APPLICATION OF PRODUCTS

- A. Contractor and subcontractors for this Project are required to thoroughly familiarize themselves with specified products and installation procedures prior to start of work. Prior to bidding, submit to Architect any objections to specified products or installation procedures, or any conflicts between manufacturers' installation instructions and contract defined installation procedures (in writing) not later than 10 days after Notice To Proceed. Proposed substitutions must be submitted in accordance with Section 016200, for consideration by Architect. Start of work constitutes acceptance of products and procedures specified.

#### 1.09 OWNER-FURNISHED PRODUCTS

- A. General: Certain items, designated on the Drawings by the abbreviations "FOIO" and "NIC" often

require blocking, backing and accessory items necessary to complete the installations. This blocking and backing is a requirement of this project.

- B. Items designated by the Drawings by the abbreviations "FOIO" will be "Furnished and Installed by Owner," following Substantial Completion of the prefabricated building on site.
  - 1. Provide blocking and any other necessary work required prior to actual installation. Confirm with Owner work to be done such as blocking or cut outs.
  - 2. FOIO items include but are not necessarily limited to:
    - a. Library shelving
    - b. Server and rack at Data Room
    - c. Wireless access point hardware. Data box and wiring to rack to be provided by bidder.
    - d. Electronic access devices. Power and infrastructure to be provided by bidder.
    - e. Televisions and wall-mount brackets in meeting rooms.

#### 1.10 MISCELLANEOUS WORK

- A. Items include, but are not limited to:
  - 1. Maintain a pedestrian and vehicular access to and around site, and to adjacent properties.
  - 2. Do not load structure with weight endangering structure.
  - 3. Move stored products interfering with Owner's other contractors.
  - 4. Obtain and pay for use of additional storage or work areas needed for operations.
  - 5. Patch/repair existing structures, paving or landscaping on site or on adjacent properties if damaged during site erection construction activities.
  - 6. Examination and Inspections: Follow requirements of General Conditions.

#### PART 2 - PRODUCTS

Not Used.

#### PART 3 - EXECUTION

Not Used.

**END OF SECTION 011100**

## **SECTION 011150- INTENT AND DEFINITIONS OF LANGUAGE USED IN THIS MANUAL**

### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Following supplements Article 1, General Provisions, and other paragraphs of the General Conditions/007000, and expands on definitions and intent of language generally used in this Project Manual.
- B. Related Sections:
  - 1. Section 001000 - Instructions to Bidders
  - 2. Section 007000 - General Conditions of the Contract
  - 3. Section 013113 - Project Coordination
  - 4. Mechanical and Electrical Sections

#### **1.02 INTENT AND LANGUAGE**

- A. The Project Manual is part of the Contract Documents between Owner and Contractor and is therefore written addressing the Contractor. Although references to subcontractors are made occasionally, it is not the intent of the Project Manual to divide the work into subcontracts; this is the responsibility of the Contractor.
- B. Following information is provided to facilitate project manual comprehension, format, language, implications, conventions, and content. This information does not modify the substance of any requirements.
  - 1. Project Manual is divided into Divisions, subdivisions and Sections for convenience. Division titles are not intended to fully describe the work of each Division, subdivision, or Section, and are not an integral part of the text specifying requirements.
  - 2. Division and Section Numbers listed in Table of Contents, and items of work included in each Section, conform in general to the Construction Specifications Institute's "Masterformat 2004 edition - Master List of Numbers and Titles for the Construction Industry." Numbering of Sections is merely for identification and may not be consecutive. Verify contents page by page to be sure book is complete in accordance with Table of Contents.
  - 3. Except for Division 0 and certain Division 1 Sections, sections are usually subdivided into three "parts" for uniformity and convenience (Part 1 - General; Part 2 - Products; and Part 3 - Execution).
  - 4. Section pages are numbered independently for each Section. Section number linked with page number appears at bottom of each page of most sections.
  - 5. Project title usually appears at top left corner of each page.
  - 6. Section title and number appear at bottom of each page.
  - 7. Trade Associations and General Standard Abbreviations: Generally understood abbreviations may be used in text.
  - 8. Text is most frequently "abbreviated" or "streamlined" type and includes incomplete sentences and phrases where completion must be implied.
  - 9. References to other project manual sections are often indicated as ".../013310/013323." Read this as meaning "in accordance with requirements of Sections 013310 and 013323."
  - 10. Architectural/Engineering Abbreviations: See Drawings.
  - 11. Interpret singular words plurally and plural words singularly wherever applicable and full context of requirements implies.

- C. Reference to Specifications Sections in Division 01: Where General Conditions provisions and Modifications thereto relate generally to work of Contractor and Subcontractor as project administrative requirements, procedural requirements, temporary facilities, and the like, these provisions may be amplified by specifications sections in Division 1, "General Requirements."

### 1.03 DEFINITIONS

- A. "Accepted" means "accepted by Architect."
  - 1. Where "or accepted" is used, Architect is sole judge of quality and suitability of proposed substitution or installation.
- B. "For Architect's acceptance" or "for Architect's approval" means "for Architect's review of intent of contract documents."
- C. "For approval" means "for Architect's/Owner's Project Manager's approval." In no case will "approval" by Architect be interpreted as a release of Contractor from responsibilities to fulfill requirements of the Contract Documents. Where the term "approval" is used, the Architect shall be the sole judge of the quality and suitability of the proposed substitution, and the term shall in no way be construed as giving the Contractor the option of using materials other than those specified without written permission of the Architect.
- D. "Selected" means "as selected by Architect." It is not necessarily limited to manufacturer's standard line of colors, finishes or details, unless otherwise called for.
- E. "As directed" means "as directed by Architect/Owner's Project Manager." However, no such implied meaning will be interpreted to extend Architect's responsibility into Contractor's area of construction supervision.
- F. "As required" means:
  - 1. "as required to suitably complete the work to the Architect's acceptance;"
  - 2. "as required by code;" and
  - 3. "at the direction of the Architect."
- G. "Provide" means "pay for, furnish, and install complete, in place, ready for operation, and use."
- H. "Furnish" means "supply and deliver to project site, ready for unloading, unpacking, assembly, installation, and the like, as applicable in each instance."
- I. "Verify" means "verify existing or new conditions and coordinate with Architect."
- J. "Indicated" means "where reasonably implied and necessary in conformance with work specified, drawn, or required for completion." Words indicate. Drawings indicate. The term "indicated" also is 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.
- K. "Coordinate" means "coordinate scheduling, submittals, and work of the various Sections of specifications, drawings and work of subcontractors to assure efficient and orderly sequence of installation of interdependent construction elements."

- L. "Architect:" The Architect as defined in the General Conditions/00700 subparagraph 4.1.1 means BuildingWork, 159 Western Ave W, Suite 486, Seattle, WA 98119.
- M. "Consultant:" Where the term "Consultant" is used, it means consultant to the Architect or Owner as listed in the Project Manual.
- N. "Engineer:" Where the term "Engineer" is used, sometimes in connection with a discipline such as "Mechanical Engineer," it means either:
1. Consultant in his/her discipline to the Architect or Owner as listed in the Project Manual.
  2. Consultant to the Contractor, retained by Contractor to perform services required by construction activities.
- O. "Specialist" means "an individual or firm of established reputation (or, if newly organized, whose personnel have previously established a reputation in the same field)." This individual or firm must be regularly engaged in and maintain a regular force of workers skilled in (as applicable): Manufacturing, fabricating, or otherwise performing required work.
- P. "Contractor" and "Subcontractor" are defined in General Conditions/00700 and Section 00100. Where "You" in imperative mode is used or implied, Contractor is the one who shall perform or is responsible for the performance of others.
- Q. "Installer:" The entity (person or firm) engaged by the Contractor 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 such entities (installers) be specialists in operations they are engaged to perform.
- R. Cutting and Patching: See Section 017129.
- S. "Manufacturer's Instructions and Directions;" "Install in Accordance with Manufacturer's Instructions and Directions:"
1. Throughout the documents, although it may not be specifically stated, install work in accordance with manufacturer's instructions and directions.
    - a. In the event of conflict between manufacturer's instructions and these documents, immediately notify Architect. *Do not proceed until written authorization is received.*
  2. Except as otherwise defined in greater detail, term "install" is used to describe operations at project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations, as applicable in each instance.
  3. Unless otherwise noted or directed, install work in accordance with each manufacturer's instructions for best results.
    - a. Not one preparatory step or installation procedure may be omitted unless specifically modified or exempted by these documents.
  4. Where Contractor is required to follow manufacturer's instructions, directions and the like, but more than one manufacturer is involved in the work, or its component parts, follow all manufacturer's instructions, directions and the like.
    - a. In the event of conflict between manufacturers' directions and recommendations, submit discrepancy or conflict to Architect for resolution and instruction.
- T. The term "install" means entered permanently into project for intended use.

- U. The term "reinstall" means entered permanently into project after temporary removal in the same manner as if the object to be reinstalled was new.
- V. The term "remove" means completely and permanently removed from the Work.
- W. The term "salvage" means carefully remove to prevent damage to product, protect and store for future reinstallation on this or other projects.
- X. The term "clean" means 100% of the exposed surface of all exterior material to be cleaned.
- Y. The term "repair" means perform minor repair and patching of all materials per specifications whether indicated in the drawings or not.
- Z. The term "restore" means major repair of missing or damaged pieces of material in place to match existing or original texture and profiles and indicated on the drawings and defined in the specifications.
- AA. The term "replace" means provide and install new material to match existing construction as indicated on the drawings.
- BB. "Product" as used in these Contract Documents refers to materials, systems, and equipment provided by Contractor.
- CC. The term "similar," where it occurs in the Contract Documents, means that a portion of the Work shall have common features with, but may not necessarily be identical to, other related portions of the Work. Contractor shall correlate similar conditions of the work.
- DD. "Project Manual" as used in these Contract Documents include Bidding and Contract Requirements, General Requirements, Specifications and other items that may be listed in the Table of Contents.
- EE. "General" and "General Requirements:" These terms as used in Conditions of the Contract and this specification apply to the balance of Specification Divisions, Section of a Division, Article, or parts of a Section.
- FF. "Regulations:" The term includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that have control of the Work.
- GG. "Project Site:" The space available to the Contractor for performing construction activities, either exclusively or in conjunction, with others performing other work as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built. Certain construction activity may extend beyond the project site.
- HH. "Testing Agencies:" A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project Site, or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

#### 1.04 MISCELLANEOUS EXPLANATIONS- INTENT

- A. Intent of Drawings:
1. Drawings are in part diagrammatic and do not necessarily show complete details of construction, work or materials, performance or installation. They do not necessarily show how construction details, other items or work, fixtures, and equipment may affect any particular installation. Ascertain and correlate the work to bring the parts together into a satisfactory and completed whole.
  2. Drawings do not show exact characteristics of the work, piping and air distribution configurations, or necessary number of fittings. The Drawings indicate only such details as are necessary to give a comprehensive ideal of the Work. In order to illustrate the Work, the Architect may furnish additional Drawings, explanations and clarifications consistent with the original Drawings, purpose and intent of the Contract. Conform Work to such Drawings and explanations. The furnishing of such additional Drawings, explanations or clarifications is for the convenience of the Contractor and shall not entitle the Contractor to an increase in the Contract time or Contract Sum.
  3. Furnish and install work not covered under any heading, Section, branch, class or trade of the Project Manual, but shown on or reasonably inferable from the Drawings. This includes work necessary to produce the intended results.
  4. Do not scale drawings. Dimensional accuracy is not guaranteed, and field verification of dimensions, locations, and levels to suit field conditions is required.
- B. Wording of these Specifications: These Specifications are of the abbreviated or streamlined type and may include incomplete sentences.
1. Words such as "the," "all," "shall," "the Contractor shall," "shall be," and similar mandatory phrases, are required to be supplied by inference in the same manner as they are in a note on the Drawings.
  2. Provide all items, articles, materials, and operations listed, including labor, materials, equipment and incidentals required for their completion.
- C. Number of Specified Items Required: Wherever in these Specifications an article, device or piece of equipment is referred to in the singular number, the reference applies to as many such articles as are shown on the Drawings or required to complete the installation.
- D. Tense, Gender, Singular, Plural: Present tense words include future tense. Words in masculine gender include feminine and neuter genders. Words in the singular include plural. Plural words include singular.
- E. All, Entire, and the Like: For brevity throughout the documents, these words may be omitted. Read their implications into all work, as the following parenthetical insertion exemplifies: "Balance and adjust {all) dampers."
- F. Specification by Reference: Materials and products specified by reference or number, symbol or title of a specified standard, such as commercial standard, ANSI and ASTM documents, Federal Specifications, trade association standard, or the like, shall comply with the following:
1. The latest revision requirements thereof, and:
  2. Any amendment or supplement thereto in effect on date of Project Manual, except as modified; and:
  3. When building code requirements refer to a different issue of standards specifications, such issue governs; and:
  4. Listing of certain reference standards: Refer to Section 014200.
- G. First Class Workmanship is expected.

1. Prior to installing any item or material, verify that receiving surfaces are plumb, level, true to line, and straight to the degree necessary to achieve tolerances specified or required. Perform without extra cost all shimming, blocking, grinding, or patching required to make such surfaces plumb, level, true to line and straight.
  2. Take care in attention to details and fitting at intersections and junctures of materials. Joints are to be tight, straight, even, and smooth.
- H. Fastening and Connections: Furnish fastenings and connections necessary and adequate to assemble work whether indicated or not. Function:
1. Contractor is responsible for proper assemblage and intended performance of all components and assemblies; bonds to bond properly, fastening to fasten properly; operable items to operate smooth, without sticking or binding, and without "play" or looseness; and the like.
  2. Where deemed necessary to establish conformance with these requirements, inspection and testing by an independent testing laboratory may be required as indicated in Section 014523.
- I. Presence of Architect/Owner: Do not misconstrue presence of this person or any of Architect's/Owner's representatives at the site as assuring compliance with Contract Documents.

#### 1.05 GENERAL INSTALLATION PROVISIONS

- A. General: Provide all items, articles, materials, and operations listed, including labor, materials, equipment and incidentals required for their completion.
- B. Installer's Inspection of Conditions:
1. Require the Installer of each major unit of work to inspect the substrate to receive work and conditions under which the work is to be performed.
  2. The Installer shall report unsatisfactory conditions in writing to the Contractor.
  3. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer. Start of work constitutes acceptance of substrates.
  4. See General Conditions, subparagraphs 3.3.3 and 3.3.4.
- C. Inspection of Items to Be Installed:
1. Inspect each item of materials or equipment immediately prior to installation.
  2. Reject damaged and defective items.
- D. Attachment and Connection:
1. Provide attachment and connection devices and methods for securing work. Secure work true to line and level, and within recognized industry tolerances. Allow for expansion and building movement.
  2. Provide uniform joint width in exposed work. Arrange joints in exposed work as drawn or to obtain the best visual effect. Refer questionable visual-effect choices to the Architect for final decision.
- E. Measurements: Check measurements and dimensions of the work, as an integral step of starting each installation.
- F. Dimensions and Measurements on Drawings:
1. Dimensions govern.
  2. Do not scale.
  3. Check dimensions in the field and verify them with respect to adjacent or incorporated work and in accordance with General Conditions/007000, subparagraph 3.3.3. Large scale

- drawings take precedence over smaller scale drawings, plans, elevations, and cross sections.
- a. Information concerning existing conditions was considered suitable for preparation of the Drawings and is given for Contractor's convenience. Architect and Owner does not guarantee accuracy of such conditions. Field verify, as per above.
4. See Section 013113 for further descriptions.

G. Weather Conditions:

1. Install each unit of work during weather conditions and project status which will ensure the best possible results in coordination with the entire work.
2. Isolate each unit of finished work and protect as necessary to prevent deterioration.

- H. Inspection and Tests: Coordinate enclosure of the work with required inspections and tests, so as to minimize the necessity of uncovering work for that purpose.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

**END OF SECTION 011150**

## **SECTION 012200- UNIT PRICES**

### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Section includes:
  - 1. Administrative and procedural requirements for unit prices.
  - 2. Schedule of unit prices.
- B. Related Sections:
  - 1. Section 003000 - Form of Proposal
  - 2. Specification sections for work where unit prices are requested

#### **1.02 DEFINITIONS**

- A. Unit price is an amount proposed by bidders, stated on the Form of Proposal, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if the estimated quantities of Work required by the Contract Documents are increased or decreased.

#### **1.03 PROCEDURES**

- A. Unit prices include necessary material, cost for delivery, installation, insurance, overhead, profit, and applicable taxes.
- B. Measurement and Payment:
  - 1. The Owner reserves the right to reject the Contractor's measurement of work-in-place that involves use of established unit prices, and to have this work measured, at the Owner's expense, by an independent surveyor acceptable to the Contractor.

### **PART 2 - PRODUCTS**

#### **2.02 UNIT PRICE SCHEDULE**

Not Used.

### **PART 3 - EXECUTION**

Not Used.

**END OF SECTION 012200**

## SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. Section includes description of procedures for change and field orders including:
  - 1. Submittals.
  - 2. Supplemental Instructions.
  - 3. Correlation of Contractor submittals.
- B. A change or substitution of any subcontractor listed in the Agreement shall be subject to the prior acceptance of the Owner and Architect, and shall be confirmed with a no-cost change order except as noted in General Conditions/007000, subparagraph 5.2.3.
- C. Related Sections:
  - Section 007000 - The General Conditions of the Contract; Changes in the Work
  - Section 012910 - Applications for Payment
  - Section 013114 - Communications, Correspondence, and Request for Information
  - Section 017839 - Project Record Documents

#### 1.02 SUBMITTALS

- A. Designate in writing the names of authorized members of Contractor's organization who accept changes in the Work, and are responsible for informing other workers of the authorized changes.

### PART 2 - PRODUCTS

#### 2.01 FORMS

- A. Change Order Proposal Requests, Change Order Proposals, Change Orders, Field Authorizations, etc.: Contractor's standard form. Submit sample form to Architect for review and acceptance.

### PART 3 - EXECUTION

#### 3.01 ARCHITECT'S SUPPLEMENTAL INSTRUCTIONS (ASI)

- A. The Architect may issue written authorizations which interpret the Contract Documents, or which order minor changes in the Work without change in the Contract Sum or Contract Time, if agreed to by the Contractor.
  - 1. Form: Architect's standard form. See Section 008000
  - 2. Contractor will assign an ASI number and list each one on an ASI log.
  - 3. Changes/clarification by other consultants will be issued through the Architect.

#### 3.02 PRELIMINARY INITIATIONS/CHANGES

- A. Supplemental instructions or Construction Memos authorizing minor changes in the work, issued by the Architect.

#### 3.03 CORRELATION WITH CONTRACTOR'S SUBMITTALS

- A. Revise Schedule of Values and Application for Payment forms to record each change in conformance with General Conditions/00700.
- B. Revise Construction Schedules reflecting each change in contract time in accordance with General Conditions.
  - 1. Revise sub-schedules to show changes for other items of work affected by changes.
- C. Promptly enter changes in Project Record Documents.

#### 3.04 DISTRIBUTION

- A. Send copies to all concerned parties.
  - 1. Change Orders: Upon authorization, Owner transmits one signed copy each to Contractor and Architect.
  - 2. Construction Change Authorization:
    - a. Distribution of copies:
      - 1) One to Owner.
      - 2) One to Contractor.
      - 3) One to Architect.

END OF SECTION 012600

## **SECTION 012910 - APPLICATION FOR PAYMENT**

### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Section includes requirements for submittal of Payment Applications according to accepted schedule and General Conditions/007000, Payments and Completion.
  
- B. Related Sections:
  - 1. Section 007000 - General Conditions of the Contract:
  - 2. Section 012600 - Contract Modification Procedures
  - 3. Section 017700 - Closeout Procedures
  - 4. Section 017839 - Project Record Documents

#### **1.02 FORMAT AND DATA REQUIRED**

- A. Refer to General and Supplementary Conditions.

#### **1.03 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT**

- A. Application Form: Use AIA Document G702 and G703, or Contractor's standard form, if acceptable to Owner.

#### **1.04 PAYMENT SCHEDULE**

- A. Submit Application for Payment in accordance with Contract and General Conditions or monthly progress applications.

### **PART 2 – PRODUCTS**

Not Used.

### **PART 3 - EXECUTION**

Not Used.

**END OF SECTION 012910**

## **SECTION 012973 - SCHEDULE OF VALUES AND APPLICATION AND CERTIFICATION FOR PAYMENT**

### **PART 1 - GENERAL**

#### **1.01 FORMAT**

- A. Type Schedule on 8-1/2 x 11 in. bond paper.
- B. For minimum listing of schedule of values, provide summary line item cost for complete modular building, with sub-categories for engineering, shop drawings, permit and review fees, fabrication, transportation to site, erection, and final installation.
- C. For Specification Divisions 0, as a minimum, include one (1) line item for each of the following: mobilization/demobilization, General Conditions, bonds and insurance, and project closeout, including record drawings, O&M Manuals, and Owner-instruction.

#### **1.02 REQUIREMENTS**

- A. Two (2) weeks prior to submission of first Application and Certificate for Payment, submit schedule of values to Architect for review.
- B. List installed value of each major item of Work to serve as a basis for computing values for Progress Payments. Round off values to nearest dollar.
- C. Coordinate listings with Progress Schedule.
- D. All line item listings shall each include a directly proportional amount of Contractor overhead and profit.

#### **1.03 SUBMITTAL**

- A. Submit one digital copy of Schedule.
- B. Transmit via email under transmittal letter. Identify project by title and by contract number.

#### **1.04 SUBSTANTIATING DATA**

- A. When Architect requires substantiating information, submit data justifying line item amounts in question.
- B. Provide one (1) copy of data with cover letter for each copy of Application and Certificate for Payment.

#### **1.05 APPLICATION AND CERTIFICATE FOR PAYMENT**

- A. See General Conditions of the Contract.
- B. The approved Schedule of Values will be typed by the Contractor onto an Owner approved Application and Certificate for Payment Form.

1.06 FIRST APPLICATION AND CERTIFICATE FOR PAYMENT

- A. Complete administrative requirements prior to submission of initial Application for Payment. Application will not be reviewed until requirements are met.
- B. Partial list of requirements follows. Other requirements may be listed elsewhere in the Contract Documents.
  - 1. Performance and Payment Bonds
  - 2. Certificates of Insurance
  - 3. Building Permit Submittal Copies
  - 4. Schedule of Values
  - 5. Progress Schedule
  - 6. List of Sub-Contractor and Suppliers
  - 7. Schedule of Submittals

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

**END OF SECTION 012973**

## SECTION 013113 – PROJECT COORDINATION

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. Coordination of Work of the Contract.
- B. Includes coordination with PCLS and Site Development/Foundation Contractor.
- C. Related Sections:
  - 1. Section 011100 - Summary of Work
  - 2. Section 013114 - Communication, Correspondence, and Request for Information
  - 3. Section 013119- Project Meetings
  - 4. Section 013323 - Shop drawings, Product Data, and Samples
  - 5. Section 016200 - Substitutions and Product Options
  - 6. Section 017129 - Cutting and Patching
  - 7. Section 017700- Closeout Procedures
  - 8. Mechanical and Electrical Divisions

#### 1.02 DESCRIPTION

- A. Coordinate scheduling, submittals, and work of the various sections of Specifications to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items to be installed later.
- B. Coordinate work between the parts of the Contract Documents to avoid conflicts and omissions. Take special care to coordinate work which is normally indicated in some but not all Architectural, Mechanical, Electrical and other major Divisions of the Contract Documents.

#### 1.03 COOPERATION AND COORDINATION OF WORK

- A. Coordination of work among the general and various subcontractors will be a critical element in the success of this project. Coordinate the installation of the Work and that of subcontractors to ensure compliance with the contract documents and to expedite the progress of the project.
- B. Ensure that the work of subcontractors complies with General Conditions of the Contract/007000, Division 01 - General Requirements, and the work of other Sections related to their own work. No additional payments or time extensions will be authorized for failure on the part of subcontractors to be familiar with and in compliance with the aforementioned specification divisions and sections.
- C. *Project Coordination and Scheduling Control: Responsibility for coordination and close adherence to time schedules rests solely with the Contractor who shall maintain coordination and scheduling control at all times:*
  - 1. Each subcontractor responsible to the Contractor shall cooperate diligently with the Contractor in the execution of their work so as to cause no delay in the completion of the Project. This responsibility includes the completion of work in a timely manner and items of equipment connected and fully operating at the time of Substantial Completion of each phase. Each subcontractor shall diligently comply with the following requirements:
    - a. Cooperate in planning and layout of the work well in advance of operations to

properly interface with work of other trades and Owner's separate contractors.

- 1) Include planning, layout and review of mock-ups/014339.
  - b. Inform other trades of requirements at proper time to prevent delay or revisions.
  - c. Be informed on the requirements of other trades and check own work for conflicts with the work of other trades.
  - d. Ensure delivery of materials and performance of work on coordinated schedule with other trades.
  - e. Attend pre-installation conferences as described in Section 013119.
2. Ensure that the subcontractors and equipment suppliers are responsible for compatibility and completeness of the installation and operation of the equipment in their respective Specification Sections including conformance with code requirements. If power, piping, ductwork, or other work required for complete installation is not provided by others to equipment location or is not adequate for complete installation, the subcontractor or equipment supplier shall be responsible for providing the necessary connections.

D. Notification and Correction of Defective Work:

1. Before starting a section of work, each contractor and subcontractor shall carefully examine preparatory work that has been executed to receive each contractor's work. Check carefully, by whichever means required, to ensure that the work and adjacent, related work will finish to proper contours, planes, and levels.
2. Promptly notify the Contractor of any defects or imperfections in preparatory work which will in any way affect satisfactory completion of the work. Under no condition shall a section of work proceed prior to preparatory work having been completed, cured, dried, or otherwise made satisfactory to receive such related work.
3. Correction of defective work shall be the responsibility of the Contractor or subcontractor providing the defective work. Correction of work due to underlying defects shall be the responsibility of the Contractor or subcontractor providing work.

E. Intent of Drawings:

1. The work of each contractor and subcontractor shall conform to the intent of the contract drawings. Drawings are partly diagrammatic and do not intend to show in detail all features of work. Each contractor shall carefully review the work to be performed by other trades, compare related drawings and shall thoroughly understand the building conditions affecting their work.
  - a. Changes required in the work caused by failure to do so shall be at no expense to the Owner.

F. Interferences and Right-Of-Way:

1. Make proper provisions to avoid interferences.
2. Where conflicts occur, architectural and structural has right-of-way over mechanical and electrical work; concealed mechanical work has right-of-way over concealed electrical work; exposed electrical fixtures have right-of-way over mechanical fixtures.
3. Submit conflicts which cannot be resolved by right-of-way to Architect for instructions.
4. Submit in accordance with requirements of Sections 013310 and 013323, reflected ceiling coordination plan showing work by affected trades. See below for description.

G. Equipment Connections: See General Requirements in Mechanical and Electrical Divisions. Work includes but is not limited to:

1. Verify utility requirement characteristics of operating equipment are compatible with building utilities.
2. Provide motors and equipment for current characteristics as shown on the electrical drawings:

- a. Electrical Subcontractor:
    - 1) Electrical subcontractor shall furnish and install all wiring except:
      - a) Temperature control wiring.
      - b) Equipment control wiring.
      - c) Interlock wiring.
      - d) Security System wiring
      - e) Fire Alarm wiring
    - 2) The electrical subcontractor shall furnish and install power wiring complete from power source to motor or equipment junction box, including power wiring through starters. Electrical Subcontractor shall furnish and install starters not factory mounted on equipment. After circuits are completed, Electrical Subcontractor shall be responsible for power wiring.
  - b. Mechanical Subcontractor: Mechanical subcontractor shall, regardless of voltage, furnish and install temperature control wiring, interlock wiring and equipment control wiring for the equipment that the mechanical subcontractor furnishes.
- H. Cooperate and coordinate with any other separate contractors and subcontractors under Contract with the Owner.
- I. Coordination Drawings:
1. The purpose of coordination drawings is to resolve potential interdisciplinary dimensional interferences and conflicts prior to shop fabrication or field installation of components and systems. While the designers have exercised the accepted standard of care in performing overall dimensional coordination in the preparation of the design intent documents, additional factors influence coordination which the contractors and subcontractors must address in the coordination drawings. These factors include, but are not limited to, specific means and methods, the sequence of work, the characteristics of the specific equipment to be installed (where the documents allow multiple options), recognition of existing conditions, and the pricing/negotiation assumptions made by each contractor/subcontractor.
  2. Prepare coordination drawings, consisting of plans, sections, and details, for those areas of the building where the dimensional location of one's trade work could adversely influence the dimensional location of other trades' work. Drawings shall depict the interrelationships of components shown on separate shop drawings, the intended installation sequences, and how work is to be installed or constructed. in relation to the work of other trades and existing conditions.
  3. Areas for which coordination drawings are to be prepared include, but are not limited to:
    - a. Ceiling coordination drawings.
      - 1) Contractor is responsible for the detail coordination of trades involved in work related to the space above and in connection with the ceiling system. These trades and related items of work include, but are not limited to the following:
        - a) Architectural: Ceiling grid and access panels
        - b) Structural: Proposed structural work
        - c) Mechanical: Ductwork, piping, fire sprinklers and access panels
        - d) Electrical: Conduit, lights and access panels
      - 2) Submit for review a "coordination" shop drawing for items noted above as they relate to the new conditions, prior to the start of any work. Where no ceiling is indicated, include that area from underside of lights to bottom of structural slab above. Modify and update this drawing as work proceeds and submit as a record "as-built" drawing.
  4. Prepare coordination drawings in accordance with the following guidelines:
    - a. Sheet size to be the same as the construction documents.
    - b. Plans to be at an appropriate scale to depict the necessary detail, but not less than 1/4" =

- 1'-0".
- c. Sections to be at an appropriate scale to depict the necessary detail, but not less than 1/2" = 1'-0".
- d. Drawings to contain elements of the construction in their correct dimensional relationship, including but not limited to, ceiling/roofs, walls, beams, columns, openings, supports, hangers, earthquake bracing, fixtures, and other appurtenances. ·
- 5. Contractor and each subcontractor shall sign drawings to indicate their participation in the coordination process and their agreement that the individual systems and components can be installed as indicated in the drawings and in the conformance with the contract documents.
- 6. These drawings shall be submitted for informational purposes only prior to installation of any components of the work to be included in order to demonstrate that the installation of the aforementioned items have been coordinated by the Contractor prior to commencement of the work.
- 7. Submit in accordance with requirements of Section 013310.

#### 1.04 MEETINGS

- A. In addition to progress meetings specified in Section 013119, hold coordination meetings and pre-installation conferences with personnel and subcontractors to ensure coordination of Work.

#### 1.05 COORDINATION OF SUBMITTALS

- A. Schedule and coordinate submittals specified in Sections 013310 and 013323.
- B. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service equipment.
- C. Coordinate requests for substitutions to assure compatibility of space, of operating elements, and effect on work of other sections.

#### 1.06 COORDINATION OF SPACE

- A. Coordinate use of Project space and sequence of installation of mechanical and electrical work which is indicated diagrammatically on Drawings. Follow routings shown for pipes, ducts, and conduits as closely as practicable, with due allowance for available physical space; make runs parallel with lines of building. Utilize space efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- B. In finished areas, except as otherwise shown, conceal pipes, ducts, wiring and the like within the construction. Coordinate locations of fixtures and outlets with finish elements; additional furring, chases, and soffits not shown on the design drawings are specifically not allowed.

#### 1.07 CONSTRUCTION MOBILIZATION AND MODULAR BUILDING ERECTION/INSTALLATION

- A. Cooperate with the Architect and Owner's Building Manufacturer Contractor in allocation of mobilization areas of site; for field offices, temporary power and sanitary facilities, for access, staging, traffic, and parking facilities.
- B. During site construction, provide for removal of waste materials from site. Do not use Building Manufacturer Contractor's waste containers.

- C. Coordinate field engineering and layout work under instructions of the Architect.

#### 1.08 COORDINATION OF CONTRACT CLOSEOUT

- A. Coordinate completion and cleanup of work by the various trades involved in preparation for Substantial Completion.
- B. After Owner occupancy of premises for installation of systems, shelving and fixtures, coordinate access to site by the various trades involved for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.
- C. Assemble and coordinate closeout submittals specified in Section 017700, Closeout Procedures.

#### PART 2 - PRODUCTS

Not Used.

#### PART 3 - EXECUTION

Not Used.

**END OF SECTION 013113**

## **SECTION 013114 - COMMUNICATION, CORRESPONDENCE AND REQUEST FOR INFORMATION**

### **PART 1-- GENERAL**

#### **1.01 SUMMARY**

- A. Section includes procedures and formats for communications.

#### **1.02 RELATED SECTIONS**

- 1. Section 007000 - General Conditions of the Contract
- 2. Section 012600 - Contract Modification Procedures
- 3. Section 013310 - Submittal Procedures

#### **1.03 GENERAL COMMUNICATION**

- A. See Section 007000, General Conditions, for general communications.
- B. Subcontractors:
  - 1. Do not contact members of the design team directly.
  - 2. Transmit problems or questions in writing using the Request for Information (RFI) form through the Contractor to the Architect.

#### **1.04 CORRESPONDENCE**

- A. Address correspondence to the Architect with copy to the Owner's Representative.
- B. Format:
  - 1. Number correspondence sequentially.
  - 2. Include Project Title, Owner's Contract Number, and Architect's Project Number.

#### **1.05 REQUEST FOR INFORMATION (RFI)**

- A. When field conditions or contract document contents require clarification or verification by the Architect or Architect's Consultants, a written RFI is to be submitted per following:
  - 1. Identify the nature and location of each clarification/verification using the RFI form and providing no less information than below:
    - a. Project name and number;
    - b. Date;
    - c. Date response required by;
    - d. Effect on contract amount; check box to indicate "cost change" or "no cost change;"
    - e. RFI number;
    - f. Subject;
    - g. Initiator of the field question;
    - h. Indication of interpretation and cost included in bid;
    - i. Location within building;
    - j. Contract drawing reference;
    - k. Contract specification section and paragraph reference;
    - l. Descriptive text;
    - m. Space for reply on same page as question;

2. Submit each RFI separately by discipline, and number each discipline sequentially from #001. Only one issue per RFI.
3. Maintain log of RFI's for Architect, Owner's Representative, and subcontractor use.

B. Route: RFI's in same manner as correspondence.

C. Copy: RFI's in same manner as correspondence.

D. Time: Architect will endeavor to respond to RFI's by due date requested by Contractor on form, but not later than within 7 working days.

E. Clarifications: May only be discussed on-site or by telephone with Architect Incorporate the essence of the discussion into an RFI form. Also see "Bulletins" below.

#### 1.06 BULLETINS, MEMOS, AND ASI

A. Architect may issue a "Bulletin", "Memo", or ASI describing a document clarification or field condition.

#### 1.07 FORMS

A. RFI:

1. Contractor's standard RFI. Submit sample form to Architect for review and acceptance.

B. ASI: Architect's standard form.

C. Other:

1. See Section 008000 for list of construction forms, or submit sample of Contractor's standard form to Architect for review and acceptance.

#### PART 2 - PRODUCTS

Not Used.

#### PART 3 - EXECUTION

Not Used.

**END OF SECTION 013114**

## SECTION 013119 - PROJECT MEETINGS

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. Section includes:
  - 1. Preconstruction conference meetings;
  - 2. Progress meetings; and
  - 3. Pre-installation conferences.
  
- B. Related Sections:
  - 1. Section 007000 - General Conditions of the Contract
  - 2. Section 017839 – Project Record Documents

### PART 2 - PRODUCTS

#### 2.01 PRECONSTRUCTION CONFERENCE MEETINGS

- A. Owner will schedule Preconstruction Conferences after Notice of Proceed. These meetings are to review Contract administration requirements, and prepare the way for commencement of the Work. The City and the Owner may call for additional preconstruction conferences as applicable to the work being started.
  - 1. Contractor shall provide meeting location at a central site, convenient for all parties.
  - 2. Attendance is required of the following:
    - a. Contractor, Contractor's Superintendent, Project Manager, and individuals authorized to sign for Contractor;
    - b. Major subcontractors and suppliers;
    - c. Others, as appropriate.
  
- B. Agenda:
  - 1. Owner's Representative and Architect will discuss pertinent detail information paralleling Project Manual requirements such as:
    - a. The Work.
      - 1) Discussion includes responsibilities and authority of Owner, Owner's Representative and Architect; Contractor and Contractor's designated personnel; and Permitting and Inspection Agencies.
    - b. Work sequence, phasing, and occupancy
    - c. Contractor's use of the site.
      - 1) Site utilization, access and mobilization issues.
      - 2) Potential construction work occurring on neighboring properties.
      - 3) Environmental controls/daily clean-up.
    - d. Procedures and processing.
      - 1) Field decisions
      - 2) Proposal requests
      - 3) Submittals
      - 4) Change Orders
      - 5) Application for payment
      - 6) Other
    - e. Special project procedures.
      - 1) Procedures for testing and inspections during factory fabrication.

- 2) Requirements for startup of equipment.
  - 3) Inspection and acceptance of equipment put into service during construction period.
  - f. Prefabricated component transportation plan and schedule
  - g. Site erection/construction facilities, controls, and construction aids.
  - h. Coordination with Owner-provided foundation and utility rough-in at crawl space.
  - i. On-site security procedures.
  - j. Coordination with Owner's Site Development/Foundation Contractor
  - k. Safety and first-aid procedures.
  - l. Housekeeping Procedures.
  - m. Other.
  - n. Project Closeout:
    - 1) Final cleaning.
    - 2) Record documents and warranties.
    - 3) O&M documents, training and instruction of personnel.
  - o. Punchlist Completion:
    - 1) Architect and Owner have responsibility for accepting Work.
    - 2) Punchlist work shall be completed within the time stipulated by the Architect, but not more than 10 days beyond date of inspection.
  - p. Contractor will present and distribute information indicating:
    - 1) List of major subcontractors and suppliers.
    - 2) Tentative schedule for engineering, shop drawing, permit submittal/review, factory fabrication, transportation to site, site erection/installation and completion, final inspections.
- C. Contractor will:
- 1. Record minutes; include significant proceedings, decisions, and summarize questions raised.
  - 2. Reproduce and distribute copies of minutes within 3 days of each meeting to:
    - a. meeting participants;
    - b. parties affected by decisions.

## 2.02 PROGRESS MEETINGS

- A. Owner's Representative will schedule and administer progress meetings, and specially called meetings throughout work progress.
- 1. Purpose of Meeting: Objective is to communicate and discuss the schedule, impediments to progress, submittals, quality control, safety, site constraints, coordination with other contractors and Owner-retained suppliers and vendors, pre- installation conferences, and related timely subject.
  - 2. Prearrange meeting time and day.
    - a. Meetings will take place not more than once a week but not less than once every month, appropriate to the progress of work.
    - b. Such meetings will continue until final completion of the work.
  - 3. Make physical arrangements for meetings; prepare agenda.
  - 4. Preside at meetings.
  - 5. Representatives of Contractors, subcontractors, and suppliers attending meetings are required to be qualified and authorized to act on behalf of their firms.
- B. Contractor will:
- 1. Record minutes; include significant proceedings, decisions, and summarize questions raised.
  - 2. Reproduce and distribute copies of minutes prior to the next progress meeting to:
    - a. meeting participants;

- b. parties affected by decisions.
- C. Meeting Locations: PCLS Administrative Building, unless otherwise notified. Meeting may move to site upon delivery of building. Virtual meetings may be established upon mutual agreement between all attendees.
- D. Attendance:
  - 1. Contractor: Superintendent and Project Manager.
  - 2. Owner's Representative, Architect and Contractor to mutually agree on attendance of the following before agenda is established for each meeting:
    - a. Subcontractors;
    - b. Suppliers; and
    - c. Manufacturers' Representatives.
  - 3. Owner's Representative, Architect and professional consultants, as needed.
  - 4. Others as appropriate.
- E. Suggested Agenda:
  - 1. Review and accept minutes of previous meeting.
  - 2. Review work progress since previous meeting.
  - 3. Present field observations, problems, and conflicts.
  - 4. Discuss problems impeding Construction Schedule.
  - 5. Review factory fabrication.
  - 6. Review delivery schedules.
  - 7. Present corrective measures and procedures to regain projected schedule, as applicable.
  - 8. Revise Construction Schedule, as required.
  - 9. Review plans for progress for succeeding work period.
  - 10. Coordinate work.
  - 11. Review submittal schedules.
  - 12. Review maintenance of quality standards.
  - 13. Review proposed changes for:
    - a. effect on Progress Schedule and on completion date;
    - b. effect on any other Contracts on the Project.
  - 14. Review required revisions to Project Record Documents.
  - 15. Review project safety.
  - 16. Status of Payments; Upcoming Application for Payment.
  - 17. On-going commissioning process.
  - 18. Review any other business.

## 2.03 PRE-INSTALLATION AND COORDINATION CONFERENCES

- A. Contractor will schedule and administer pre-installation conferences as indicated in respective specification section or as otherwise required throughout work progress.
  - 1. Purpose is to ensure Contractor and Contractor's Superintendent, Subcontractors and applicable foremen, installers, suppliers, fabricators, and others as appropriate, are coordinated and understand the Project requirements, quality requirements, safety, and design parameters and constraints.
- B. Those meetings shall be scheduled by the Contractor as agreed by the Owner's Representative at least 4 days prior to any work for the applicable section.
  - 1. Schedule meetings to occur in conjunction with other regularly scheduled construction meetings that Architect and Owner's Representative attend.

2. Applicable submittals as well as the Subcontractor's safety plan and insurance certificates shall have been submitted to and approved by the Owner prior to scheduling this conference. The Contractor may elect to group several sections or divisions to minimize the number of these meetings.
- C. Subcontractors and major suppliers are required to attend pre-installation conferences prior to commencing work of their respective specifications section, or as required by related work in other specification sections.
- D. Require attendance of entities directly affecting, or affected by, work of the section including Architect, Owner, Owner's Representative, Contractor's Project Manager and Superintendent with Lead Man performing the work, and/or the appropriate subcontractors/suppliers/fabricators.
- E. Agenda (as applicable):
1. Review technical contract requirements with any options. Contractor to submit any options and resolve with Owner any conflicts, interference, or compatibility problems.
  2. Insurance and certifications.
  3. Schedule.
  4. Review requirements and status as relates to:
    - a. schedule;
    - b. submittals and mock-ups;
    - c. tolerances;
    - d. Manufacturer's requirements; and
    - e. weather limitations.
  5. Quality control methods:
    - a. Testing/Inspection requirements;
    - b. Acceptability of substrates;
    - c. Required performance results; and
    - d. Recording requirements.
  6. Applicable governing rules and regulations.
  7. Temporary facilities and controls:
    - a. Safety, environmental controls, security, noise;
    - b. Space and access limitations.
  8. Protection of work, curing periods and related subjects.
  9. Other business.
- F. Meetings include but are not limited to:
1. Structural engineering
  2. Aluminum Framed Entrances and Storefronts
  3. Electrical and communications system
  4. Others as noted Divisions 02 through 34.

### PART 3 - EXECUTION

Not Used.

**END OF SECTION 013119**

## **SECTION 013215-CONSTRUCTION SCHEDULE**

### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Prepare Preliminary Schedule, the Construction Schedule, Short Interval Schedules with two-week look aheads, monthly updates and changes according to General Conditions/007000.

#### **1.02 RELATED SECTIONS**

- A. Coordinate related work specified in other parts of the Project Manual, including but not limited to following:
  - 1. Section 007000 - General Conditions of the Contract
  - 2. Section 013323 - Shop Drawings, Product Data and Samples: review time

### **PART 2 - PRODUCTS**

Not Used.

### **PART 3 - EXECUTION**

Not Used.

**END OF SECTION 013215**

## SECTION 013310- SUBMITTAL PROCEDURES

### PART 1 - GENERAL

#### 1.01 SUMMARY

##### A. Section includes:

1. General submittal procedures, further described in other sections, including but not limited to:
  - a. Construction schedules and reports as required by General Conditions.
  - b. List of Submittals.
    - 1) Include approximate schedule for submittals.
    - 2) Schedule of submittals shall be organized chronologically and by section number.
    - 3) Provide not later than first payment application.
  - c. Shop drawings, product data, and samples as required by Section 013323.
    - 1) Materials Safety Data Sheets (MSDSs).
  - d. Testing laboratory and inspection reports as required by Section 014523.
2. Miscellaneous submittals, including but not limited to:
  - a. Submittals prior to start of construction.
  - b. Proposed products lists.
  - c. Manufacturers' installation instructions.
  - d. Manufacturers' Certificates.
  - e. Project closeout submittals other than those described in Sections 017700, 017823, 017835 and 017839.
3. Designate in Construction Schedule the dates for submission and submittal review as described in General Conditions.
  - a. For Architect's review, allow 5 working days. Allow 3 additional normal working days for each involved Consultant's and Owner's review.
  - b. Allow an additional 5 days for submittals which deviate from design intent of Contract Documents.

##### B. Related Sections:

1. Section 007000 - General Conditions of the Contract
2. Section 012600 - Contract Modification Procedures: Submit data in required form
3. Section 012910 - Application for Payment: Submit data in required forms
4. Section 013113 - Project Coordination: Coordination of Submittals; Coordination Drawings, including but not limited to Reflected Ceiling Coordination Drawings
5. Section 013119 - Project meetings: Minutes
6. Section 013114 - Communication, Correspondence, and Request for Information
7. Section 013323 - Shop Drawings, Product Data and Samples
8. Section 014523 - Testing Laboratory and Inspection Services: Reports
9. Section 016100 - Basic Product Requirements: Purchase orders and documentation for long lead time items, as applicable
10. Section 016200 - Substitutions and Product Options: Substitution Request form
11. Section 017129 - Cutting and Patching: Requirements as specified
12. Section 017823 - Operating and Maintenance Data
13. Section 017835 - Warranties and Bonds
14. Section 017839 - Project Record Documents
15. Various Sections, Division 2 through 34: As required and specified

#### 1.02 GENERAL

- A. Communications between the Owner and the Contractor shall be forwarded through the Architect in accordance with requirements of General Conditions/007000 and Section 013114.
- B. Electronic submission of all submittals shall be through Architect. Contractor shall provide 3 physical samples for all sample submittals.

#### 1.03 COMPLETE SUBMITTALS REQUIRED

- A. Unless indicated otherwise, submittals shall include the items required under the individual specification sections for the product(s) indicated. For example, product data, samples, certificates, design data and shop drawings, and the like, where required, shall be organized and submitted in a single package. Partial or incomplete submittals will be returned to the Contractor for Corrective action and resubmittal.

#### 1.04 SEQUENCING/SCHEDULING

- A. Phase-in properly with Progress Schedule as described in General Conditions.

### PART 2 - PRODUCTS

#### 2.01 SUBMITTALS PRIOR TO START OF ENGINEERING AND SHOP DRAWINGS

- A. Submit to Owner in accordance with General Conditions/007000:
  - 1. List of subcontractors and material suppliers in conformance with General Conditions.
  - 2. Names and references for proposed:
    - a. Superintendent,
    - b. Project Manager, and
    - c. Major Subcontractors.
  - 3. Policies of all types of specified bonds and insurance and notification of bonding and insurance companies indicating extent of coverage.
  - 4. List of Submittals. Include:
    - a. Specification section numbers as per this Project Manual.
    - b. Dates of submittals.
    - c. Interrelationships with other specification sections and required coordination.

#### 2.02 MANUFACTURER'S INSTALLATION INSTRUCTIONS

- A. When specified in individual specification Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- C. Identify conflicts between manufacturers' instructions/warranty requirements and Contract Documents.

#### 2.03 MANUFACTURER'S CERTIFICATES

- A. When specified in individual specification Sections, submit manufacturers' certificate to Architect for review, in quantities specified for Product Data.

- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect.

## 2.04 MISCELLANEOUS

- A. Submit evidence that tests, adjustments, and inspections required for mechanical and electrical work in mechanical and electrical divisions have been made with acceptable results.
- B. Submit information required as a condition of building permit issued by Code authority, including but not limited to:
  - 1. Certificate of Occupancy.
  - 2. Certificate of Approval from appropriate Fire Marshal.
  - 3. Certificate of Code Compliance from appropriate Electrical Inspector.
  - 4. Certificate of Code Compliance from appropriate Mechanical/Plumbing Inspector.
- C. Make following submittals to Architect where items occur within specification sections:
  - 1. Proof of subcontractors' years of experience.
  - 2. Status of "accepted" installer (manufacturer licensing, certifications, etc.).
  - 3. Approval Certificates by Manufacturer.
  - 4. Reports of intermittent inspections.
  - 5. Reports from Manufacturer's Representatives.

## PART 3 - EXECUTION

### 3.01 SUBMITTAL PROCEDURES

- A. Use these procedures to make submittals.
  - 1. Coordinate and review submittals for accuracy, completeness, and compliance with contract requirements. Indicate Contractor approval on each submittal as evidence of coordination and review.
  - 2. Shop drawings submitted without evidence of the Contractor's approval will not be reviewed.
  - 3. Where fabrication, construction or erection procedures require engineering and calculations, Contractor shall hire a Professional Engineer licensed in the State of Washington to perform these services, affix seal, and provide signature.
  - 4. Approval by the Architect shall not relieve the Contractor from responsibility for the safety of his methods or equipment or from responsibility for complying with the requirements of applicable codes and of this contract, except with respect to specifically approved variations.
  - 5. The review of drawings by the Architect or Architect's consultants is limited to general design requirements only, and shall in no way relieve the Contractor from responsibility for errors or omissions contained therein.
- B. Sequentially number the transmittal forms. Resubmittals to have original number with an alphabetic suffix. Date each submittal and resubmittal.
  - 1. Identify Project, Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail numbers, and specification Section number, as appropriate.
  - 2. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in

- accordance with the requirements of the Work and Contract Documents.
3. Schedule submittals to expedite the Project, submit electronically. Coordinate submission of related items. Include with each Submittal, early and late start for work related to submitted item, and early and late date for ordering product to meet early and late start dates. Submittal shall be rejected as incomplete without this information.
  4. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
  5. Provide space for Contractor and Architect review stamps.
  6. Revise and resubmit submittals as required, identify all changes made since previous submittal.
  7. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

C. Submittal Review:

1. The Architect will review only those items required by the Contract Documents. Information submitted by the Contractor that is not required will be returned marked "No Approval Necessary."
2. In the event a single submittal contains both required and non-required information, only the required information is subject to the Architect's review.
3. Submittals will be checked for conformance with the design concept of the project and compliance with the information given in the Contract Documents.
4. The Architect's review of drawings or data prepared by a Professional Engineer licensed in Washington will be limited to the submittal's effect on the integrity of the completed project.

### 3.02 ARCHITECT'S REVIEW STAMP

- A. Architect's Review Stamp bears markings and text similar to the following:
- REVIEWED
  - REVISE AND RESUBMIT
  - REJECTED

Review is performed only for the limited purpose of checking for general conformance with information given and the design concept expressed in the Contract Documents. Review does not include determining the accuracy and completeness of details such as dimensions and quantities or substantiating instructions for installation or performance of equipment or systems designed by the Contractor, all of which is the Contractor's responsibility. Review does not constitute approval of safety precautions or of construction means, methods, techniques, sequences or procedures. Review of a specific item does not constitute review of an assembly of which the item is a component.

### 3.03 VARIATIONS FROM CONTRACT REQUIREMENTS

- A. Variations from the Contract Drawings and Specifications shall be specifically and separately approved by the Architect.
1. Show and describe variations from the contract requirements in writing, and submit for approval in conformance with requirements of Section 016200.

**END OF SECTION 013310**

## SECTION 013323 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. Section includes requirements for:
1. Shop Drawings, Product Data and Samples required by the Contract Documents.
    - a. Submit Coordination Drawings as described in Section 013113 in same manner as Shop Drawings.
  2. Designate in Construction Schedule the dates for submission and submittal review as described in General Conditions and as indicated in Section 013310.
  3. Make submittals through Architect.
  4. Pay costs for reproduction, distribution, and materials.
- B. Related Sections:
1. Section 007000 - General Conditions of the Contract
  2. Section 013113 - Project Coordination: Schedule for submittals
  3. Section 013310 - Submittals: Note in particular requirements for complete submittals, Article 1.04
  4. Section 017839 - Project Record Documents

### PART 2 - PRODUCTS

#### 2.01 SHOP DRAWINGS

- A. General:
1. Submit Shop Drawings for fabricated and other work, as required by Specifications. Fabricate no work until Shop Drawings have been reviewed and accepted.
  2. Show by whom materials, items, work, and installation are supplied, performed, or installed. Designate every item, material article, and the like, of installations. *Do not use the expression "by others."*
  3. If Shop Drawings show variations from Contract requirements because of standard shop practices or other reason, Contractor shall make specific mention of such variations in the transmittal.
    - a. If indicated departures affect a correlated function, item, article, work, installation or construction of other trades, Contractor shall make note of it in the transmittal. Assume all extra costs involved in related changes.
  4. Clearly identify revisions on resubmittals. *Do not make revisions to previously reviewed and approved items.*
  5. If the Architect makes changes in the Shop Drawings varying from Contract and causing Contract sum deviation, notify the Architect. Do not proceed with fabrication or installation until Contractor receives written instructions or a Change Order from the Architect.
    - a. If Contractor proceeds with changes without written instructions or a Change Order, it is assumed that Contractor has accepted additional costs at own expense.
- B. Shop Drawings Requirements: Present in a clear and thorough manner.
1. Identify details by reference to sheet and detail, schedule, room numbers, or other reference shown on Contract Drawings.
  2. Do not submit freehand drawings.
  3. Provide 8-1/2" x 11", 8-1/2" x 14", 11" x 17", 24" x 36".

4. Provide electronic submission to Architect.

C. Copies Required for Each Review:

1. 11" x 17" and smaller: electronic format.
2. Larger than 11" x 17": electronic format
3. Also note requirements of Section 017839, Project Record Documents.

## 2.02 PRODUCT DATA

A. Clearly identify on each copy, as applicable:

1. Pertinent products or models;
2. Performance characteristics and capacities;
3. Dimensions and clearances;
4. Wiring, piping diagrams, controls, and the like pertinent information.
5. Collect required data into one submittal for each unit of work or system; mark each copy to show which choices and options are applicable to project.
6. MSDSs: For each and every chemical which is known to be present in the workplace, submit Materials Safety Data Sheets (MSDSs). Attach to each copy of product data above.

B. Manufacturer's Standard Schematic Drawings and Diagrams:

1. Modify drawings and diagrams to delete inapplicable information.
2. Supplement to provide pertinent information.

C. Copies required:

1. Submit 3 copies of opaque reproductions to Architect unless otherwise indicated.
2. After reviewed product data is returned to Contractor by Architect, provide copies of reviewed product data for distribution as indicated: Assure that *Architect* receives 2 reviewed copies and *each consultant* involved in the product data review receives 1 copy.

## 2.03 SAMPLES

A. Submit *samples for selection* of finishes in sufficient time for review cycle.

1. Office samples shall be of sufficient size and quantity to clearly show colors, textures, and patterns.
2. Include identification on each Sample, giving full information.
3. Assure that *Architect* receives 2 reviewed copies and each consultant involved in the sample review receives 1 copy.
  - a. Reviewed Samples which may be used in the Work are indicated in the Specification section.
4. Provide field finishes at Project as required by individual Specification Section. Install sample complete and finished. Acceptable finishes in place may be retained in completed Work.

B. Submit samples of products in sufficient time for review cycle.

1. Samples are required to illustrate product's functional characteristics with integral parts and attachment devices. Coordinate submittal of different categories for interfacing work.
2. Office samples shall be of sufficient size and quantity to clearly illustrate:
  - a. Products' functional characteristics with integrally related parts and attachment devices; and
  - b. Full range of color, texture, and pattern.
3. Include identification on each Sample, giving full information.

4. Assure that *Architect* receives 2 reviewed copies and each consultant involved in the sample review receives 1 copy. Reviewed Samples which may be used in the Work are indicated in the Specification section.

#### 2.04 INDUSTRY STANDARDS

- A. Where submittal of a standard is specified, except where included integrally with Product Data submittal, submit single copy for Architect's use.
- B. Where workmanship at Project Site and elsewhere is governed by a standard, furnish additional copies to fabricators, installers, and others involved in performance of the Work.

#### 2.05 OTHER PERTINENT DATA, AS APPLICABLE

- A. Submit as required.
- B. Include manufacturers' installation instructions when required by the Specification section.

### PART 3 - EXECUTION

#### 3.01 SUBMISSION REQUIREMENTS

- A. Transmit each submittal to Architect with AIA Form G810, or as mutually agreed. Make notification of deviations from Contract Documents.
  1. *Note that submittals via fax will not be accepted.*
- B. Sequentially number the transmittal forms. Resubmittals to have original number with an alphabetic suffix.
- C. *Thoroughly review submittals prior to forwarding. Architect will perform initial review to determine if Contractor has adequately reviewed the submittal before forwarding. If not adequately reviewed, submittal will be rejected. Dates for submission and review will be subsequently revised in the Construction Schedule, with no revisions to completion date.*
- D. Include in one location on original Shop Drawings, or on 8-1/2" x 11" white paper affixed to product data and samples the following:
  1. Project title.
  2. Date.
  3. Architect.
  4. Owner.
  5. Contractor/Supplier/Manufacturer:
    - a. Name.
    - b. Address.
    - c. Telephone number.
    - d. Representative's name.
  6. Identification of product or material, as appropriate:
    - a. Detail number.
    - b. Location.
    - c. Specification Reference.
    - d. Applicable Standard.
    - e. Finishes.

- f. Identification of deviations from Contract Documents.
  - 7. A 4" x 5" blank space for Architects/Engineers stamp.
  - 8. Contractor's and applicable Subcontractors' stamps, initialed or signed, certifying review, verification of field measurements, and Contract Documents compliance. *REVIEW AND SIGNING BY CONTRACTOR AND APPLICABLE SUBCONTRACTORS REQUIRED BEFORE SUBMITTAL TO ARCHITECT.*
  - 9. Identification of revisions on resubmittals.
- E. Additional Information Required:
- 1. Relation to adjacent structure or materials.
  - 2. Fabrication methods, assembly, installation, accessories, fasteners, and other pertinent information.
  - 3. Field dimensions, clearly identified.
  - 4. Coordination with other trades. Stamped and signed by affected trades.
- F. Submit other pertinent data as applicable:
- 1. Templates to other trades.
  - 2. Inserts to other trades in timely fashion.

### 3.02 RESUBMISSION REQUIREMENTS

- A. Make any corrections or changes in the submittals required by the Architect and resubmit until accepted.
- 1. Revise Construction Schedule to include review time for resubmission same as for initially allowed.
- B. Shop Drawings and Product Data:
- 1. Revise initial drawings or data, and resubmit as specified for the initial submittal.
  - 2. Indicate any changes which have been made other than those requested by the Architect.
- C. Samples: Submit new samples as required for initial submittal.
- D. *If more than one resubmittal is required, Contractor shall compensate Architect and each consultant involved in the review for the time they have to spend on submittal review until submittal is accepted. Contractor will compensate Architect for each additional submittal review at Architect's and Consultants' standard hourly billing rate and expenses.*

### 3.03 DISTRIBUTION

- A. Distribute reproductions of Shop Drawings and copies of Product Data bearing Architect's review stamp to:
- 1. Job site file.
  - 2. Record documents file.
  - 3. Other concerned Contractors.
  - 4. Subcontractors.
  - 5. Suppliers and fabricators.
  - 6. Owner's Project Manager.
- B. Distribute samples carrying the Architect's review stamp, as directed by Architect.

### 3.04 ARCHITECT'S REVIEW RESPONSIBILITIES

- A. Reviewing is only for general conformance and compliance with Project design concept and Contract Documents in accordance with 007000, subparagraph 4.2.7. Any action shown is subject to Contract Documents' requirements. *Contractor* is responsible for:
  - 1. Dimensions (confirm and correlate at job site).
  - 2. Fabrication processes; construction techniques.
  - 3. Quantities, space requirements, coordination of work with that of other trades.
  - 4. Union jurisdiction, infringements of patent rights.
  - 5. Possible cause of injury to persons or property.
  - 6. Satisfactory performance of Contractor's work, and the like.
  
- B. Architect's review of separate items does not constitute review of assembly in which it functions.
  
- C. Submission of Materials Safety Data Sheets (MSDSs) is for Architect's information and use and will not be reviewed for completeness or appropriateness for use on project site.

**END OF SECTION 013323**

## SECTION 014100 - REGULATORY REQUIREMENTS

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. Section includes but is not limited to following:
  - 1. Comply with laws, ordinances, rules, regulations and lawful orders as required and in conformance with Contract Documents. Keep building department, fire department, and other authorities completely informed of changes in the work in a timely manner. This includes contract modifications, amendments, additions, shop drawings, and the like, current as of Project Manual date.
  - 2. Gain approvals as required for Owner occupancy within contract scheduling requirements.
  - 3. Make adjustments and modifications as required to conform to ordinances, and regulations.
  
- B. Related Sections:
  - 1. Section 007000 - General Conditions of the Contract
  - 2. Section 007200 - Supplemental Conditions
  - 3. Section 015719 - Environmental Controls

#### 1.02 COMPLIANCE REQUIREMENTS

- A. Referenced codes establish minimum requirement levels. Where provisions of various codes or standards conflict, the more stringent provisions govern. Promptly submit to Architect written notice of observed contract document variations from legal requirements.
  
- B. Compliance requirements include, but are not limited to following:
  - 1. 2018 International Building Code (IBC), with Lakewood Amendments.
  - 2. 2018 International Mechanical Code, with Lakewood Amendments.
  - 3. 2018 International Fire Code, with Lakewood Amendments.
  - 4. 2018 Washington State Energy Code (WSEC), with Lakewood Amendments.
  - 5. Accessibility:
    - a. ICC/ANSI A117.1-2009 Accessible and Usable Buildings and Facilities - as Code Alternate.
    - b. US Department of Justice, Americans with Disabilities Architectural Guidelines (ADAAGs), 2010 edition.
    - c. 2018 IBC with Lakewood Amendments.
  - 6. National Fire Protection Association (NFPA) Codes including, but not limited to the following:
    - a. NFPA 10-2002 Standard for Portable Fire Extinguishers.
    - b. NFPA 13-2002, Standard for the Installation of Sprinkler Systems.
    - c. NFPA 80-1999, Standard for Fire Doors and Windows.
    - d. NFPA 101-2006, The Life Safety Code.
  - 7. State of Washington, WAC Chapter 296-24, General Safety and Health Standards, Washington Industrial Safety and Health Act (WISHA).
  - 8. State of Washington, WAC Chapter 296-305-06501, Safety Standards for Fire Fighters.
  - 9. Rules and Regulations of the State Board of Health.
  - 10. Department of Labor and Industries (L&I) Regulations: Hazard Communication Standards (MSDS), WAC 296-62-054 through WAC 296-62-05427.

11. State of Washington, WAC Chapter 51-13, Ventilation and Indoor Air Quality, current adopted edition.
  12. Mechanical Work:
    - a. 2018 International Mechanical Code, with Lakewood Amendments, except the standards for liquefied petroleum gas installations shall be in accordance with NFPA 58 (Storage and Handling of Liquefied Petroleum Gases) and NFPA 54 (National Fuel Gas Code).
    - b. 2018 Uniform Plumbing Code, with Lakewood Amendments.
  13. Electrical Work:
    - a. Underwriters' Laboratories (UL).
    - b. National Electrical Manufacturers' Association (NEMA).
    - c. 2020 NFPA 70, National Electrical Code (NEC), or current adopted edition
    - d. 2017 National Electrical Safety Code (NESC), or current adopted edition.
    - e. State Electrical Construction Code (from L&I).
  14. Environmental Requirements: Relevant statutes and regulations dealing with prevention of environmental pollution and preservation of public natural resources.
    - a. Washington State Department of Ecology: Emission Standards and Controls for Sources Emitting Volatile Organic Compounds (VOC), WAC 173-490, 2/2/1998 edition, or current adopted edition.
    - b. United States Environmental Protection Agency, National Volatile Organic Compound Emissions standards for Architectural Coatings, Federal Register/Vol. 63, No. 176/September 11, 1998/Rules and Regulations, Final Rule.
    - c. Puget Sound Clean Air Agency (PSCAA).
  15. City of Lakewood Municipal Code.
- C. Specifications of Higher Standards: Drawings and Specifications govern whenever Drawings and Specifications require higher standards than are required by governing codes, regulations, and the like.

## PART 2 - PRODUCTS

Not Used.

## PART 3 - EXECUTION

Not Used.

**END OF SECTION 014100**

## SECTION 014200 - REFERENCE STANDARDS

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. Listing of applicable Reference Standards used in Contract Documents. These are indicated by acronym, full title, and address.
- B. Related Sections:
  - 1. Section 014300 - Quality Requirements

#### 1.02 REFERENCE STANDARDS

- A. The Contract Documents contain references to various standard specifications, codes, practices, and requirements for materials, equipment, work quality, installation, inspections, and tests, which references are published and issued by the organizations, societies, and associations listed herein by abbreviation and name. Such references are hereby made a part of the Contract Documents to the extent specified in the General Provisions.
- B. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- C. Whenever a referenced standard contains administrative requirements, including measurement and payment provisions, such as the standards specifications of various government entities, utility districts, and other agencies, such administrative requirements shall not apply to the Work of this Contract. References to such standards shall be applicable to the pertinent technical provisions only.
- D. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. When required by individual Specification Section, obtain copy of standard, catalog or excerpt. Maintain copies at jobsite during submittals, planning, and progress of the specific work through final acceptance of the work by the Owner. Make readily available for Architect and the Contractor's staff in carrying out the quality assurance and quality control programs specified in the Contract Documents, and to assure compliance with the requirements of the codes, specifications, test methods, practices, and other standards referenced in the Contract Documents.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- F. The contractual relationship of the parties of the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

#### 1.03 SCHEDULE OF REFERENCES

- A. All listings may not be referenced in the Contract Documents.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless

otherwise indicated.

- C. Listings may not be complete. Where not shown, request information from Architect during bidding.
- D. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."
- E. Abbreviations and Acronyms for Industry Organizations, Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ACRONYM    ASSOCIATIONS & STANDARDS

AA	Aluminum Association 900 19th St. N.W., Suite 300 Washington, DC 20006 <a href="http://www.aluminum.org/">http://www.aluminum.org/</a>
AABC	Associated Air Balance Council 1518 K Street NW Washington DC 20005 <a href="http://www.aabchq.com/">http://www.aabchq.com/</a>
AAMA	American Architectural Manufacturers' Association 1827 Walden Office Sq. Suite 104 Schaumburg, IL 60173-4268 <a href="http://www.aamanet.org/">http://www.aamanet.org/</a>
AASHTO	American Association of State Highway & Transportation Officials 444 North Capital Street NW, Suite 249 Washington, DC 20001 <a href="http://www.transportation.org/">http://www.transportation.org/</a>
ABAA	Air Barrier Association of America 1600 Boston-Providence Highway Walpole, MA 02081 <a href="http://www.airbarrier.org/">http://www.airbarrier.org/</a>
ACI	American Concrete Institute P.O. Box 9094 Farmington Hills, Michigan 48333-9094 <a href="http://www.aci-int.org/">http://www.aci-int.org/</a>
AFPA	American Forest and Paper Association (Formerly: National Forest Products Association) 1111 19th St., NW, Suite 800

Washington, DC 20036  
<http://www.afandpa.org/>

- AGA American Galvanizers Association  
6881 South Holly Circle, Suite 10.8  
Englewood, CO 80112  
<http://www.galvanizeit.org/>
- AGC Associated General Contractors of America  
1957 "E" Street N.W.  
Washington, DC 20006
- AHA American Hardboard Association  
1210 W. Northwest Hwy  
Palatine, IL 60067  
[www.hardboard.org](http://www.hardboard.org)
- AIA American Institute of Architects  
1735 New York Avenue N.W.  
Washington, DC 20006-5292  
<http://www.aia.org/>
- AIA American Insurance Association  
1130 Connecticut Avenue N.W., Suite 1000  
Washington, DC 20036  
<http://www.aiadc.org/>
- AIHA American Industrial Hygiene Association  
2700 Prosperity Avenue Suite 250  
Fairfax, VA 22031  
<http://www.aiha.org/>
- AIMA Acoustical & Insulating Materials Association  
111 W. Washington St.  
Chicago, IL 60002
- AISC American Institute of Steel Construction  
One E. Wacker Dr., Suite 3100  
Chicago, IL 60601-2001  
<http://www.aisc.org/>
- AISI American Iron & Steel Institute  
1101 17th Street N.W., Suite 1300  
Washington, DC 20036-4700  
<http://www.steel.org/>
- AITC American Institute of Timber Construction  
7012 S. Revere Parkway, Suite 140  
Englewood, CO 80112  
<http://www.aitc-glulam.org/>

ALSC	American Lumber Standards Committee P.O. Box 210 Germantown, MD 20875
AMCA	Air Movement and Control Association International, Inc. 30 W. University Dr. Arlington Heights, IL 60004-1893 <a href="http://www.amca.org">www.amca.org</a>
ANSI	American National Standards Institute 11 W. 42nd St., 13th Floor New York, NY 10036-8002 <a href="http://www.ansi.org/">http://www.ansi.org/</a>
AOAC	Association of Official Analytical Chemists International 481 N. Frederick Avenue, Suite 500 Gaithersburg, MD 20877
APA/EWA	APA- The Engineered Wood Association (Formerly: American Plywood Association) P.O. Box 11700 Tacoma, WA 98411-0700 <a href="http://www.apawood.org/">http://www.apawood.org/</a>
APWA	American Public Works Association Washington State Chapter (See WSDOT)
ASA	American Standards Association 10 E. 40th Street New York, NY 10018
ASA	American Subcontractor's Association 1004 Duke St. Alexandria, VA 22314-3512 <a href="http://www.asaonline.com/">http://www.asaonline.com/</a>
ASCE	American Society of Civil Engineers - World Headquarters 1801 Alexander Bell Drive Reston, VA 20191-4400 <a href="http://www.asce.org/">http://www.asce.org/</a>
ASHRAE	American Society of Heating, Refrigeration & Air-Conditioning Engineers, Inc. 1791 Tullie Circle N.E. Atlanta, GA 30329-2305 <a href="http://www.ashrae.org/">http://www.ashrae.org/</a>
ASME	American Society of Mechanical Engineers 345 East 47th Street New York, NY 10017-2932

<http://www.asme.org/>

- ASNT American Society for Nondestructive Testing  
P.O. Box 28518  
Columbus, OH 43228-0518  
<http://www.asnt.org/>
- ASTM American Society for Testing & Materials  
100 Barr Harbor Dr.  
West Conshohocken, PA 19428-2959  
<http://www.astm.org/>
- AWCI Association of Wall and Ceiling Industries - International  
307 E. Annandale Rd., Suite 200  
Falls Church, VA 22042-2433  
<http://www.awci.org/>
- AWI Architectural Woodwork Institute  
46179 Westlake Drive, Suite 120  
Potomac Falls, VA 20165  
<http://www.awinet.org/>
- AWPA American Wood Preservers' Association  
P.O. Box 388  
Selma, AL 36702-0388  
<http://www.awpa.com/>
- AWPI American Wood Preservers Institute  
12100 Sunset Hill Rd, Suite 130  
Reston, VA 20190  
<http://www.preservedwood.com/>
- AWS American Welding Society  
550 N.W. LeJeune Rd  
Miami, FL 33126  
<http://www.aws.org/>
- BHMA Builders Hardware Manufacturers Association  
355 Lexington Avenue, 17th Floor  
New York, NY 10017-6603  
<http://buildershardware.com/>
- CISCA Ceilings and Interior Systems Construction Association  
1500 Lincoln Hwy., Suite 202  
St. Charles, IL 60174  
<http://www.cisca.org/>
- CISPI Cast Iron Soil Pipe Institute  
5959 Shallowford Rd, Suite 419  
Chattanooga, TN 37421  
[www.cispi.org](http://www.cispi.org)

CRI	The Carpet and Rug Institute P.O, Box 2048 Dalton, GA 30722-2048 <a href="http://www.carpet-rug.com/">http://www.carpet-rug.com/</a>
CSI	Construction Specifications Institute 601 Madison Street Alexandria, VA 22314-1791 <a href="http://www.csinet.org/">http://www.csinet.org/</a>
DASMA	Door and Access Systems Manufacturers Association, International (Formerly: National Association of Garage Door Manufacturers) c/o Thomas Associates, Inc. 1300 Sumner Avenue Cleveland, OH 44115-2851 <a href="http://www.dasma.com/">http://www.dasma.com/</a>
DFPA	Douglas Fir Plywood Association (See APA (now known as APA- The Engineered Wood Association))
DHI	Door and Hardware Institute 14150 Newbrook Dr., Suite 200 Chantilly, VA 20151-2223 <a href="http://www.dhi.org/">http://www.dhi.org/</a>
DOC	Department of Commerce 1401 Constitution Avenue, NW Washington, DC 20230 <a href="http://www.doc.gov/">http://www.doc.gov/</a>
DOE	Washington State Department of Ecology P.O. Box 47600 Olympia, WA 98504-7600
DOH	Washington State Department of Health 101 Israel Road SE Tumwater, WA 98501 Mail: P.O. Box 47890 Olympia, WA 98504-7890 <a href="http://www.doh.wa.gov">www.doh.wa.gov</a>
DOT	U.S. Department of Transportation 400 7th Street, S.W. Washington D.C. 20590 <a href="http://www.dot.gov/">http://www.dot.gov/</a>
EEI	Edison Electric Institute 701 Pennsylvania Avenue, NW Washington, DC 20004

<http://www.eei.org/>

- EIA            Electronic Industries Alliance  
2500 Wilson Blvd.  
Arlington, VA 22201
- EIMA          EIFS Industry Members Association  
3000 Corporate Center Dr., Suite 270  
Morrow, GA 30260  
[www.eifsfacts.com](http://www.eifsfacts.com)
- EPA            Environmental Protection Agency  
401 M. Street S.W.  
Washington, DC 20460  
<http://www.epa.gov/>
- Northwest Region:  
1200 Sixth Avenue  
Seattle, WA 98101  
(See also PSCAA, Region 10)  
<http://www.epa.gov/region10/>
- FGMA         Flat Glass Marketing Association (see GANA)
- FM            Factory Mutual System (see FMG)
- FMG          FM Global Corporate Headquarters  
PO Box 7500  
Johnston, RI 02919  
<http://www.fmglobal.com/>
- FS            Federal Specification  
Available from:  
Department of Defense Single Stock Point  
[www.dodssp.daps.mil](http://www.dodssp.daps.mil)
- Available from:  
General Services Administration  
[www.fss.gsa.gov](http://www.fss.gsa.gov)
- Available from:  
National Institute of Building Sciences  
[www.nibs.org](http://www.nibs.org)
- GSA Business Center  
909 First Avenue  
Seattle, WA 98104
- GA            Gypsum Association  
810 1st St. N.E., Suite 510

Washington, DC 20002  
<http://www.gypsum.org/>

- GANNA Glass Association of North America  
(Formerly: Flat Glass Marketing Association)  
3310 W. Harrison St.  
Topeka, KS 66611-2279  
<http://www.glasswebsite.com/ganna>
- HMMA See NAAMM
- HPMA Hardwood Plywood Manufacturers Association  
P.O. Box 2789  
Reston, VA 22090
- IAPMO International Association of Plumbing and Mechanical Officials  
20001 E. Walnut Drive South  
Walnut, CA 91789-2825  
<http://www.iapmo.org/>
- IBC (ICBO) International Building Code for International Conference of Building Officials  
5360 Workman Mill Road  
Whittier, CA 90601-2298  
<http://www.icbo.org/>
- ICC International Code Council  
5203 Leesburg Pike #708  
Falls Church, VA 22041  
[www.intlcode.org](http://www.intlcode.org)
- ICC-ES ICC Evaluation Service, Inc.  
[www.icc-es.org](http://www.icc-es.org)
- IEEE Institute of Electrical and Electronic Engineers, Inc.  
Operations Center:  
445 Hoes Lane  
Piscataway, NJ 08854-1331  
<http://www.ieee.org/>
- IESNA Illuminating Engineering Society of North America  
120 Wall Street, 1th Floor  
New York, NY 10005-4001  
<http://www.iesna.org/>
- IGMA Insulating Glass Manufacturers Alliance  
(formerly SIGMA)  
Suite 300  
1500 Bank St.  
Ottawa, Ontario. CANADA  
K1H 1B8  
<http://www.igmaonline.org/>

IMSA	International Municipal Signal Association 165 East Union Street PO Box 539 Newark, NY 14513 <a href="http://www.imsasafety.org/">http://www.imsasafety.org/</a>
IPCEA	Insulated Power Cable Engineers Association P.O. Box P South Yarmouth, MA 02664
IRI	Industrial Risk Insurers P.O. Box 5010 85 Woodland Street Hartford, CT 06102 <a href="http://www.industria.lrisk.com/">http://www.industria.lrisk.com/</a>
ISO	ISO Central Secretariat International Organization for Standardization 1, rue de Varembe, Case postale 56 CH-1211 Geneva 20, Switzerland <a href="http://www.iso.ch/">http://www.iso.ch/</a>
LEED	See USGBC
MIL	See MILSPEC
MIL-STD	See MILSPEC
MILSPEC	Military Specification and Standards Available from Department of Defense Single Stock Point <a href="http://www.dodssp.daps.mil">www.dodssp.daps.mil</a>
ML/SFA	Metal Lath/Steel Framing Association (A Division of NMMM) 8 South Michigan Avenue, suite 1000 Chicago, IL 60603 <a href="http://www.naamm.org/mlsfa.htm">http://www.naamm.org/mlsfa.htm</a>
MPI	Master Painters Institute 4090 Graveley Street Burnaby, BC V5C 3T6 <a href="http://paintinfo.com">http://paintinfo.com</a>
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. 127 Park Street NE Vienna, VA 22180-4602 <a href="http://www.mss-hg.com/">http://www.mss-hg.com/</a>
NAAMM	National Association of Architectural Metal Manufacturers 8 South Michigan Avenue, Suite 1000 Chicago, IL 60603

<http://www.naamm.org/>

NACE NACE International (National Association of Corrosion Engineers International)  
[www.nace.org](http://www.nace.org)

NAIMA North American Insulation Manufacturers Association  
(Formerly: Thermal Insulation Manufacturers Association)  
44 Canal Center Plaza, Suite 310  
Alexandria, VA 22314  
<http://www.naima.org/>

NCRP National Council on Radiation Protection and Measurement  
7910 Woodmont Ave., Suite 800  
Bethesda, MD 20814-3095  
[www.ncrp.com](http://www.ncrp.com)

NEBB National Environmental Balancing Bureau  
8575 Grovemont Circle  
Gaithersburg, MD 20877  
<http://www.nebb.org/>

NELMA Northeastern Lumber Manufacturers' Association  
P.O. Box 87A, 272 Tuttle Road  
Cumberland Center, ME 04021  
<http://www.nelma.org/>

NEMA National Electrical Manufacturer's Association  
2101 L Street N.W.  
Washington, DC 20037  
<http://www.nema.org/>

NETA InterNational Electrical Testing Association  
[www.netaworld.org](http://www.netaworld.org)

NFPA National Fire Protection Association  
1 Batterymarch Park  
Quincy, MA 02169-7471  
<http://www.nfpa.org/>

NFPA National Forest Products Association  
(See AFPA)

NFRC National Fenestration Rating Council  
8484 Georgia Ave., Suite 320  
Silver Spring, MD 20910  
<http://www.nfrc.org/>

NHLA National Hardwood Lumber Association  
P.O. Box 34518  
Memphis, TN 38184-0518

NIBS	National Institute of Building Sciences 1090 Vermont Ave., NW, Suite 700 Washington, DC 20005 <a href="http://www.nibs.org">www.nibs.org</a>
NIOSH	National Institute of Occupational Safety and Health Department of Health, Education and Welfare 200 Independence Ave SW, Room 715 H Washington, DC 20201 <a href="http://www.cdc.gov/niosh">http://www.cdc.gov/niosh</a>
NIST	National Institute of Standards and Technology 100 Bureau Dr., MS 2150 Gaithersburg, MD 20899-2150
NLGA	National Lumber Grading Authority 103 4400 Dominion Burnaby, BC V5G 4G3 <a href="http://www.nlga.org">www.nlga.org</a>
NRCA	National Roofing Contractors Association Standard O'Hare International Center 10255 W. Higgins Rd., Suite 600 Rosemont, IL 60018-5607 <a href="http://www.nrca.net/">http://www.nrca.net/</a>
NSF	NSF International (Formerly: National Sanitation Foundation) P.O. Box 130140 Ann Arbor, MI 48113-0140 <a href="http://www.nsf.org/">http://www.nsf.org/</a>
NWFA	National Wood Flooring Association 223 Old Meramec Station Road Manchester, MO 63021-5310
NWWDA	National Wood Window and Door Association (See WDMA)
NWCB	Northwest Wall and Ceiling Bureau 1032-A N.E. 65th Street Seattle, WA 98115 <a href="http://www.nwcb.org/">http://www.nwcb.org/</a>
OSHA	Occupational Safety and Health Administration/US Department of Labor 200 Constitution Avenue, NW, Room N3647 Washington, DC 20210
PCI	The Powder Coating Institute 2121 Eisenhower Ave., Suite 401 Alexandria, VA 22314 <a href="http://www.powdercoating.org/">http://www.powdercoating.org/</a>

PDCA	Painting and Decorating Contractors of America 3913 Old Lee Hwy, Suite 33-B Fairfax, VA 22030 <a href="http://www.pdca.com/">http://www.pdca.com/</a>
PDI	Plumbing & Drainage Institute 45 Bristol Drive South Easton, MA 02375 <a href="http://www.pdionline.org/">http://www.pdionline.org/</a>
PS	Product Standard of U.S. Department of Commerce Government Printing Office Washington, DC 20203
PSCAA	Puget Sound Clean Air Agency 110 Union Street, Suite 500 Seattle, WA 98101 <a href="http://www.pscleanair.org/">http://www.pscleanair.org/</a>
RFCI	Resilient Floor Covering Institute 966 Hungerford Drive, Suite 12-B Rockville, MD 20850-1714
RCSC	Research Council on Structural Connections See AISC <a href="http://www.boltcouncil.org/">http://www.boltcouncil.org/</a>
SDI	Steel Door Institute 30200 Detroit Rd. Cleveland, OH 44145-1967 <a href="http://www.steeldoor.org/">http://www.steeldoor.org/</a>
SIGMA	See IGMA
SMACNA	Sheet Metal and Air-Conditioning Contractors National Association 4201 Lafayette Center Dr. Chantilly, VA 20151-1209 <a href="http://www.smacna.org/">http://www.smacna.org/</a>
SPRI	Single Ply Roofing Institute 200 Reservoir St., 30009A Needham, MA 02494 <a href="http://www.spri.org">www.spri.org</a>
SSINA	Specialty Steel Industry of North America 3050 K Street, NW, Suite 400 Washington, DC 20007 <a href="http://www.ssina.com/">http://www.ssina.com/</a>

TCA	Tile Council of America, Inc. 100 Clemson Research Blvd. Anderson, SC 29625 <a href="http://www.tileusa.com/">http://www.tileusa.com/</a>
TCNA	See TCA.
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance 2500 Wilson Blvd, Suite 300 Arlington, VA 22201 <a href="http://www.tiaonline.org">www.tiaonline.org</a>
TIMA	Thermal Insulation Manufacturer's Association (See NAIMA)
TSCA	Toxic Substances Control Act (See PSCAA)
UL	Underwriters' Laboratories 333 Pfingsten Road Northbrook, IL 60062 <a href="http://www.ul.com/">http://www.ul.com/</a>
USDA	United States Department of Agriculture 14th St. and Independence Avenue SW Washington, DC 20250 <a href="http://www.usda.gov/">http://www.usda.gov/</a>  915 2nd Avenue Seattle, WA 98101
USGBC	U.S. Green Building Council 1015 18th Street, NW, Suite 508 Washington, DC 20036 <a href="http://www.usgbc.org/">http://www.usgbc.org/</a>
WABO	Washington Association of Building Officials P.O. Box 7310 Olympia, WA 98507-7310 <a href="http://www.wabo.org/">http://www.wabo.org/</a>
WCLIB	West Coast Lumber Inspection Bureau P.O. Box 23145 Portland, OR 97281-3145 <a href="http://www.wclib.org/">http://www.wclib.org/</a>
WCMA	Window Covering Manufacturers Association (See WCSC)
WCSC	Window Covering Safety Council (Formerly: Window Covering Manufacturers Association) 355 Lexington Avenue, Suite 1700 New York, NY 10017

<http://www.windowcoverings.org/>

- WDMA Window & Door Manufacturers Association  
{Formerly: National Wood Window and Door Association}  
1400 East Touhy Avenue, Suite 450  
Des Plaines, IL 60018-3337  
<http://www.wdma.com/>;  
<http://www.nwwda.org/>
- WH Warnock Hersey  
3210 American Drive  
Mississauga, Ontario, CN L4V 1B3
- WRCLA Western Red Cedar Lumber Association  
1200 - 555 Burrard Street  
Vancouver, British Columbia, Canada V7X 1S7  
<http://www.wrcla.org/>
- WSDA Washington State Department of Agriculture  
406 General Administration Building AXL-41  
Olympia, WA 98504  
<http://www.wa.gov/agr/>
- WSDOT Washington State Department of Transportation  
Department of General Administration - Purchasing Department  
Room 216, General Administration Building  
Olympia, WA 98504  
<http://www.wsdot.wa.gov/fasc/>
- WWPA Western Wood Products Association  
Yeon Building  
522 SW 5th Ave, Suite 500  
Portland, OR 97204-2122  
<http://www.wwpa.org/>
- WWPA Woven Wire Products Association  
1641 E. Higgins Lake Dr.  
Roscommon, MI 48653  
<http://www.wovenwire.org/>

## PART 2 - PRODUCTS

Not Used.

## PART 3 - EXECUTION

Not Used.

**END OF SECTION 014200**

## SECTION 014300 - QUALITY REQUIREMENTS

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. Section includes:
  - 1. Quality Assurance - Control of Installation.
  - 2. Tolerances.
  - 3. Manufacturer's Certificates.
  - 4. Manufacturers' Field Services.
  
- B. Related Sections:
  - 1. Section 013323 - Shop Drawings, Product Data, and Samples: Industry Standards
  - 2. Section 014200 - Reference Standards: Applicability of specified reference standards
  - 3. Section 014523 - Testing Laboratory and Inspection Services
  - 4. Mechanical and Electrical Divisions: testing and demonstration of mechanical equipment

#### 1.02 QUALITY ASSURANCE - CONTROL OF INSTALLATION

- A. Maintain quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
  
- B. 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.
  
- C. Perform work by persons qualified to produce workmanship of specified quality.
  
- D. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

#### 1.03 TOLERANCES

- A. Monitor tolerance control of installed Products to produce acceptable Work. Do not permit tolerances to accumulate.
  
- B. Comply with manufacturer's tolerances. Should manufacturer's tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
  
- C. Adjust Products to appropriate dimensions, position before securing Products in place.

#### 1.04 MANUFACTURERS' CERTIFICATES

- A. Refer to Section 013310.

#### 1.05 MANUFACTURERS' INSTRUCTIONS

- A. Refer to Sections 013310 and 016100.

#### 1.06 MANUFACTURERS' FIELD SERVICES

- A. When specified in respective Specifications Section, require supplier and manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to make appropriate recommendations.
1. Manufacturer's representative shall attend applicable pre-installation conferences.
  2. Representative shall submit written report to Architect listing observations and recommendations.

#### PART 2 - PRODUCTS

Not Used.

#### PART 3 - EXECUTION

Not Used.

**END OF SECTION 014300**

## SECTION 015100-TEMPORARY UTILITIES AND FACILITIES

### PART 1 - GENERAL

#### 1.01 SUMMARY

A. Section includes:

1. Furnish, install, maintain and protect temporary utilities required for construction. Include installation of extensions and branching, as required.
  - a. Temporary utilities shall be safe, non-hazardous, and sanitary. They are to be protective of persons and property, and be free of deleterious effects.
2. Remove temporary utilities after completion of work.
3. Interface temporary utilities with each phase of construction as required.
4. Coordinate utility shutdowns with Owner.
5. Parking.
6. Staging and laydown area.
7. Deliveries.

B. Related Sections:

1. Section 015213 - Field Offices and Sheds
2. Section 015400 - Construction Aids
3. Section 015600 - Temporary Barriers and Enclosures
4. Section 015700 - Temporary Controls
5. Mechanical and Electrical Divisions.

#### 1.02 REFERENCES AND STANDARDS

A. Applicable provisions of the following standards shall apply to the work of this Section, except as modified herein, and are hereby made a part of these Specifications to the extent required:

ANSI A10.3-95	Safety Requirements for Power Actuated Fastening Systems
ANSI A10.4-94	Safety Requirements for Personnel Hoists
ANSI A10.5-92	Safety Requirements for Material Hoists
ANSI A10.6-90(R 1998)	Requirements for Demolition Safety
ANSI A10.7-98	Commercial Explosives and Blasting Agents - Safety Requirements for Transportation, Storage, Handling and Use
ANSI A10.8-01	Safety Requirements for Scaffolding
ANSI A10.9-97	Concrete and Masonry Work Safety Requirements
ANSI A10.10-90(R 1998)	Safety Requirements for Temporary and Portable Space Heating Devices and Equipment
ANSI A10.11-89(R1998)	Safety Requirements for Safety Nets
ANSI A10.12-98	Safety Requirements for Excavation
ANSI A10.13-01	Safety Requirements for Steel Erection
ANSI A10.14-91	Construction and Demolition Operations - Requirements for Safety Belts, Harnesses, Lanyards, and Lifelines for Construction and Demolition Use
ANSI A10.15-95	Safety Requirements for Dredging
ANSI A10.17-97	Safe Operating Practices for Hot Mix Asphalt (HMA) Construction
ANSI A10.18-96	Safety Requirements for Temporary Floors; Hole, Wall Openings, Stairways and Other Unprotected Edges in

ANSI A10.22-90(R 1998)	Construction and Demolition Operations Safety Requirements for Rope-Guided and Non-Guided Worker's Hoists
NFPA 241-2000	Safeguarding Construction, Alteration, and Demolition Operations

### 1.03 QUALITY ASSURANCE

- A. Requirements of Regulatory Agencies: See Section 014100 for referenced codes, ordinances, and the like, and comply with the following:
  - 1. Rules and recommendations of utility companies.
  - 2. Applicable local industry standards for construction work (published recommendations by local "building councils").
  - 3. Applicable provisions of ANSI-Series standards on construction safety, including A10.3, A10.4, A10.5, A10.6, A10.7, A10.8, A10.9, A10.10, A10.11, A10.12, A10.13, A10.14, A10.15, A10.17, A10.18, A10.20, and A10.22.
  - 4. NFPA 241.
  - 5. Conserving Energy Material: Install and operate temporary facilities and perform construction activities in manner to conserve and avoid waste of materials, energy, and water.
  - 6. OSHA.
  - 7. Local agencies and Fire Department as applicable.

## PART 2 - PRODUCTS

### 2.01 TEMPORARY SERVICES

- A. General: Required services include, but are not limited to water, electrical power, heating and ventilating, and telephones. Comply with service companies' recommendations for materials and methods, or engage service companies to install services. Locate and relocate services (as necessary) to minimize interference with construction operations.
- B. Materials may be new or used, but are required to be of adequate capacity for usage. Do not use materials constituting unsafe conditions, or that violate applicable codes and standards.
- C. Interface temporary utilities with each phase of construction as required.

### 2.02 TEMPORARY ELECTRICITY AND LIGHTING

- A. Size to provide service required for power and lighting.
- B. Furnish, install and maintain circuit and branch wiring, with area distribution boxes located so that electricity is available for power and lighting throughout the construction by the use of construction type power cords. Install and maintain temporary equipment in accordance with applicable safety regulations.
- C. Provide adequate artificial lighting for:
  - 1. work areas where natural light is not adequate for work;
  - 2. areas of public access; and for:
  - 3. security/night-time illumination.

## 2.03 TEMPORARY HEAT AND VENTILATION

- A. Provide temporary heat and ventilation required to:
  - 1. maintain adequate environmental conditions facilitating work progress;
  - 2. meet specified minimum conditions for installation of materials; and to:
  - 3. protect materials and finishes from damage due to temperature and humidity.
  - 4. maintain minimum ambient temperature of 50° F, in areas where construction is in progress, unless indicated otherwise in specifications.
- B. Provide adequate forced ventilation of enclosed areas to:
  - 1. cure installed materials;
  - 2. disperse humidity; and:
  - 3. prevent hazardous accumulations of dust, fumes, vapors, and gases.
- C. Portable heaters: Use standard approved units complete with controls.
- D. Pay for power or other fuels {propane, and the like) used.
- E. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

## 2.04 TEMPORARY TELEPHONE/FAX SERVICE/E-MAIL

- A. At start of site Work, arrange with local telephone service company as necessary.
- B. Pay costs for installations, maintenance, and removals.
  - 1. Pay service charges for local calls.
  - 2. Require toll charges to be paid by party placing call.

## 2.05 TEMPORARY WATER

- A. Provide water for construction purposes.
  - 1. Install branch piping as required for construction; include appropriate pressure- reducing stations. Locate taps so water is available throughout the Project by use of hoses. Protect piping and fittings against freezing.
- B. Provide drinking water from a proven safe source for all those connected with the Work. Pipe or transport water in such a manner as to keep it clean and fresh. Serve in single service containers or sanitary drinking fountains.

## 2.06 TEMPORARY SANITARY FACILITIES

- A. Coordinate with Owner's Site Development/Foundation Contractor for shared, temporary use of sanitary facilities or arrange and pay costs for installation, maintenance, and removal of temporary sanitary facilities.

## 2.07 TEMPORARY FIRE PROTECTION

- A. Comply with governing laws, codes, and regulations to maintain required protection at all times. Include proper and adequate back up protection during any "shut-down" of normal protection systems.

- B. Conduct operations in a manner that is fire-safe for the work area and adjacent areas. Proper fire extinguishers shall be provided, identified, and maintained. The premise shall be maintained, clear of rubber, debris, or other material constituting a potential fire hazard.
  - 1. All contractors shall have personnel trained in fire prevention and emergency action.
  - 2. Use only flame-proof tarpaulins.
  - 3. Use welding and flame cutting equipment only in the presence of a designated user of fire protection equipment.
  - 4. Fire extinguishers for use by personnel at sites: Provide types, sizes, numbers, and locations to be effective in early stage extinguishing.
- C. *Pay costs for installations, maintenance, and removals.*

## 2.08 SITE ACCESS FOR PARKING, STAGING, LAYDOWN, DELIVERIES

- A. Limited site parking will be available to the Contractor for temporary use during erection and installation.
- B. Limited areas will be available to the Contractor for temporary staging, laydown, and deliveries during erection and installation. Contractor is not to block driveways or otherwise interfere with ongoing work by Owner's Site Development/Foundation Contractor. Coordinate specific requirements with Architect prior to delivery.

## 2.09 FENCING AND SECURITY

- A. Contractor to provide temporary security fencing or other protection measures, as required to secure modular building and surrounding area during erection/installation and completion of modular building.

## PART 3 - EXECUTION

### 3.01 GENERAL

- A. Maintain, operate, modify, and extend systems as work progress requires. Assure continuous services. Verify termination/removals with Architect.
- B. Protect storm/landscape drains by using filter fabrics or other means acceptable for local requirements.

### 3.02 REMOVAL

- A. Completely remove temporary materials and equipment when no longer required.
  - 1. Remove temporary above grade or buried utilities, equipment, facilities, materials, prior to Final Application for Payment inspection.
  - 2. Clean and repair damage to site or site improvements caused by temporary installations and use of temporary facilities. Restore permanent facilities used during construction to specified condition.
  - 3. Disinfect premises occupied by temporary sanitary facilities.
  - 4. Replace used air filters in air systems used for temporary heat and ventilation.
- B. Prior to Final Inspections, remove temporary lamps and install new lamps unless otherwise specified/Division 34, Electrical.

**END OF SECTION 015100**

## SECTION 015600 - TEMPORARY BARRIERS AND ENCLOSURES

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. Section Includes:
  - 1. Prevent injury to persons, including from traffic.
  - 2. Protect the work from Construction operations.
  - 3. Prevent public entry.
  - 4. Protect adjacent properties, structures, and utilities.
  - 5. Remove barriers at completion of the Work, or when no longer needed.
  
- B. Related Sections:
  - 1. Section 007000 - General Conditions of the Contract
  - 2. Section 013119 - Project Meetings

#### 1.02 QUALITY ASSURANCE

- A. Regulatory Requirements: See Section 014100 for federal, state, city, and other local codes and regulations, as applicable. Comply with the most stringent requirements.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Materials may be new or used. They are to be suitable for intended purposes, reasonably clean, and uniform in appearance. They must not violate requirements of governing codes and standards.

#### 2.02 GENERAL CONSTRUCTION FENCING

- A. Chain link fencing per City of Lakewood and Owner requirements.

#### 2.03 BARRIERS AND OTHER PROTECTIVE DEVICES

- A. Choose any allowed appropriate material, as suitable for required purposes.

### PART 3 - EXECUTION

#### 3.01 GENERAL

- A. Install barriers neatly, reasonably uniform, and structurally adequate for required purpose. Maintain barriers as long as required. Relocate barriers as required by construction progress.

#### 3.02 CONSTRUCTION FENCES

- A. Prior to start of on-site work and at earliest reasonable date, install enclosure fence in location to suit Site Development/Foundation Contractor and Owner requirements.

#### 3.03 BARRIERS AND OTHER PROTECTIVE DEVICES

- A. Provide and install as required and necessary.
  - 1. Contractor's equipment located on sidewalks or other pedestrian ways shall be suitably barricaded for cane detection as a warning for sight impaired persons. Barricade shall include a horizontal member at a maximum of two feet above the walking surface, pedestrian traffic will be diverted with appropriate signs, barricades, fences, and the like from any area where contractor equipment or operations may pose a threat to the safety and health of staff, students and visitors.
  - 2. Use certified flaggers.
  - 3. Maintain barriers in safe and secure condition for duration of their need.

#### 3.04 REMOVAL

- A. Completely remove specified facilities including foundations, when no longer needed. Clean areas as required at installations.
- B. Clean and repair damage caused by installations. Perform any necessary filling and grading to make work conform to required construction finish elevations and slopes. Patch holes in pavement to match existing where fence posts have been removed.

**END OF SECTION 015600**

## **SECTION 015636 - SECURITY**

### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Section Includes:
  - 1. Protect Work, stored products, and construction equipment from theft and vandalism; and:
  - 2. Protect modular building during site erection/installation from entry by unauthorized persons.
  
- B. Related Sections:
  - 1. Section 013119 - Project Meetings
  - 2. Section 015100 - Temporary Utilities and Facilities
  - 3. Section 015700 - Temporary Controls
  - 4. Section 016100 - Product Requirements

### **PART 2 - PRODUCTS**

Not Used.

### **PART 3 - EXECUTION**

#### **3.01 MAINTENANCE OF SECURITY**

- A. Provide adequate security to protect the building and work site from unauthorized entry. The Contractor is solely responsible for any theft, damage, or injury caused by a breach of such security.
  
- B. Initiate security program promptly after job mobilization, when enclosure fence, gates, and temporary enclosures are installed.
  
- C. Maintain security program throughout construction period, until Owner occupancy or Owner acceptance precludes the need for contractor security.

#### **3.02 PERSONNEL**

- A. Exclude from building any personnel not authorized and properly identified.

#### **3.03 ENTRANCE CONTROL**

- A. Provide control of persons and vehicles entering and leaving modular fabrication area and site areas.
  
- B. Allow entrance only to authorized persons with proper identifications.

#### **3.04 SECURITY SERVICE**

- A. Contractor may employ a recognized patrol/guard service to provide a watchman service, at times of day or night when general construction work is not in progress.

**END OF SECTION 015636**

## **PART 1 - GENERAL**

### 1.1 SECTION INCLUDES

- A. This Section includes the protection and trimming of trees that interfere with, or are affected by, execution of the Work, whether temporary or new construction.
- B. Related Sections include the following:
  - 1. Division 01 Section "Summary" for limits placed on Contractor's use of the site.
  - 2. Division 01 Section "Temporary Facilities and Controls" for temporary tree protection.
  - 3. Division 31 Section "Site Clearing" for removal limits of trees, shrubs, and other plantings affected by new construction.
  - 4. Division 31 Section "Earth Moving" for building and utility trench excavation, backfilling, compacting, grading requirements, and soil materials placement.
  - 5. Division 32 Section "Soil Preparation" for soil materials and amendments.
  - 6. Division 32 Section "Transplanting" for tree and shrub transplanting.
  - 7. Division 32 Section "Plants" for tree and shrub planting, and tree support systems.

### 1.2 DEFINITIONS

- A. Tree Protection Zone: The area surrounding a tree equal to the diameter of its canopy which is designated to protect the roots and health of the tree.

### 1.3 SUBMITTALS

- A. The following Submittals shall be provided prior to commencement of any work on the project site.
  - 1. Product Data: For each type of product indicated.
  - 2. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names, and addresses of Owner's Representatives and owners, and other information specified.
  - 3. Certification: Written certification from a qualified arborist stating tree protection measures have been correctly installed prior to commencement of construction, that trees have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.
  - 4. Maintenance Recommendations: From a qualified arborist outlining procedures for the care, monitoring and protection of trees during construction and following completion of all work on site.
  - 5. Existing Conditions: Provide documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.

- a. Use sufficiently detailed photographs or videotape.
- b. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

#### 1.4 QUALITY ASSURANCE

- A. Tree Service Qualifications: An experienced tree service firm that has successfully completed tree protection and trimming work similar to that required for this Project and that will assign an experienced, qualified arborist to the Project site on a full-time basis during execution of the Work.
- B. Arborist Qualifications: An arborist certified by the International Society of Arboriculture or licensed in the jurisdiction where Project is located.
- C. Tree Pruning Standards: Comply with ANSI A300, "Trees, Shrubs, and Other Woody Plant Maintenance, Standard Practices," unless more stringent requirements are dictated by the arborist or governing agencies.
- D. Preconstruction Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."
  1. Before starting tree protection and trimming, meet with representatives of authorities having jurisdiction, Owner, Owner's Representative, Landscape Architect, consultants, and other concerned entities. Review tree protection and trimming procedures and responsibilities. Notify participants at least three working days before convening conference. Record discussions and agreements and furnish a copy to each participant.

#### 1.5 PROJECT CONDITIONS

- A. The following practices are prohibited within tree and shrub protection zones:
  1. Storage of construction materials, debris, or excavated material.
  2. Parking vehicles or equipment.
  3. Vehicle or foot traffic.
  4. Erection of sheds or structures.
  5. Impoundment of water.
  6. Excavation or other digging unless otherwise indicated.
  7. Modification of soil grade by cutting or filling unless indicated otherwise.
  8. Damage to roots by grading, tearing, or grubbing.
  9. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
  10. Cleaning equipment or material.
- B. Do not direct vehicle or equipment exhaust toward tree protection zones.
- C. Prohibit heat sources, flames, ignition sources, and smoking within or near tree protection zones.
- D. No damaging attachment, wires, signs, or permits may be fastened to any protected tree.

## **PART 2 - PRODUCTS**

### 2.1 MATERIALS

- A. Drainage Fill: Selected crushed stone, or crushed or uncrushed gravel, washed, ASTM D 448, Size 24, with 90 to 100 percent passing a 2-1/2-inch sieve and not more than 10 percent passing a 3/4-inch sieve.
- B. Topsoil: Fertile, friable, surface soil, containing natural loam and complying with ASTM D 5268. Provide topsoil that is free of stones larger than 1 inch in any dimension and free of other extraneous or toxic matter harmful to plant growth. Obtain topsoil only from well-drained sites where soil occurs in depth of 4 inches or more; do not obtain from bogs or marshes.
- C. Filter Fabric: Manufacturer's standard, nonwoven, pervious, geotextile fabric of polypropylene, nylon, or polyester fibers.
- D. Tree Protection Fence: Galvanized chain-link fence of minimum 6ft tall, secured with metal posts driven in the ground with signage designating the tree protection zone attached to the fence every 30 feet.

## **PART 3 - EXECUTION**

### 3.1 EXAMINATION

- A. Prior to commencing work on site, the Contactor shall:
  - 1. Review the existing site conditions. Any conflicts or discrepancies between existing conditions and the documented grades shall be immediately brought to the attention of the Owner's Representative.
  - 2. Verify all work can be performed outside of designated tree protection zones, without altering existing grade beneath trees, causing damage to, or removing tree roots. Any work which cannot be performed under these conditions shall be immediately brought to the attention of the Owner's Representative.
- B. Install tree protection fencing as indicated on the documents or outside the drip line of trees, to protect existing vegetation to remain from construction damage.
  - 1. If installing tree protection is infeasible in any portion of the site due to steep slopes or other conditions, propose an alternative method of identifying the tree protection zone and obtain approval from the Owner's Representative prior to installation.
- C. Protect tree root systems from damage caused by runoff or spillage of noxious materials when mixing, placing, or storing construction materials. Protect root systems from flooding, eroding, or excessive wetting caused by dewatering operations.
- D. Protect all existing plant material to remain against unnecessary cutting, breaking, or skinning of roots and branches, or skinning and bruising of bark.

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TEMPORARY TREE AND PLANT PROTECTION

- E. Do not store construction materials, debris, or excavated material within the drip line of remaining trees. Do not permit vehicles or foot traffic within the drip line; prevent soil compaction over root systems.
- F. Do not allow fires under or adjacent to remaining trees or other plants.
- G. Do not spray any herbicide or toxic substance within drip line of any existing plant material without approval of Owner's Representative.
- H. Water trees and other vegetation which are to remain as necessary to maintain their health during the course of the work. Rate of frequency of application to be determined jointly by Arborist and Owner's Representative.

3.2 DEMOLITION WITHIN TREE PROTECTION ZONE

- A. Demolition of existing paths and other infrastructure within the TPZ shall proceed with caution. Spoils should be hauled outside of the TPZ immediately (no temporary stockpiles). Coordinate with the Owner's Representative if tree roots are revealed during demolition to document exposed roots and tree protection measures, and provide on-the-ground recommendations, if needed.

3.3 EXCAVATION AROUND TREES

- A. Do not excavate within drip line of trees, unless otherwise indicated.
- B. Install shoring or other protective support systems to minimize sloping or benching of excavations.
- C. When excavating within the tree protection zone, roots smaller than 2" diameter may be pruned clean to sound wood using a sharp saw as digging progresses to avoid pulling and tearing roots. Prune roots at the limits of work perpendicular to the natural growth direction with bark firmly intact.
- D. Where trenching is required within drip lines, tunnel under or around roots larger than 2" diameter by hand digging or boring. . Where excavating or tunnelling around roots is not feasible, review conditions with Owner's Representative. Do not cut roots larger than 2" diameter without approval from Owner's Representative.
- E. Where excavating for new construction is required within drip line of trees, hand excavate to minimize damage to root systems. Use narrow tine spading forks and comb soil to expose roots.
  - 1. Relocate roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and relocate them without breaking. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

- F. Where utility trenches are required within drip line of trees, tunnel under or around roots by drilling, auger boring, pipe jacking, or digging by hand.
  - 1. Root Pruning: Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots with sharp pruning instruments; do not break or chop.
- G. Prune branches in accordance with good horticultural practice to balance loss to root system caused by damage or cutting of root system.
- H. Where silt fencing is required to be installed within the tree protection zone, it shall not be trenched in. Use straw wattles or compost socks staked above grade to secure silt fence.

#### 3.4 GRADING AND FILLING AROUND TREES

- A. Maintain existing grade within drip line of trees unless otherwise indicated. Install protection measures as shown on the Drawings.
- B. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade beyond drip line of trees. Maintain existing grades within drip line of trees.
- C. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by qualified arborist, unless otherwise indicated.
- D. Root Pruning: Excavation beneath the dripline of protected trees shall be avoided if alternatives are available. Roots smaller than 2-inches in diameter may be pruned clean to sound wood using a sharp saw as digging progresses to avoid pulling and tearing roots; prune roots at the limits of work perpendicular to the natural growth direction with bark firmly intact. Excavation immediately adjacent to roots 2-inches and larger in diameter shall be by hand or other non-invasive techniques to ensure that roots are not damaged. The Contractor shall coordinate with the Project Arborist to assess and document roots 2- inches and larger in diameter prior to impacts. Where feasible, these roots shall be protected by tunneling or other means to avoid destruction or damage. Exceptions can be made if, in the opinion of the Project Arborist, unacceptable damage will not occur to the tree. The Project Arborist shall document any such coordination in a report to the City.
- E. Fill: Where new surfacing is proposed within the TPZ, avoid excavation, and use a modified profile to build up from existing grade where feasible. The uppermost organic matter may be gently scraped from the ground using an excavator with a flat blade bucket (no excavation). Place a layer of permeable geotextile fabric on the ground surface and top the fabric with clean crushed rock per the pavement detail to raise the grade as needed. Surfacing may include asphalt, concrete, or other materials.

August 4, 2023

TEMPORARY TREE AND PLANT PROTECTION

3.5 TREE REMOVAL

- A. Trees to be removed shall be clearly identified with tree-marking paint or other methods approved in advanced by the project arborist. Tree removal shall be performed by a Qualified Tree Service. Tree protection fencing may be temporarily opened to allow tree removal within the TPZ. Directionally fell trees with caution or surgically remove them from the top down to avoid damage to protected trees.

3.6 STUMP REMOVAL

- A. Stumps of trees planned for removal that are located within the RPZ of retained trees shall be removed by stump grinding to just below the ground surface. Stumps of trees planned for removal that are located along steep riverbanks shall be removed with the Owner's Representative and upon approval, shall remain in the ground and be treated with an aquatically safe herbicide, pre-approved for use by the Owner's Representative, applied to the fresh cut stump face using a paint brush on a dry day or as otherwise specified by the manufacturer.

3.7 TREE PRUNING

- A. Prune remaining trees affected by temporary and new construction as approved by Owner's Representative.
  - 1. Prune all dead or hazardous branches larger than 2 inches in diameter from all trees to remain.
  - 2. Prune low branches which overhang walks, roads, drives or parking areas.
    - a. Walks – within 8 feet vertically of a walk surface.
    - b. Parking – within 12 feet vertically of the parking surface.
    - c. Roads and Drives – within 14 feet vertically of the drive surface.
- B. Prune remaining trees to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period as recommended by qualified arborist.
- C. Pruning Standards: Prune trees according to ANSI A300 as follows:
  - 1. Type of Pruning:
    - a. Crown cleaning.
    - b. Crown thinning.
    - c. Crown raising.
    - d. Crown reduction.
    - e. Vista pruning.

- f. Crown restoration.
  
  - D. Cut branches with sharp pruning instruments; do not break or chop.
  - E. Chip branches removed from trees. Spread chips where indicated on the Drawings or as directed by Owner's Representative.
- 3.8 PLANTING WITHIN TREE PROTECTION ZONE
- A. Tree protection fencing may be removed when landscaping commences within the TPZ. Where landscaping is desired, remove weeds by hand and with hand tools and apply 2- to 3-inches of mulch beneath the dripline of protected trees, but not directly against tree trunks. Seed mix, shrubs, and other ground cover plants may be installed by hand and should be adjusted as needed to avoid tree root impacts. If irrigation is used, ensure that any irrigation spray heads are directed away from tree trunks.
- 3.9 TREE REPAIR AND REPLACEMENT
- A. Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots according to written instructions of the qualified arborist. Engage a qualified tree surgeon to advise Contractor on appropriate protection measures and to perform tree repair work if required. Make repairs promptly after damage occurs at no additional cost to the Owner.
  - B. Remove and replace dead and damaged trees that the qualified arborist determines to be incapable of restoring to a normal growth pattern.
    - 1. Provide new trees of the same size and species as those being replaced; plant and maintain as specified in Division 32 Section "Plants."
  - C. Provide new trees of 2-inch caliper size and of a species selected by Owner's Representative when trees more than 6 inches in caliper size, measured 12 inches above grade, are required to be replaced.
  - D. In the event that any trees are damaged, destroyed, or removed as a result of Contractors', its agents', or employees' acts or omissions; then damages shall be assessed against the Contractor in accordance with the trunk formula method set forth in The Council of Tree and Landscape Appraisers "Guide for Plant Appraisal," latest edition. In the event that a tree is damaged, but not to the extent that it must be removed, damages will be calculated

as a percentage of the total value of the damaged tree, as estimated by the Owner's Arborist. Contractor shall also pay as damages, all costs associated with the appraisal of tree damage, lost tree value and any required repairs to the trees as determined solely by the Owner's Arborist.

- E. Owner may elect to receive compensation for plants destroyed or damaged by the Contractor. Trees shall be valued at \$25,000 each, and shrubs at \$1,000 each. The compensation shall be paid by the Contractor for each occurrence of loss due to the Contractor's activities or negligence. The compensation shall be paid by the Contractor for each occurrence of loss due to the Contractor's activities or negligence.
- F. Any wound or damage by construction activities to an existing tree indicated to remain constitutes partial injury. These include, but are not limited to:
  - 1. Any tissue damage.
  - 2. Unauthorized cutting, breaking, or removing tree branches or roots.
  - 3. Unauthorized ingress, cutting or damaging protected root zones.
  - 4. Soil compaction.
  - 5. Toxic run-off into tree preservation areas.
  - 6. Unauthorized discharge of materials into the tree protection zone.
- G. Partial injury will be calculated by percentage, estimated by the Owner's Representative Owner's Arborist, of the total value of the damaged tree. Damages for partial injuries will include the cost to the Owner for loss appraisal by the Owner's Representative's and Owner's Arborist's plus the cost for necessary damage repair.
- H. Aerate surface soil, compacted during construction, 10 feet beyond drip line and no closer than 36 inches to tree trunk. Drill 2-inch diameter holes a minimum of 12 inches deep at 24 inches on center. Backfill holes with a mix of equal quantities of augered soil and sand.

### 3.10 DISPOSAL OF WASTE MATERIALS

- A. Burning is not permitted.
- B. Disposal: Remove excess excavated material, displaced trees, and excess chips from Owner's property.

END OF SECTION

## SECTION 015700 - TEMPORARY CONTROLS

### PART 1 - GENERAL

#### 1.01 SUMMARY

##### A. Section Includes:

1. Provide and maintain controls using methods, equipment, and temporary construction.
2. Protect against unfavorable controls over environmental and other factory and site conditions and related areas under your management. Remove physical evidence of temporary control facilities at completion of Work.
3. Protect adjacent buildings and sitework outside of project area.
4. Coordinate with project phasing.
5. Protect existing utilities to remain both on-site and off-site.
6. Include control provisions for:
  - a. Dust
  - b. Water
  - c. Debris: Disposal management requirements are specified in Section 017419.
  - d. Pollution
  - e. Erosion and sediment
  - f. Protection of work
  - g. Noise
  - h. Fumes (i.e., paints and coatings, exhausts)
  - i. Others, as required
7. Ensure compliance with regulations governing the site and vicinity. Designate one person - the Construction Superintendent, or other to enforce provisions preventing:
  - a. Air, water, and soil pollution.
  - b. Waste generation.
  - c. Other irritating, harmful effects.

##### B. Related Sections:

1. Section 011100 - Summary of Work: Work sequence, Contractor's use of premises
2. Section 015100 - Temporary Utilities and Facilities
3. Section 015719 - Environmental Controls
4. Section 017129 - Cutting and Patching
5. Section 017419 - Construction Waste and Disposal Management
6. Section 017423 - Final Cleaning

#### 1.02 QUALITY ASSURANCE

- ##### A. Requirements of Regulatory Agencies: See Section 014100 for referenced Codes, ordinances and the like.
1. Where applicable, conform to requirements of state and local air pollution control agency, and other authorities' rules and regulations.
  2. Comply with applicable authorities' requirements including those of local utility companies.

#### 1.03 DUST CONTROL

- ##### A. Provide positive methods and apply dust control materials to minimize raising dust from construction operations. Prevent air-borne dust from dispersing into adjacent facilities and the atmosphere.

- B. Block out and/or cover HVAC ducts, enclosures, voids and the like during construction to ensure no dust or fume accumulation.

#### 1.04 WATER CONTROL

- A. Provide methods to control rain water during site erection/installation of prefabricated building until downspouts are permanently connected to stormwater systems. Prevent damage to prefabricated building and adjoining properties.
- B. Control site installation activities to direct surface drainage away from construction areas, and to direct drainage to proper runoff. Maintain excavations free of water.
- C. Provide, operate, and maintain hydraulic equipment of adequate capacity to control water.
- D. Dispose of drainage water in a manner to prevent flooding, and other damage to any portion of the building, site or adjoining properties.

#### 1.05 POLLUTION CONTROL

- A. In accordance with Section 015719, and following:
  - 1. Provide methods, means, and facilities required to prevent contamination of soil, water, or atmosphere. Allow no discharge of noxious substances or fumes from construction operations.
  - 2. Provide equipment and personnel; perform emergency measures required to contain spillages. Remove contaminated soils and liquids.
    - a. Excavate and dispose of earth contaminated by contractor operations off-site in compliance with laws and regulations.
    - b. Replace with suitable compacted fill and topsoil. Provide Owner with receipt of soil acceptability prior to installation.
  - 3. Take special measures to prevent harmful substances from entering public waters.
    - a. Prevent disposal of wastes, effluents, chemicals, or other such substances in or adjacent to bodies of water, or in sanitary or storm sewers.
  - 4. Provide systems for control of atmospheric pollutants in accordance with federal, state, and local published rules and regulations.
    - a. Prevent toxic concentrations of chemicals.
    - b. Prevent harmful dispersal of pollutants into the atmosphere or building HVAC system in the adjacent surrounding buildings.

#### 1.06 EROSION AND SEDIMENT CONTROL

- A. Provide temporary protection of erodible soils during site erection/installation of prefabricated building until downspouts are permanently connected to stormwater systems and installation crews have demobilized from site. Employ methods as may be necessary to effectively prevent erosion and control sedimentation.
- B. Mechanically retard and control runoff rate. This includes construction of diversion ditches, benches, and berms to retard and divert runoff to protected drainage courses.
- C. Temporary erosion and siltation control work shall conform to the local and state requirements except costs for the work shall be considered incidental to and included in the contract.

- D. Periodically inspect earthwork to detect any evidence of the start of erosion, apply corrective measures as required to control erosion.

#### 1.07 PROTECTION OF WORK DURING SITE ERECTION/INSTALLATION/COMPLETION

- A. Provide temporary protection measures for roof seams and other openings in walls or roof during transportation to site, during erection/installation of prefabricated components on site and for all other activities associated with project.
- B. Provide temporary protection for installed products during final completion on site. Control traffic in immediate area to minimize damage.
  - 1. Prohibit traffic or storage upon waterproofed or roofed surfaces.

#### 1.08 REMOVAL

- A. Remove temporary materials, equipment, services, and construction when Architect authorizes.
  - 1. Clean and repair damage caused by installations and use of temporary facilities. Remove temporary control installations. Restore existing facilities used during construction to specified, or to original, condition.

#### PART 2 - PRODUCTS

Not Used.

#### PART 3 - EXECUTION

Not Used.

**END OF SECTION 015700**

## SECTION 015719 - ENVIRONMENTAL CONTROLS

### PART 1 - GENERAL

#### 1.01 SUMMARY

##### A. Section Includes

1. Familiarity with Laws and Ordinances:
  - a. Abide by the following laws and ordinances where and if applicable to this Project.
  - b. Pay fines and penalties resulting from the Contractor's failure to comply with the Federal, State, and local pollution control regulations set forth herein.
  - c. Costs involved with these preventive measures shall be considered as incidental to the construction of this Project and shall be included in the contract price for the various items which comprise this Contract.
2. Environmental protection.

##### B. Section Includes:

1. Section 015700 - Temporary Controls
2. Section 015720 - Indoor Air Quality
3. Section 015730 - Noise Control
4. Section 017413 - Cleaning

#### 1.02 AIR POLLUTION

- A. Maintain air quality within the National Emission Standards for Hazardous Air Pollutants. Air pollutants being defined as that to which no ambient air quality standard is applicable and which in the judgment of the Administrator of the Environmental Protection Agency Clean Air Act may cause, or contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness.
- B. Comply with local standards and regulations, as applicable.

#### 1.03 WATER POLLUTION CONTROL

- A. In order to effectively control water pollution, erosion and related damage, the Contractor will be expected to perform work of a temporary nature.
- B. Comply with local standards and regulations, as applicable.

#### 1.04 NOISE POLLUTION

- A. Pursuant to the EPA Noise Control Act of 1972, conduct the Work within the noise limits specified as follows:
  1. Section 1(a): For the purposes of this ordinance, "allowable level of noise" means not more than ninety five (95) decibels as measured on the "A" scale of a General Radio Company #1551-B sound level meter, or equivalent, stationed at a distance of not less than twenty (20) feet to the side of a motor vehicle as such motor vehicle passes the sound level meter, or is stationed not less than twenty (20) feet from a stationary motor or engine, horn, whistle, amplifier, tool or other object being tested.

- B. Comply with local standards and regulations, as applicable.

#### 1.05 ENVIRONMENTAL PROTECTION

- A. Contractor is encouraged to use environmentally friendly products, such that are made of recycled materials and use less of natural resources; and methods and procedures that are energy efficient and non-polluting.
- B. Whenever possible, recycle construction waste and demolition debris. Process recycling on site where possible, or sort debris for off-site recycling. Comply with local standards and regulations, as applicable.

#### PART 2 - PRODUCTS

Not Used.

#### PART 3 - EXECUTION

Not Used.

**END OF SECTION 015719**

## SECTION 015730- NOISE CONTROL

### PART 1 - GENERAL

#### 1.01 SUMMARY

A. Section Includes:

1. Conduct work, use appropriate construction methods and equipment, and furnish and install acoustical barriers as necessary, so that no noise emanating from the process or any related tool or equipment will exceed noise levels as indicated.

B. Related Sections:

1. Section 015700 - Temporary Controls
2. Section 015719 - Environmental Controls

#### 1.02 INTENT

- A. The purpose of this specification is to keep the level of construction noise inside adjacent buildings from exceeding a dBA 55 curve {with windows closed} during normal working hours. Night time activities, if any, should be quiet.

#### 1.03 SUBMITTALS

- A. Mitigation of Construction Noise Impact: Submit to the Owner proposed plans to mitigate the construction noise impacts and to comply with the noise criteria specified herein, including the method of construction, the equipment to be used, and acoustical treatments if necessary.

#### 1.04 QUALITY ASSURANCE

- A. Regulatory Requirements: Noise control regulations as currently amended.

#### 1.05 SEQUENCING/SCHEDULING

- A. Restrict construction noise to hours and magnitudes indicated by the Lakewood Municipal Code.
- B. Construction activities occurring during other hours shall be quiet. "Quiet" is defined as sound not exceeding existing ambient noise or 45 dBA, whichever is lowest.
1. Request permission by Owner to exceed "quiet" during any of these hours. Submit written request not less than one week in advance to allow Owner time to coordinate and notify neighbors. State reason for request.
  2. Notify and obtain prior approval from the City of Lakewood prior to beginning unusually noisy procedures.

### PART 2 - PRODUCTS

Not Used.

### PART 3 - EXECUTION

### 3.01 NOISE CONTROL

- A. Conform to noise control regulations. Be familiar with applicable laws and ordinances.
  - 1. General: Equipment that can be electrically driven instead of gas or diesel is preferred. If noise levels on any gear cannot reasonably be brought down to criteria, do not use that gear. Conformance to this specification shall be included in the Contract price and no compensation will be allowed for special equipment, overtime, and the like that may be required.
  - 2. Outdoor Vehicle and Internal Combustion Engine Noise: Noise level of each piece of equipment shall not be greater than 86 dBA at a distance of 50 feet as measured under noisiest operating conditions. Rubber-tired equipment will be used whenever possible instead of equipment with metal tracks. Mufflers for stationary engines shall be hospital area quality of silencing.
  - 3. Air compressors: Equip with silencing packages. Electric driven are required.
  - 4. Jack Hammers and Roto Hammers: May be used if permitted by the Owner. Use core-drilling or saw cutting equipment. Time of use subject to approval by Owner.

**END OF SECTION 015730**

## SECTION 016100 - PRODUCT REQUIREMENTS

### PART 1 - GENERAL

#### 1.01 SUMMARY

##### A. Section includes:

1. Products, materials, and equipment incorporated into the work:
  - a. Products, materials, and equipment shall be new unless specified or shown otherwise.
  - b. Conform to applicable specifications and standards.
  - c. Comply with size, make, type, and quality specified, or as specifically accepted in writing by Architect.
  - d. Manufactured and Fabricated Products:
    - 1) Design, fabricate, and assemble in accordance with "First Class Workmanship" as defined in Section 011150.
    - 2) Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.
    - 3) Two or more items of the same kind to be identical and by same manufacturer (whether furnished under one Section or more).
    - 4) Provide products suitable for service conditions.
    - 5) Adhere to indicated equipment capacities, sizes, and dimensions unless variations are specifically accepted in writing.
  - e. Do not use materials and equipment for other than designed or specified purposes and uses.
2. Long-Lead-Time Items: Provide copies of purchase orders to Architect with reasonable promptness after receipt of Notice to Proceed for such items. Forward copies of acknowledgment, production, and shipping schedules to Architect as they are received for all required items. Order items far enough in advance to assure timely delivery. No schedule adjustments will be granted for failure to do so.
3. Material transportation, storage, and protection

##### B. Related Sections:

1. Section 007000 - General Conditions of the Contract: Paragraph 3.5, Warranty
2. Section 011150 - Intent and Definitions of Language Used in this Manual
3. Section 013310 - Submittal Procedures
4. Section 016200 - Substitutions and Product Options

#### 1.02 DEFINITION

- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying, and erection of the Work.

#### 1.03 MANUFACTURER'S INSTRUCTIONS

- A. When Contract Documents require installation of work to comply with Manufacturer's printed instructions, obtain and distribute instructions to concerned entities. Include for Owner, Architect, and field office. Submit in accordance with Section 013310 before starting the work.
1. Until project is complete, maintain at job site one set of complete installation and maintenance instructions for materials and equipment.

- B. Handle, store, install, connect, clean, condition and adjust products in accordance with Manufacturer's recommendations, directions, and specified requirements. See Section 011150 for paragraphs pertaining to manufacturers' recommendations and directions.
  - 1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Architect for further instructions.
  - 2. Do not proceed with work without clear instructions.

## PART 2 - PRODUCTS

Not Used.

## PART 3 - EXECUTION

### 3.01 TRANSPORTATION, STORAGE, AND PROTECTION

- A. Transport, store, and handle products in accordance with manufacturer's instructions; seals and labels intact and legible.
  - 1. Store products subject to damage by the elements in weathertight enclosures.
  - 2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
  - 3. Do not allow any storage of combustible materials in any mechanical or electrical equipment room.
  - 4. Note requirements on Materials Safety Data Sheets (MSDSs).
- B. Exterior Storage:
  - 1. Store fabricated products above ground. Position on blocking or skids; prevent soiling or staining. Cover products subject to deterioration with impervious sheet coverings. Provide adequate ventilation to avoid condensation.
  - 2. Store loose granular materials in well-drained areas on solid surfaces. Prevent mixing with foreign matter.
  - 3. Coordinate on-site storage with Architect and Owner.
- C. Arrange storage to provide easy access for periodic inspection. Assure that products are:
  - 1. Maintained under specified conditions;
  - 2. and kept free from damage or deterioration.
- D. Protect products after installation (see more detailed requirements in individual Specification Sections):
  - 1. Protect all parts of the buildings from damage (from all causes) until Owner's acceptance.
  - 2. Provide substantial coverings such as boarding, building paper, polyethylene sheeting, and the like as necessary to protect installed products. Protect against:
    - a. traffic damage;
    - b. subsequent construction operations; and the like.
  - 3. Remove coverings when no longer needed.
  - 4. Repair or replace damages to Architect's satisfaction and as required for acceptance.

**END OF SECTION 016100**

## SECTION 016200-SUBSTITUTIONS AND PRODUCT OPTIONS

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. Section includes:
1. Furnish and install Products specified, under options and conditions for substitutions stated in this Section.
  2. Substitutions will not be considered during construction if:
    - a. They are indicated or implied on Shop Drawings or other Project data submittals, without proper notice shown on attached form;
    - b. They are requested directly by a subcontractor or supplier;
    - c. Acceptance will require substantial revisions of Contract Documents.
- B. Related Sections:
1. Section 007000 - General Conditions of the Contract
  2. Section 013323 - Shop Drawings, Product Data and Samples
  3. Section 016100 - Product Requirements

#### 1.02 PRODUCTS

- A. Where specified only by reference standards, select any product meeting standards by any manufacturer.
- B. Where specified by naming several products or manufacturers, select any product and manufacturer named. Other products and manufacturers will not be considered.
- C. Where specified by naming one or more products, but indicating "or accepted" or similar terminology after specified listing, submit any request for another product substitution on attached form in conformance with Article 1.03, Substitutions, below.
- D. Where specified by naming only one product and manufacturer, followed by words indicating that no substitution is permitted, there is no option, and no substitution will be allowed.

#### 1.03 SUBSTITUTIONS

- A. General: Contractor will evaluate all substitution requests and make recommendations before submitting to Owner and Architect.
- B. Substitution Requests Prior to Bid Opening: As required, submit written substitution requests (on form provided) to Architect.
1. Electronic submission to [kate@buildingwork.design](mailto:kate@buildingwork.design)
  2. Time/submitted in order to be received in Architect's office: Not later than 10 days prior to bid opening. Request received after this date will not be considered.
  3. Submittals received with less than required days for review or with incorrect form may be rejected.
- C. After Contract date, Owner and Architect may, at their option, consider certain other substitutions submitted in accordance with requirements of this Section.
1. Substitution requests must be made within the first 20 days after Notice to Proceed.

2. Allow not less than 10 days for Architect's consideration of product substitution in addition to time required for submittal review in accordance with Section 013323.
  3. As required, submit written substitution requests (on form provided) to Architect: 3 copies/each of product submission.
- D. Indicate one or more of following reasons for request:
1. Substitution is required for compliance with final Code interpretation requirements, or insurance regulations.
  2. Specified product is unavailable through no fault of Contractor or subcontractor.
  3. Subsequent information discloses specified product unable to perform properly or fit designated space.
  4. Manufacturer or fabricator refuses to certify or guarantee performance of specified product, as required.
  5. Substitution provides significant benefit to the Owner by saving substantial cost, time or other considerations. (Show accurate cost data on proposed substitution in comparison with product or method specified.)
- E. In making request for Substitution, manufacturer/ Contractor represents:
1. Contractor has personally investigated proposed product, and in his/her opinion, it is equal or superior in all respects to that specified.
  2. Contractor will coordinate installation of accepted substitution and guarantees to complete it in all respects.
    - a. Contractor has outlined any changes required in accordance with form.
  3. Contractor will provide the same guarantee for Substitution as for specified product.
  4. Contractor waives all claims for additional costs related to Substitution which consequently become apparent.
  5. Cost data is complete and includes related costs under his/her Contract, but excludes:
    - a. Cost under separate Contracts. (Show impact on attached form.)
  6. Where substitution(s) affect(s) the system design (as determined by the Architect) the Contractor has included in his/her cost data a credit to the Owner of the amount necessary for the Architect to revise the contract documents and/or record drawings.

## PART 2 - PRODUCTS

Not Used.

## PART 3 - EXECUTION

Not Used.

NOTE: SUBSTITUTION REQUEST FORM FOLLOWS.

**SUBSTITUTION REQUEST FORM**

TO: BuildingWork  
159 Western Ave West  
Suite 486  
Seattle, WA 98119  
Attn: Michele Hill  
kate@buildingwork.design

PROJECT NAME: PCLS Lakewood Interim Library Site Development  
Lakewood, Washington

CONTRACTOR:

---

We hereby submit for consideration, the following product instead of specified item for above project:

SECTION	PARAGRAPH	SPECIFIED ITEM
_____	_____	_____

Proposed substitution: \_\_\_\_\_

Attach complete dimensional information and technical data in conformance with Sections 013310 and 013323, including laboratory tests, if applicable.

Include complete information on changes to Drawings and Specifications which proposed substitution will require for its proper installation.

Submit with request all necessary samples and substantiating data to prove equal quality, performance, and appearance to that specified. Clearly mark manufacturer's literature to indicate equality in performance. Indicate differences in quality of materials and construction.

Fill in Blanks Below:

A. Does the substitution affect dimensions shown on Drawings?  
Yes \_\_\_\_\_ No \_\_\_\_\_ If yes, clearly indicate changes. \_\_\_\_\_

---

B. The Undersigned agrees to pay for changes to the building design and Architect's review time, including engineering and detailing costs caused by the requested substitution.

C. What affect does substitution have on other trades, other Contracts, and Contract completion date?  
\_\_\_\_\_  
\_\_\_\_\_

D. What affect does substitution have on applicable code requirements?  
\_\_\_\_\_  
\_\_\_\_\_

E. Difference between proposed substitution and specified item? \_\_\_\_\_  
\_\_\_\_\_

F. Manufacturer's guarantees of the proposed and specified items are:  
\_\_\_\_\_ Same \_\_\_\_\_ Different  
(explain) \_\_\_\_\_

G. List of names and addresses of 3 similar projects on which product was used, date of installation, and Architect's name and address:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

Cost impact: \_\_\_\_\_

**CERTIFICATION OF EQUAL PERFORMANCE AND ASSUMPTION OF LIABILITY FOR EQUAL PERFORMANCE**

The Undersigned attests function and quality equal or superior to specified items.

Signature must be by person having authority to legally bind his/her firm to the above terms. Failure to provide legally binding signature will result in retraction of acceptance.

Submitted By:

\_\_\_\_\_  
Signature Address

\_\_\_\_\_  
PRINTED NAME AND TITLE

\_\_\_\_\_  
Firm Telephone

\_\_\_\_\_  
Date

For Use by Architect:

\_\_\_\_\_ Accepted \_\_\_\_\_ Accepted as Noted

\_\_\_\_\_ Not Accepted \_\_\_\_\_ Received Too Late

By \_\_\_\_\_ Date \_\_\_\_\_

Remarks \_\_\_\_\_

**END OF FORM**

**END OF SECTION 016200**

## SECTION 017129 - CUTTING AND PATCHING

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. Section includes:
  - 1. Provide cutting, fitting, and patching including attendant excavation and backfill, required to complete the Work, and to:
    - a. make its several parts fit together properly;
    - b. uncover portions of the Work to provide for installation of any ill-timed work;
    - c. remove and replace defective work;
    - d. remove and replace work not conforming to requirements of Contract Documents;
    - e. remove samples of installed work as specified for testing;
    - f. provide routine penetrations of non-structural surfaces for installation of piping, duct work and electrical conduit;
  - 2. For additional requirements for cutting and patching, see respective Specifications Sections.
- B. Related Sections:
  - 1. Section 007000 - General Conditions of the Contract:
  - 2. Section 016100 - Product Requirements
  - 3. Mechanical and Electrical Work: Coordinate cutting and patching with mechanical and electrical subcontractors.
  - 4. Individual Specification Sections: Cutting and patching, incidental to work of those Sections.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Comply with Specifications and standards for each applicable product.
- B. Product Substitution: For any proposed change in materials, submit request for substitution under provisions of Sections 016100 and 016200.

### PART 3 - EXECUTION

#### 3.01 INSPECTION

- A. Inspect elements subject to damage or movement during cutting and patching.
- B. After uncovering work, inspect conditions affecting product installations and work performance.
- C. Submit written reports to Owner and Architect of unsatisfactory work or questionable conditions. Do not proceed with work until Owner issues further instructions.

#### 3.02 PREPARATION

- A. Provide adequate temporary support as necessary to assure structural integrity of affected work portion.
- B. Provide devices and methods protecting other portions of project from damage.

- C. Provide protection from elements for work exposed by cutting and patching.

### 3.03 CUTTING

- A. Execute cutting and removals by methods preventing damage to other work. Use core drilling equipment and diamond saws for cutting required openings in concrete and masonry. Do not overcut corners. (Do not use hammering and chopping tools.) Provide proper surfaces to receive repairs.
- B. Execute any required excavating and backfilling by methods preventing settlement or damage to other work.
- C. Uncover work to install improperly sequenced work.
- D. Remove and replace defective or non-conforming work.
- E. Remove samples of installed work for testing when requested.
- F. Provide openings in the work for penetration of mechanical and electrical work.
- G. Employ a "Specialist" as defined in Section 011150 to perform cutting and patching for:
  - 1. sight-exposed finished surfaces; and
  - 2. weather-exposed and moisture-resistant elements.
  - 3. Employ original installer to perform cutting and patching of newly installed materials.
- H. Execute fitting and adjustment of products to provide finished installations complying with specified products, functions, tolerances, and finishes.
- I. Restore work cut or removed. Install new products as required to complete work in accordance with Contract Documents.
- J. Cutting shall be done wet whenever possible. Take precautions to protect workers and public from dust.

### 3.04 PATCHING

- A. Execute patching to complement adjacent work.
- B. Fit products together to integrate with other work.
- C. Execute work by methods to avoid damage to other work, and which will provide appropriate surfaces to receive patching and finishing.
- D. Employ a "Specialist" as defined in Section 011150, experienced in restoration projects to perform patching for:
  - 1. sight-exposed finished surfaces;
  - 2. weather-exposed and moisture-resistant elements;
  - 3. at penetrations of waterproof membranes, such as test areas.
  - 4. Employ original installer to perform cutting and patching of newly installed materials.

- E. Restore work with new products in accordance with requirements of Contract Documents.
- F. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- G. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 078400, to full thickness of the penetrated element.
- H. Refinish entire surfaces as necessary to provide even finish matching adjacent finishes.
  - 1. For continuous surfaces, refinish to nearest intersection.
  - 2. For an assembly, refinish the entire unit.

**END OF SECTION 017129**

## SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. Section includes:
  - 1. Control waste generation and reuse, salvage or recycle materials as much as economically feasible and consistent with the intent of RCW 39.04.135.
  - 2. Develop a Waste Management Plan for this project.
- B. Related Sections:
  - 1. Section 017423 - Cleaning

#### 1.02 DEFINITIONS

- A. Chemical Waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals and inorganic wastes.
- B. Class III Landfill: A landfill that accepts non-hazardous waste such as household, commercial and industrial waste, including construction, remodeling, repair and demolition operations.
- C. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- D. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
- E. Environmental Pollution and Damage: The presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humanity; or degrade the utility of the environment for aesthetic, cultural or historical purposes.
- F. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.
- G. Inert Fill: A permitted facility that accepts inert waste such as asphalt and concrete exclusively.
  - 1. Inert Solids/ Inert Waste: Non-liquid solid waste including, but not limited to, soil and concrete, that does not contain hazardous waste or soluble pollutants at concentrations in excess of water-quality objectives established by a regional water board pursuant to local regulations and does not contain significant quantities of decomposable solid waste.
- H. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.
- I. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- J. 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.

- K. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- L. 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.
- M. Return: To give back reusable items or unused products to vendors for credit.
- N. Reuse: To reuse a construction waste material in some manner on the project site.
- O. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- P. Sanitary Wastes:
  - 1. Garbage: Refuse and scraps resulting from preparation, cooking, distribution or consumption of food.
  - 2. Sewage: Domestic sanitary sewage.
- Q. Sediment: Soil and other debris that has been eroded and transported by storm or well production runoff water.
- R. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- S. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- T. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- U. 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.

### 1.03 SYSTEM DESCRIPTION

- A. Landfill Alternatives:
  - 1. An analysis of trash/waste to be generated and landfill options as specified for Waste Management Plan described below.
  - 2. Describe as many alternatives to landfilling as possible.
    - a. List each material proposed to be salvaged, reused, or recycled during the course of the Project.
    - b. Estimate quantities for each waste stream.
    - c. State the proposed recycle or disposal method for each waste stream.
    - d. State on-site storage method for each waste stream.
    - e. State transportation method for each waste stream.
    - f. State the estimated net cost resulting from each alternative, after subtracting revenue from sale of recycled or salvaged materials and landfill tipping fees saved due to diversion of materials from the landfill.
  - 3. Provide alternatives to landfilling for at least the following materials:
    - a. Aluminum and plastic beverage containers.
    - b. Corrugated cardboard.
    - c. Wood pallets.

- d. Clean dimensional wood: May be used as blocking or furring.
  - e. Metals, including packaging banding, metal studs and trim, ductwork, piping, sheet metal, structural steel, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
  - f. Glass.
  - g. Gypsum drywall and plaster.
  - h. Carpet, carpet cushion, carpet tile, and carpet remnants, both new and removed: DuPont {<http://flooring.dupont.com>) and Interface {[www.interfaceinc.com](http://www.interfaceinc.com)) conduct reclamation programs.
  - i. Paint.
  - j. Plastic sheeting.
  - k. Rigid foam insulation.
  - l. Plumbing fixtures.
  - m. Mechanical and electrical equipment.
  - n. Fluorescent lamps {light bulbs}.
  - o. Acoustical ceiling tile and panels.
4. Include the names for each subcontractor who will transport solid or hazardous waste from the site and the name of the receiving facility that will accept waste for disposal.

B. Waste Management Plan:

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 project trash/waste in the landfill(s).
3. Landfill Alternatives: List waste materials that will be diverted from landfills by reuse, salvage, or recycling.
  - a. List each material proposed to be salvaged, reused, or recycled.
  - b. List the local market for each material.
  - c. State the estimated net cost, versus landfill disposal.
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.

C. Implementation:

1. For each material recycled, reused, or salvaged from the project, the amount (in tons or cubic yards), the date removed from the job site, the receiving party, the transportation cost, the amount of any money paid or received for the recycled or salvaged material, the net total cost or savings of salvage or recycling the material. Include manifests, weight ticket receipts or invoices.
2. The amount (in tons or cubic yards) of material landfilled from the project, the location of the receiving facility, the total amount of tip fees paid at the landfill, and the total disposal cost. Include manifests, weight tickets, receipts and invoices.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013310, Submittal Procedures:
  - 1. Landfill Alternatives Proposal/Draft Waste Management Plan: Within 14 working days after receipt of Notice to Proceed, or prior to any trash or waste removal, whichever occurs first, submit to the Architect and Owner for review and approval 3 copies of a Draft Waste Management Plan projecting trash/waste that will require disposal and alternatives to landfilling, with net costs. The plan is described in Paragraph 1.03 A. above.
  - 2. Waste Management Plan: Include information as described in Paragraph 1.03 B. above.
  - 3. Implementation: Submit a monthly progress report summary of waste generated at the project. Submit the summary on a form acceptable to the Owner containing information indicated in Paragraph 1.03 C. above.

#### 1.05 RESOURCES

- A. Contractor must meet any City of Lakewood disposal requirements.
- B. Recycling Centers and Waste Haulers: For information, contact the Department of Ecology Recycling (1-800-RECYCLE) or the Solid Waste Department of nearby Counties.

#### 1.06 ADDITIONAL RECYCLING REQUIREMENTS

- A. Handling:
  - 1. Materials shall be free of dirt, adhesives, solvents, petroleum contamination and other substances deleterious to recycling process. Clean materials which are contaminated prior to placing in collection containers.
  - 2. Arrange for collection by or delivery to the appropriate recycling center or transfer station that accepts construction and demolition waste for purpose of recycling.

### PART 2 - PRODUCTS

#### 2.01 PRODUCT SUBSTITUTIONS

- A. Notify Architect when Contractor is aware of materials, equipment or products that meet the aesthetic and programmatic intent of Contract Documents, but which are more environmentally-sensitive than materials, equipment or products specified or indicated in the Contract Documents.
- B. For each proposed product substitution, submit the following information in addition to requirements specified in Section 016200, Substitutions:
  - 1. Relative amount of waste produced, compared to specified product.
  - 2. Cost savings on waste disposal, compared to specified product, to be deducted from the Contract Sum.
  - 3. Proposed disposal method for waste product.
  - 4. Markets for recycled waste product.

### PART 3 - EXECUTION

#### 3.01 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.
- B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each

subcontractor, Owner, and Architect.

- C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.
- D. Meetings: Discuss trash/waste management goals and issues at project meetings.
  - 1. Pre-construction meeting.
  - 2. 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. As a minimum, provide:
    - a. Separate area for storage of materials to be reused on-site, such as wood cut-offs for blocking.
    - b. Separate dumpsters for each category of recyclable materials.
    - c. Recycling bins at worker lunch area.
  - 2. Provide containers as required.
  - 3. Provide temporary enclosures around piles of separated materials to be recycled or salvaged.
  - 4. Provide materials for barriers and enclosures that are nonhazardous, recyclable, or reusable to the maximum extent possible; reuse project construction waste materials if possible.
  - 5. Locate enclosures out of the way of construction traffic.
  - 6. Provide adequate space for pick-up and delivery and convenience to subcontractors.
  - 7. If an enclosed area is not provided, clearly lay out and label a specific area on-site.
  - 8. 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. Disposal Operations:
  - 1. Promptly and legally transport and dispose of removed and demolished items and waste materials that are not identified to be recycled or reused.
  - 2. Do not burn, bury or otherwise dispose of rubbish and waste materials on project site.

**END OF SECTION 017419**

## SECTION 017423 - CLEANING

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. Section includes:
  - 1. Cleaning During Fabrication and Site Construction
    - a. Maintain Interior and exterior areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition. Protect work in progress and adjoining work on the basis of continuous maintenance.
    - b. Remove waste materials, debris, and rubbish from site weekly and dispose off- site.
  - 2. Final Cleaning
    - a. Employing skilled Cleaning Contractor for final cleaning.
      - 1) Ductwork shall be vacuumed by company specializing in this service.
    - b. Conducting cleaning and disposal operations.
  - 3. Complying with governing codes, ordinances, regulations, anti-pollution laws, and the like during cleaning.
- B. Related Sections:
  - 1. Section 007000 - General Conditions of the Contract
  - 2. Section 015719 - Environmental Controls
  - 3. Section 015720 - Indoor Air Quality
  - 4. Specifications: For cleaning of specific product or work, see Specification Section for that work.

#### 1.02 SUBMITTALS

- A. Submit in accordance with Sections 013310, Submittal Procedures, and 013323, Shop Drawings, Product Data and Samples:
  - 1. Cleaning Plan.

#### 1.03 QUALITY ASSURANCE

- A. Requirements of Regulatory Agencies: See Sections 014100 and 015719 for referenced codes, ordinances and the like.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Do not use cleaning materials damaging to surfaces.
- B. Do not use cleaning materials creating hazards to health or property.
- C. Use only cleaning materials and methods recommended by manufacturer of surface material to be cleaned.

### PART 3 - EXECUTION

#### 3.01 CLEANING DURING FABRICATION AND SITE INSTALLATION/COMPLETION

A. Material Control

1. Execute periodic cleaning. Keep work areas free from accumulation of construction waste materials, rubbish, and windblown debris.
  - a. Protect new materials from damage by construction debris.
  - b. Dispose daily of flammable, hazardous, and toxic waste materials. Storage of these materials will not be permitted on the interior of the building.
    - 1) Disposal and storage must be in accordance with 40 CFR; WAC 173-303; 49 CFR; state and local fire codes and regulations.
2. Provide on-site containers for collection of waste materials, debris, and rubbish.
  - a. Periodically remove from site.
  - b. Dispose of legally at disposal areas away from site.
3. Store volatile wastes in covered metal containers and remove from premises daily. Prevent accumulation of wastes which create hazardous conditions. Provide adequate ventilation during use of volatile or noxious substances.

B. Dust Control

1. Clean interior spaces and surfaces prior to start of finish painting. Continue cleaning on an "as-needed" basis until painting is finished.
2. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces.

C. Debris Control

1. In accordance with Section 015719, Environmental Protection Procedures, and following:
  - a. Maintain all areas free of extraneous debris.
  - b. Initiate and maintain a specific program to prevent accumulation of debris at construction site, storage and parking areas, and along access roads and haul routes.
    - 1) Provide containers for deposit of debris as specified.
    - 2) Prohibit overloading of trucks to prevent spillages on access and haul routes.
      - a) Provide periodic inspection of traffic areas to enforce requirements.
  - c. Schedule periodic collection and disposal of debris as specified.
    - 1) Provide additional collection and disposal of debris whenever the periodic schedule is inadequate to prevent accumulation.
  - d. Keep storm sewers free of debris or extraneous materials

3.02 FINAL CLEANING

A. Cleaning includes but is not limited to following procedures:

1. Clean in accordance with excellent housekeeping practices. Remove dust and dirt in corners.
2. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, non-permanent labels, and other foreign materials from sight-exposed interior and exterior surfaces.
  - a. Clean hard-surfaced finishes, to dirt-free condition, free of dust, stains, films and similar noticeable detracting substances.
  - b. Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces.
  - c. Restore reflective surfaces to original reflective conditions.
3. Remove debris from limited-access spaces including trenches, equipment vaults, manholes, and similar spaces.
4. Clean light fixtures and lamps so as to function with full efficiency.
5. Ventilating System:
  - a. Clean permanent filters and replace disposable filters, if units were operated during

- construction.
  - b. Clean ducts, blowers, and coils, if units were operated without filters during construction.  
Clean inside ducts.
  - 6. Surfaces of mechanical and electrical equipment. Include vertical and horizontal surfaces, pipes, ducts, conduits, and the like.
  - 7. Clean plumbing fixtures to sanitary condition.
  - 8. Vacuum or mop as required concrete floors.
  - 9. Vacuum carpet and remove stains as required.
  - 10. Provide special cleaning for all trades at completion of work as follows:
    - a. Clean the top surfaces of removable ceiling panels and ducts, light fixtures, piping, conduit, and horizontal collecting surfaces above removable ceilings.
    - b. Remove stains from glass; wash, polish same, inside and outside.
    - c. Exercise care not to scratch glass.
    - d. Replace broken glass.
    - e. Remove marks, stains, fingerprints, dust, dirt from painted and decorated work.
    - f. Clean, polish hardware for all trades; this shall include removal of stains, dust, dirt, paint and the like.
    - g. Remove spots, soil, paint from tile work and mirrors; wash same.
    - h. Clean fixtures, shelves, casework, furnishings, equipment; remove stains, paint, dirt, dust.
    - i. Remove temporary floor protections; clean finish floors and floor coverings.
    - j. Clean exterior, interior metal surfaces, including doors and windows of oil, stains, dust, dirt, paint and the like. Polish, leave without fingermarks, other blemishes.
    - k. Remove from site crates, packing materials, and the like.
    - l. Clean lighting fixtures including both lenses and exposed surfaces.
  - 11. Clean project site (yard and grounds), and areas affected by these construction activities, including landscape development areas, of litter and foreign substances. Sweep paved areas to a broom-clean condition. Remove stains, petro-chemical spills and other foreign deposits. Rake grounds which are neither planted nor paved to a smooth, even-textured surface.
    - a. Include parking and other staging areas.
  - 12. Building Exterior:
    - a. Remove debris from roof areas. Clean dirt from membrane in preparation of final inspection.
    - b. Wipe metal siding, flashing and trim with soft cloth in preparation for final inspection.
    - c. Prior to installation of topsoil and final planting, drag the construction site with a magnet rake to pick up hidden metal.
    - d. Clean drain line of all debris and material.
- B. Removal of Protection: Except as otherwise indicated or requested by Architect, remove temporary protection devices and facilities installed during course of the Work to protect previously completed work during remainder of construction period.
- C. Extra Materials: Where excess materials of value remaining after completion of associated work have become Owner's property, dispose of these to Owner's best advantage as directed.

### 3.03 PROGRESS INSPECTIONS

- A. Continually, and not less than every third day, inspect performed cleaning in conformance with cleaning standards. Close off cleaned areas or fully protect finished/cleaned work.

### 3.04 FINAL INSPECTIONS

- A. Prior to final completion, or Owner occupancy, inspect exposed surfaces. Verify that the entire Work is clean.

**END OF SECTION 017423**

## **SECTION 017700 - CONTRACT CLOSEOUT**

### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

**A. Section includes:**

1. Comply with requirements stated in Conditions of the Contract and in Specifications for administrative procedures in closing out the Work.

**B. Related Sections:**

1. Section 001000 - Instructions to Bidders
2. Section 007000 - The General Conditions of the Contract;
3. Section 017423 - Cleaning
4. Section 017835 - Warranties and Bonds
5. Section 017839 - Project Record Documents
6. Closeout Submittals Required of Trades/respective Specifications Sections

#### **1.02 REINSPECTION FEES**

**A. Should Architect perform reinspection due to failure of the Work to comply with completion status claimed:**

1. Owner will compensate Architect for each additional service at Architect's standard hourly billing rate; and
2. Deduct Architect's compensation from Contractor's final payment.

### **PART 2 - PRODUCTS**

Not Used.

### **PART 3 - EXECUTION**

Not Used.

**END OF SECTION 017700**

## SECTION 017823 -OPERATIONS AND MAINTENANCE DATA

### PART 1 - GENERAL

#### 1.01 SUMMARY

##### A. Section includes:

1. Compile product data and related information appropriate for Owner's maintenance and operation.
  - a. Modify data as required to accurately represent completed installations.
2. Provide spare parts and maintenance materials.
3. Prior to Owner's acceptance of any portion or stage of the Work, instruct Owner's personnel in maintenance, equipment, and systems operations.
  - a. Owner's personnel include users and maintenance personnel.
4. For additional data requirements see respective Specification Sections. See Mechanical and Electrical Specifications and any additional lists and details required.
5. Provide Operation and Maintenance data in electronic form in accepted software.

##### B. Related Sections:

1. Section 013310 - Submittal Procedures
2. Section 013323 - Shop Drawings, Product Data and Samples
3. Section 014300 - Quality Requirements: Manufacturer's instructions
4. Section 017516 - Starting Systems
5. Section 017700 - Contract Closeout
6. Section 017835 - Warranties and Bonds
7. Section 017839 - Project Record Documents
8. Mechanical and Electrical Divisions

### PART 2 - PRODUCTS

#### 2.01 FORM OF SUBMITTALS

##### A. Prepare data in instructional manual form for use by Owner's personnel.

##### B. Format:

1. Size: 8-1/2"x11".
2. Paper: 20-pound minimum; white for typed pages.
3. Text: Manufacturer's printed data, or neatly typewritten information.
4. Drawings:
  - a. provide reinforced punched binder tab, bound in with text;
  - b. fold oversized drawings and place in "pocket" glued to inside of back cover.
5. Provide fly-leaf for each separate product and major component parts of equipment followed by typed descriptions. Provide indexed tabs.
6. Cover: Identify each volume with typed or printed title: "OPERATION AND MAINTENANCE INSTRUCTIONS." Show:
  - a. Title of project, names of Owner, Architect, Engineer, Contractor, appropriate mechanical, electrical or other subcontractor, and completion date of Project.
  - b. Identity of general subject matter covered in the Manual(s).

##### C. Binders:

1. Commercial quality post-and-screw binders with durable and cleanable plastic covers.

2. Maximum ring size: As suitable to content, 3" maximum.
3. When multiple binders are used, correlate data into related groupings.

D. Drawings:

1. Supplement Product Data with Drawings where necessary to clearly illustrate:
  - a. Relations of component Parts;
  - b. Control and Flow Diagrams;
2. Do not use Project Record Documents as Maintenance Drawings.

E. Written Text:

1. Provide where necessary to supplement Product Data and Drawings.
2. Write text in English.
3. Organize in consistent format under separate headings for different procedures.
4. Provide logical sequence of instructions for each procedure.

- F. Submit 2 copies of each completed manual in final form and one two copies in electronic form.

## 2.02 GENERAL OPERATION AND MAINTENANCE MANUALS

- A. Operation and Maintenance Manual: Description of the operation of systems and system components including manufacturer's technical data; maintenance, operation, start up, shut down and troubleshooting information.

1. The system division will be organized into sections by system and major subsystem. For example, each major fan system will be completely documented in its own section. For each section include the following sub-sections as appropriate:
  - a. Descriptive Information:
    - 1) Function or service area served
    - 2) Classification
    - 3) Design capacity
    - 4) Performance characteristics
    - 5) Principal components
    - 6) Distribution arrangement
    - 7) Schematic diagram
    - 8) Control diagram
    - 9) Results from system functional performance test
    - 10) Equipment list referenced to Equipment Division
  - b. Operation Instructions:
    - 1) Starting and stopping procedures
    - 2) Adjustment and regulation
    - 3) Seasonal changeover
    - 4) Seasonal start-up
    - 5) Seasonal shutdown
    - 6) Logs and records
    - 7) Part load performance
    - 8) Emergency instructions
    - 9) Special operation instructions
  - c. Panelboard Circuit directories indicating:
    - 1) Electrical service;
    - 2) Controls;
    - 3) Communications, if any.
  - d. As installed wiring Color-Code Legend, if any.

- e. Inspection and Maintenance:
  - 1) Inspection schedule and checklist
  - 2) Schedules and procedures for lubrication, replacements, adjustment, calibration, cleaning, painting, protection, and testing
  - 3) Inspection and maintenance records
  - 4) Disassembly, repair, and reassembly
2. Reference documents should include the following:
  - a. Construction drawings list
  - b. Construction specifications
  - c. As-built record drawings
  - d. Test and balance records
  - e. Commissioning Reports
  - f. Copies of certificates and reports, for example:
    - 1) Plumbing sanitation;
    - 2) boiler start up, include stack gas test, accumulation test, safety valve test;
    - 3) hydronic system water analysis, steam boiler water analysis, electric inspection, fire marshal inspection, elevator inspection.
  - g. List of Architects, subconsultants, contractors, sub-contractors with addresses and telephone numbers
3. The equipment division is composed of manufacturers' and fabricators' data on equipment and materials organized into sections by generic classifications of equipment. Within each section organize sub-sections of specific types of equipment. Each section includes the following information for each equipment item as appropriate:
  - a. Descriptive Literature:
    - 1) Catalog cuts, brochures, or shop drawings
    - 2) Dimensional drawings
    - 3) Materials of construction
    - 4) Parts designations
  - b. Operation Characteristics:
    - 1) Performance tables and charts
    - 2) Performance curves
    - 3) Pressure, temperature, and speed limitations
    - 4) Safety devices
  - c. Operation Instructions:
    - 1) Pre-start checklist
    - 2) Start-up procedures
    - 3) Inspection during operation
    - 4) Adjusting and regulation
    - 5) Testing
    - 6) Detection of malfunction
    - 7) Precautions
  - d. Inspection Instructions and Procedures:
    - 1) Normal and abnormal operation temperature, pressure, and speed limits
    - 2) Schedule and manner of operation
    - 3) Detection signals
  - e. Maintenance Instructions and Procedures:
    - 1) Schedule of routing maintenance, schedule of preventive maintenance
    - 2) Procedures
    - 3) Troubleshooting
    - 4) Overhaul specifications for major equipment
  - f. Parts List

- g. Spare Parts:
  - 1) Essential inventory
  - 2) Distributor directory
- h. Color-Code Legend, if any
- i. Valve Tag Number Chart, with location and function of each Valve
- j. Service and Dealer Directory
- k. Warranty
- l. Service Contracts

## 2.03 MANUAL FOR MATERIALS AND FINISHES

- A. Include for architectural products, applied materials, and finishes:
  - 1. Manufacturer's data, giving full information on products.
    - a. Catalog number, size, and composition.
    - b. Color and texture designations.
    - c. Information required for re-ordering special manufactured products.
  - 2. Instructions for care and maintenance.
    - a. Manufacturer's recommendation for types of cleaning agents and methods.
    - b. Cautions against cleaning agents and methods detrimental to products.
    - c. Recommended schedule for cleaning and maintenance.
- B. Moisture-Protection and Weather-Exposed Products: Include product data. List applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance and repair.
- C. For additional maintenance data requirements, see respective Specification Sections.

## 2.04 ADJUSTMENT AND CHECKING SUBMITTALS/SHOP DRAWINGS

- A. One complete set of reviewed submittals/shop drawings. Organized per specification divisions and delivered in labeled cartons with index log.

## 2.05 SPARE REPLACEMENT MATERIALS

- A. Furnish copies of spare replacement material signed by Owner.
  - 1. Special Mechanical Subcontractor requirements: Comply with Division 16 requirements.
  - 2. Special Electrical Subcontractor requirements: Comply with Division 15 requirements.
  - 3. Comply with other special requirements in respective Specification Sections.
  - 4. Deliver spare parts and materials specified in individual sections of this specification.
  - 5. Deliver to Owner's storage facilities as directed.
  - 6. Each item delivered shall be identified with permanent label indicating project name, Contractor's name, date, and location of material in the project.

## PART 3- EXECUTION

### 3.01 SUBMITTAL SCHEDULE

- A. Submit operation and maintenance manuals for each phase of the work to be incorporated into final master manual at the end of the project.
- B. Submit 2 copies of preliminary drafts of proposed formats and outlines of contents.

1. Architect and Owner will review and return with comments.
- C. Submit 1 copy of completed data in final form 15 days prior to Final Inspection or Acceptance.
  1. After Final Inspection or Acceptance, copy will be returned with accompanying comments.
- D. Submit specified number of copies of accepted data in final 10 days after final inspection or acceptance. Deliver prior to final payment.

**END OF SECTION 017823**

## SECTION 017835 - WARRANTIES AND BONDS

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. Section includes:
  - 1. Compiling specified certificates, warranties, any bonds, and the like.
  - 2. Compiling any specified services and maintenance contracts.
  - 3. Co-execute submittals when so specified.
  - 4. Review submittals to verify compliance with Contract Documents.
    - a. Submit to Owner on Contractor's letterhead prior to final payment.
- B. Related Sections:
  - 1. Section 007000 - General Conditions of the Contract
  - 2. Section 017700 - Contract Closeout
  - 3. Section 017823 - Operation and Maintenance Data
  - 4. Other – Each respective Section as required.

#### 1.02 SUBMITTALS

- A. Submit in accordance with Sections 013310, Submittal Procedures, and 013323, Shop Drawings, Product Data and Samples:
  - 1. Assemble executed certificates, warranties, bonds, and any required service and maintenance contracts from the respective Manufacturers, suppliers and subcontractors.
  - 2. Number of original signed and notarized copies required: 2 each.
  - 3. Contents: Neatly type Table of Contents in orderly sequence. Then provide complete information for each item following (as applicable):
    - a. product or work item;
    - b. firm, with name of principal, address, and telephone number;
    - c. description of Warranty and Bond (as applicable);
    - d. date of beginning of warranty or service and maintenance contract; duration of warranty or service and maintenance contract;
    - e. information for Owner's personnel, including proper procedure in case of failure;
    - f. instances which might affect validity of warranty or bond; and
  - 4. Contractor, name of responsible principal, address, and telephone number.

#### 1.04 FORM OF SUBMITTALS

- A. Prepare in duplicate packets conforming to following requirements:
  - 1. Size: 8-1/2" x 11" punched sheets for 3-ring binder. Fold larger sheets to fit into binders.
  - 2. Binders: Same as specified in Section 017825.
  - 3. Covers: Identify each packet with typed or printed title "WARRANTIES AND BONDS" and showing:
    - a. Title of Project: and
    - b. name of Contractor.
- B. Format of Warranties and Guarantees:
  - 1. In addition to guarantees required by "General Conditions of Contract", furnish written guarantees warranting certain portions of work for longer periods.
  - 2. Address them to Owner.

3. Submit to Owner on Contractor's letterhead before final payment and acceptance of work by Owner.
4. Where more than one subcontractor is involved, submit guarantee for each.
  - a. Form of Guarantee:
    - 1) I (We), (insert the name of contractor), certify (insert name of trade or portion of work being guaranteed) installed by (insert name of appropriate subcontractor) on (insert name of job) located at (street address or location), is performed in strict accordance with Contract Documents. Further, I (we) guarantee this work to be (watertight, and without leaks) (other) caused by defects in materials and workmanship, for (fill in specific required guarantee period) years from (date of Substantial Completion), and will repair, or replace, without delay, any defects in materials and workmanship discovered within guaranty period.

Sincerely,

(Name of Contractor/responsible principal/address/telephone number) Signed by  
Owner, Partner, or other person authorized to commit firm.

#### 1.04 TIME OF SUBMITTALS

- A. For equipment or component parts of equipment put into service during progress of construction:
  1. Submit documents within 10 days after Final Inspection and Acceptance; or:
    - a. Otherwise make submittals within 10 days after Date of Substantial Completion, prior to final request for payment.
    - b. See Article 1.05 below for start of warranties.
- B. For items of work, where acceptance is delayed materially beyond the date of Substantial Completion, provide updated submittal within 10 days after Acceptance. List the date of Acceptance as the start of the warranty period.

#### 1.05 SUBMITTALS REQUIRED

- A. Submit certificates, warranties and any bonds, and service and maintenance contracts specified in respective Specification Section. If a subcontractor is an out-of-the-area Contractor, indicate name of local firm responsible for any work required during 1 year Guarantee Period.
- B. Special Guarantees: These special guarantees are an extension of the guarantee of work called for in the General Conditions. During the guarantee period, any repairs or replacements required because of the defective materials or workmanship and the repairing of damage to the other work caused by defective material/workmanship shall be performed by the Contractor at no cost to the Owner.

#### 1.06 WARRANTY

- A. Comply with provisions of Section 017835, Warranties and Bonds:
  1. Warranty periods start and are of duration as described in General Conditions, Paragraph 12.2.2.
  2. Warranty for entire project is 2 years, except where extended for portions of the work as indicated in Contract Documents.
    - a. No portion of the work will be guaranteed for less than this 2-year period.

1.07 CORRECTIVE MEASURES, REMOVALS, REPLACEMENT INSTALLATIONS, AND THE LIKE

- A. Take whatever necessary measures (as required of Contractor by Owner) to bring Work into accordance with requirements. Coordinate work to be performed at Owner's convenience and least interruption and disruption of his business.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

**END OF SECTION 017835**

## SECTION 017839- PROJECT RECORD DOCUMENTS

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. Section includes:
  - 1. Maintain for Owner. and Architect, one Record Copy of Contract Documents. Include:
    - a. Drawings, annotated as work progresses;
    - b. Specifications, annotated as work progresses;
    - c. Addenda;
    - d. Change Orders and other Contract Modifications;
    - e. Field Orders or other written instructions;
    - f. Reviewed Shop Drawings and Product Data;
    - g. Field Test Records; and
    - h. Construction photographs.
    - i. Current Progress Schedule.
- B. Related Sections:
  - 1. Section 007000 - General Conditions of the Contract
  - 2. Section 012910 - Applications for Payment
  - 3. Section 013310 - Submittal Procedures
  - 4. Section 013323 - Shop Drawings, Product Data and Samples
  - 5. Mechanical and Electrical Divisions

#### 1.02 MAINTENANCE OF RECORD DOCUMENTS AND SAMPLES

- A. Maintain and store apart from documents used for construction.
  - 1. Contract drawings.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change orders and other modifications to the Contract.
  - 5. Accepted shop drawings and other submittals.
  - 6. Field test records.
- B. Provide files and racks for storage of documents in field office.
  - 1. Sample Storage: Provide locked cabinet or other secured storage.
  - 2. File documents in accordance with Project Manual Table of Contents.
- C. Maintain documents in orderly, clean, and legible conditions. Do not use record documents for construction purposes.
- D. Make documents and samples available at all times for inspection by Owner and Architect.

#### 1.03 MARKING DEVICES

- A. Provide felt tip marking pens or non-smearing dark pencils for recording information.

#### 1.04 RECORDING

- A. Label each document "PROJECT RECORD. "Record information concurrently with construction

progress. Do not conceal any work until required information is recorded.

- B. Drawings: Legibly mark construction prints to record actual construction. Indicate the following, as applicable to work in this contract:
  - 1. Keep accurate measurements of underground services and utilities, referenced to the building or other permanent construction.
  - 2. Note changes of directions and locations, by dimension and elevations, as utilities are actually installed. Show mechanical dampers, valves, reheat boxes, clean out, and other items that require maintenance. Show fire alarm system.
  - 3. Show location of construction-concealed internal utilities and appurtenances referenced to visible and accessible features of the structure.
  - 4. Record accurate locations of piping, valves, traps, dampers, duct work, equipment, and the like.
  - 5. Show details and locations not on original Contract Drawings.
  - 6. Indicate field changes of dimension and detail.
  - 7. Show changes made by Field Order or by Change Order.
  - 8. Erase conditions not constructed or "X-out" and appropriately annotate "not constructed," whichever condition most clearly conveys the actual "as constructed" condition.
  - 9. Indicate revisions to drawings with a "cloud" drawn around the revision and note date revision was made.
- C. Pay costs, including cost of reproduction.
- D. Specifications and Addenda: Legibly mark each Section to record:
  - 1. Manufacturer, trade name, catalog number, and supplier of each equipment item actually installed; and
  - 2. changes made by Field Order or by Change Order.
- E. Shop Drawings: Maintain as record documents; legibly annotate to record changes made after review.

## 1.05 SUBMITTALS

- A. Submit in accordance with Sections 013310, Submittal Procedures, and 013323, Shop Drawings, Product Data and Samples:
  - 1. With each submittal/Application for Payment, make drawing print and specification mark-up (as of Application date) of pertinent Project Record Documents available for Architect's and Owner's observation of progress.
  - 2. At Contract Closeout and before final payment, deliver record Documents to Owner.
    - a. Legibly marked construction drawings to record actual construction, and two copies;
    - b. Original legibly marked original project manual and all addenda, and two copies.
  - 3. Pay printing costs.
  - 4. Accompany submittal with duplicate transmittal letters indicating:
    - a. Date;
    - b. Project title and number;
    - c. Contractor's name and address;
    - d. Title and number of each Record Document; and;
    - e. Signature of Contractor or Contractor's authorized representative.

## PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

**END OF SECTION 017839**

## SECTION 017900-DEMONSTRATION AND TRAINING

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. Section includes:
  - 1. Work includes but is not limited to following:
    - a. General requirements and procedures for demonstration of the products and systems of the facility and training of the Owner's operating and maintenance personnel.
- B. Related Sections:
  - 1. Section 017516 - Starting Systems
  - 2. Section 017700 - Contract Closeout
  - 3. Section 017823 - Operating and Maintenance Data
  - 4. Section 017835 - Warranties and Bonds
  - 5. Mechanical and Electrical Divisions

#### 1.02 INSTRUCTION OF OWNER'S PERSONNEL

- A. Prior to substantial completion, or acceptance, fully instruct Owner's designated operating and maintenance personnel in the operation, adjustment, and systems. Instructors are required to be qualified, authoritative representatives for the trade involved. The time and place of the instruction period shall be as mutually agreeable.
  - 1. Schedule instruction period not less than 1 week in advance at Owner's convenience, so that the appropriate maintenance staff can be involved.
  - 2. For equipment or systems requiring seasonal operation, perform demonstration for other season within 6 months.
- B. Use operating and maintenance manuals as the basis for instruction.
  - 1. Review the manuals in detail. Explain all aspects of operations and maintenance.
- C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment, at equipment location.
- D. For additional requirements for operating instructions, see respective Specification Sections.

#### 1.03 PREVENTATIVE MAINTENANCE INSTRUCTIONS

- A. Prepare preventative maintenance instructions. Include for each piece of equipment or system furnished requiring periodic inspections, lubrication, adjustment, and the like, to ensure optimum and continued performance as originally specified. Include these instructions in manuals prepared in Section 017823.

### PART 2 - PRODUCTS

Not Used.

### PART 3 - EXECUTION

Not Used.

**END OF SECTION 017900**

**PART 1 - GENERAL**

1.1 SECTION INCLUDES

- A . Reinforcing steel for cast-in-place concrete.
- B . Supports and accessories for steel reinforcement.

1.2 RELATED REQUIREMENTS

- A . Section 03 30 00 - Cast-in-Place Concrete.
- B . Section 03 37 13 - Shotcrete: Reinforcement for shotcrete.
- C . Section 26 05 26 - Grounding and Bonding for Electrical Systems: Grounding connection to concrete reinforcement.
- D . Section 31 62 00 - Bored Piles: Reinforcement for piles.
- E . Section 31 62 00 - Driven Piles: Reinforcement for piles.
- F . General Structural Notes: For additional requirements. The General Structural Notes shall supersede the specification.

1.3 REFERENCE STANDARDS

- A . ACI 301 - Specifications for Structural Concrete 2016.
- B . ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).
- C . ACI SP-66 - ACI Detailing Manual 2004.
- D . ASTM A184/A184M - Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement 2019.
- E . ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2020.
- F . ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire 2019.
- G . ASTM A704/A704M - Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement 2019, with Editorial Revision.
- H . ASTM A706/A706M - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement 2016.
- I . ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement 2016.
- J . ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars 2017.

- K . ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement 2019, with Editorial Revision (2020).
- L . ASTM A996/A996M - Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement 2016.
- M . ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2018a.
- N . ASTM D3963/D3963M - Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars 2015.
- O . AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification 2014 (Amended 2015).
- P . AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel 2018.
- Q . CRSI (DA4) - Manual of Standard Practice 2009.
- R . CRSI (P1) - Placing Reinforcing Bars 2011.

#### 1.4 SUBMITTALS

- A . See Division 01, for submittal procedures.
- B . Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.
  - 1. Prepare shop drawings under seal of a Professional Structural Engineer experienced in design of work of this type and licensed in the State in which the Project is located.
- C . Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.
- D . Welders' Qualification Statement: Welders' WABO certification and certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.
- E . Reports: Submit certified copies of mill test report of reinforcement materials analysis.

#### 1.5 QUALITY ASSURANCE

- A . Perform work of this section in accordance with ACI 301.
  - 1. Maintain one copy of each document on project site.
- B . Provide Architect with access to fabrication plant to facilitate observation of reinforcement. Provide notification of commencement and duration of shop fabrication in sufficient time to allow observation.
- C . Welder Qualifications: Welding processes and WABO-certified welding operators qualified in accordance with AWS D1.4/D1.4M and no more than 12 months before start of scheduled welding work.

## **PART 2 - PRODUCTS**

### 2.1 MANUFACTURERS

#### A . Continuously Galvanized Reinforcing Steel:

1. AZZ, Inc; Galvabar: [www.azz.com/#sle](http://www.azz.com/#sle).
2. Substitutions: See Section 01 60 00 - Product Requirements.

### 2.2 REINFORCEMENT

#### A . Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).

1. Plain billet-steel bars.
2. Unfinished.
3. Galvanized in accordance with ASTM A767/A767M, Class I.
4. Continuously galvanized in accordance with ASTM A1094/A1094M.
5. Epoxy coated in accordance with ASTM A775/A775M.

#### B . Reinforcing Steel: ASTM A706/A706M, deformed low-alloy steel bars.

1. Unfinished.
2. Galvanized in accordance with ASTM A767/A767M, Class I.
3. Continuously galvanized in accordance with ASTM A1094/A1094M.
4. Epoxy coated in accordance with ASTM A775/A775M.

#### C . Reinforcing Steel: Deformed bars, ASTM A996/A996M Grade 40 (280), Type A.

1. Galvanized in accordance with ASTM A767/A767M, Class I.
2. Continuously galvanized in accordance with ASTM A1094/A1094M.
3. Epoxy coated in accordance with ASTM A775/A775M.

#### D . Reinforcing Steel Mat: ASTM A704/A704M, using ASTM A615/A615M, Grade 40 (40,000 psi) steel bars or rods, unfinished.

#### E . Stirrup Steel: ASTM A1064/A1064M steel wire, unfinished.

#### F . Reinforcement Accessories:

1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch.
2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
3. Provide stainless steel components for placement within 1-1/2 inches of weathering surfaces.

### 2.3 RE-BAR SPLICING:

#### A . Coupler Systems: ICC-ES Approved Mechanical devices for splicing reinforcing bars; capable of developing 125% of specified steel reinforcing yield strength in tension and compression.

1. Products:

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

B . Dowel Bar Splicer with Dowel-Ins: ICC-ES Approved mechanical devices for connecting dowels; capable of developing 125% of specified steel reinforcing yield strength in tension and compression.

2.4 FABRICATION

A . Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.

B . Welding of reinforcement is not permitted.

C . Fabricate and handle epoxy-coated reinforcing in accordance with ASTM D3963/D3963M.

D . Locate reinforcing splices not indicated on drawings at point of minimum stress.

1. Review locations of splices with Architect / Engineer.

**PART 3 - EXECUTION**

3.1 PLACEMENT

A . Place, support and secure reinforcement against displacement. Do not deviate from required position.

B . Do not displace or damage vapor barrier.

C . Accommodate placement of formed openings.

D . Maintain concrete cover around reinforcing as per General Structural Notes.

E . Comply with applicable code for concrete cover over reinforcement.

F . Bond and ground all reinforcement to requirements of Section 26 05 26.

3.2 FIELD QUALITY CONTROL

A . An independent testing agency, as specified in Division 01, will inspect installed reinforcement for compliance with contract documents before concrete placement.

3.3 SCHEDULES

A . Reinforcement For Superstructure Framing Members: Deformed bars, unfinished.

B . Reinforcement For Foundation Wall Framing Members and Slab-on-Grade: Deformed bars and welded wire reinforcement, galvanized finish.

END OF SECTION

**PART 1 - GENERAL**

1.1 SUMMARY

- A. Section includes architecturally finished cast-in-place site elements including visible foundation stem walls, benches, planter walls, stairs, ramps, and site accessories. Refer to civil for WSDOT specifications to be used for all other site and offsite improvements.

1.2 RELATED REQUIREMENTS

- A . WSDOT Standard Specifications for Road, Bridge, and Municipal Construction, 2023 for all sidewalk, parking, and plaza construction
- B . General Structural Notes: For additional requirements. In the event of any conflict, the General Structural Notes shall supersede the specification.

1.3 REFERENCE STANDARDS

- A . ACI 117 - Specifications for Tolerances for Concrete Construction and Materials 2010 (Reapproved 2015).
- B . ACI 301 - Specifications for Structural Concrete 2016.
- C . ACI 302.1R - Guide to Concrete Floor and Slab Construction 2015.
- D . ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).
- E . ACI 347 - Guide to Formwork for Concrete. 2004.
- F . AISC 303 - Code of Standard Practice for Steel Buildings and Bridges 2016.
- G . ASTM A184/A184M - Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement 2019.
- H . ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2020.
- I . ASTM A706/A706M - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement 2016.
- J . ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings 2009 (Reapproved 2015).
- K . ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete 2013.
- L . ASTM C1064/C1064M - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete 2017.
- M . ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation 2017.
- N . ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens) 2020b.

- O . ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures 2020.
- P . ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete 2020.
- Q . ASTM C150/C150M - Standard Specification for Portland Cement 2020.
- R . ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete 2016.
- S . ASTM C172/C172M - Standard Practice for Sampling Freshly Mixed Concrete 2017.
- T . ASTM C231/C231M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method Revision 17A, 2017.
- U . ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete 2010a (Reapproved 2016).
- V . ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete 2019.
- W . ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field 2019a.
- X . ASTM C33/C33M - Standard Specification for Concrete Aggregates 2018.
- Y . ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete 2019.
- Z . ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete 2019.
- AA . ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete 2020a.
- BB . ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2020.
- CC . ASTM C989/C989M - Standard Specification for Slag Cement for Use in Concrete and Mortars 2018a.
- DD . ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types) 2018.
- EE . ASTM D1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction 2018.
- FF . ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness 2015, with Editorial Revision (2017).
- GG . ASTM E1155 - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers 2020.
- HH . ASTM E1155M - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers (Metric) 2014.
- II . ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs 2018a.

JJ . ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection 2020.

KK . AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel 2018.

#### 1.4 DEFINITIONS

A . Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B . W/C Ratio: The ratio by weight of water to cementitious materials.

#### 1.5 PREINSTALLATION MEETINGS

A . Preinstallation Conference: Conduct conference at Project site.

1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
  - a. Contractor's superintendent.
  - b. Independent testing agency responsible for concrete design mixtures.
  - c. Ready-mix concrete manufacturer.
  - d. Concrete Subcontractor.
  - e. Special concrete finish Subcontractor.
2. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, semirigid joint fillers, forms and form removal limitations, shoring and reshoring procedures, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, methods for achieving specified floor and slab flatness and levelness floor and slab flatness and levelness measurement, concrete repair procedures, and concrete protection.

#### 1.6 ACTION SUBMITTALS

A . Product Data: For each type of product.

B . Design Mixtures: For each concrete mixture as defined in General Structural Notes. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1. Indicate amounts of mixing water to be withheld for later addition at Project site.

C . Sawcut expansion joints shop drawings: design intent is shown on architectural site plans. Shop drawings are to call out any proposed deviations or additional joints.

D . Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

E . Construction Joint Layout: Indicate proposed construction joints required to construct the structure.

1. Location of construction joints is subject to approval of the Architect.

F . Samples: For waterstops and vapor retarder.

#### 1.7 INFORMATIONAL SUBMITTALS

A . Qualification Data: For Installer, manufacturer, and testing agency.

B . Welding certificates.

C . Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Form materials and form-release agents.
4. Steel reinforcement and accessories.
5. Fiber reinforcement.
6. Waterstops.
7. Curing compounds.
8. Floor and slab treatments.
9. Bonding agents.
10. Adhesives.
11. Vapor retarders.
12. Semirigid joint filler.
13. Joint-filler strips.
14. Repair materials.

D . Material Test Reports: For the following, from a qualified testing agency:

1. Aggregates: Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.

E . Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer, detailing fabrication, assembly, and support of formwork.

1. Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and reshoring installation and removal.

F . Floor surface flatness and levelness measurements indicating compliance with specified tolerances.

G . Field quality-control reports.

H . Minutes of preinstallation conference.

#### 1.8 QUALITY ASSURANCE

- A . Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- B . Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.
1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- C . Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C1077 and ASTM E329 for testing indicated.
1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
  2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.
- D . Mockups: Cast concrete slab-on-grade and formed-surface panels to demonstrate typical joints, surface finish, texture, tolerances, floor treatments, and standard of workmanship.
1. Build panel approximately 200 sq. ft. for slab-on-grade and 100 sq. ft. for formed surface in the location indicated or, if not indicated, as directed by Architect.
  2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- 1.9 PRECONSTRUCTION TESTING
- A . Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on concrete mixtures.
- 1.10 DELIVERY, STORAGE, AND HANDLING
- A . Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.
- B . Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.
- 1.11 FIELD CONDITIONS
- A . 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 average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301 (ACI 301M).
  2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B . Hot-Weather Placement: Comply with ACI 301 (ACI 301M) and ACI 305.1 (ACI 305.1M), and as follows:
1. Maintain concrete temperature below 90 deg 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. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

## **PART 2 - PRODUCTS**

### 2.1 CONCRETE, GENERAL

- A . ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
1. ACI 301 (ACI 301M).
  2. ACI 117 (ACI 117M).

### 2.2 FORM-FACING MATERIALS

- A . Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
1. Plywood, metal, or other approved panel materials.
  2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
    - a. High-density overlay, Class 1 or better.
    - b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
    - c. Structural 1, B-B or better; mill oiled and edge sealed.
    - d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.
  3. Overlaid Finish birch plywood.
- B . Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C . Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation.
- D . Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.
- E . Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- F . Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

G . Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

H . Form Ties: Factory-fabricated, removable or snap-off glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
2. Furnish ties that, when removed, leave holes no larger than 1 inch in diameter in concrete surface.
3. Furnish ties with integral water-barrier plates to walls indicated to receive waterproofing.

### 2.3 STEEL REINFORCEMENT

A . Reinforcing Bars: ASTM A615/A615M, Grade 60 (Grade 420), deformed.

B . Low-Alloy-Steel Reinforcing Bars: ASTM A706/A706M, deformed.

C . Steel Bar Mats: ASTM A184/A184M, fabricated from ASTM A615/A615M, Grade 60 (Grade 420) deformed bars, assembled with clips.

### 2.4 REINFORCEMENT ACCESSORIES

A . Joint Dowel Bars: ASTM A615/A615M, Grade 60 (Grade 420), plain-steel bars, cut true to length with ends square and free of burrs.

B . Epoxy-Coated Joint Dowel Bars: ASTM A615/A615M, Grade 60 (Grade 420), plain-steel bars, ASTM A775/A775M epoxy coated.

C . Epoxy Repair Coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A775/A775M.

D . Zinc Repair Material: ASTM A780/A780M.

E . Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

### 2.5 CONCRETE MATERIALS

A . Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

B . Cementitious Materials:

1. Portland Cement: ASTM C150/C150M, Type I gray.
2. Fly Ash: ASTM C618, Class F
3. Slag Cement: ASTM C989/C989M, Grade 100 or 120.
4. Silica Fume: ASTM C1240, amorphous silica.

C . Normal-Weight Aggregates: ASTM C33/C33M, Class 3M coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.

1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D . Air-Entraining Admixture: ASTM C260/C260M.

E . Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
2. Retarding Admixture: ASTM C494/C494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

F . Water: ASTM C94/C94M.

## 2.6 WATERSTOPS

A . Bentonite Rope Waterstops: CE CRD-C 513, for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes. Basis of Design Product: RX 101 and 102 by Cetco.

1. Dimensions: as recommended for wall depth; nontapered.

## 2.7 VAPOR RETARDERS

A . Sheet Vapor Retarder: In accordance with Section 03 30 03 - Underslab Vapor Retarder and 07 25 00 - Weather Barriers.

## 2.8 CURING MATERIALS

A . Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete. See Structural General Notes for applications.

B . Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

C . Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.

D . Water: Potable.

E . Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, dissipating. See Structural General Notes for application.

F . Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering. See Structural General Notes for application.

## 2.9 RELATED MATERIALS

A . Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber or ASTM D1752, cork or self-expanding cork.

B . Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, [epoxy resin with a Type A shore durometer hardness of 80] [aromatic polyurea with a Type A shore durometer hardness range of 90 to 95] according to ASTM D2240.

C . Bonding Agent: ASTM C1059/C1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

D . Epoxy Bonding Adhesive: ASTM C881/C881M, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:

1. [Types I and II, nonload bearing] [Types IV and V, load bearing], for bonding hardened or freshly mixed concrete to hardened concrete.

E . Reglets: Fabricate reglets of not less than 0.022-inch-thick, galvanized-steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.

F . Dovetail Anchor Slots: Hot-dip galvanized-steel sheet, not less than 0.034 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

## 2.10 REPAIR MATERIALS

A . Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C150/C150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C109/C109M.

B . Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.

1. Cement Binder: ASTM C150/C150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C109/C109M.

## 2.11 CONCRETE MIXTURES, GENERAL

A . Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301 (ACI 301M).

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B . Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash: 25 percent.
2. Combined Fly Ash and Pozzolan: 25 percent.
3. Slag Cement: 25 percent.
4. Combined Fly Ash or Pozzolan and Slag Cement: 25 percent.
5. Silica Fume: 10 percent.
6. Combined Fly Ash, Pozzolans, and Silica Fume: 25 percent
7. Combined Fly Ash or Pozzolans, Slag Cement, and Silica Fume: 25 percent

C . Limit water-soluble, chloride-ion content in hardened concrete to 0.06

D . Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing, high-range water-reducing, or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a w/c ratio below 0.50.

## 2.12 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A . Footings: Normal-weight concrete: See Structural General Notes for requirements B .

Foundation Walls: Normal-weight concrete: See Structural General Notes for requirements.

C . Slabs-on-Grade: Normal-weight concrete: See Structural General Notes for requirements.

D . Suspended Slabs: Normal-weight concrete: See Structural General Notes for requirements.

E . Concrete Toppings: Normal-weight concrete: See Structural General Notes for requirements.

F . Building Frame Members: Normal-weight concrete: See Structural General Notes for requirements.

G . Building Walls: Normal-weight concrete: See Structural General Notes for requirements.

## 2.13 FABRICATING REINFORCEMENT

A . Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

## 2.14 CONCRETE MIXING

A . Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94/C94M and ASTM C1116/C1116M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

B . Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C94/C94M. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

## **PART 3 - EXECUTION**

### 3.1 FORMWORK INSTALLATION

A . Design, erect, shore, brace, and maintain formwork, according to ACI 301 (ACI 301M), to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B . Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117 (ACI 117M).

C . Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:

1. Class A, 1/8 inch for smooth-formed finished surfaces.
2. Class B, 1/4 inch for rough-formed finished surfaces.

D . Construct forms tight enough to prevent loss of concrete mortar.

E . Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like, for easy removal.
  2. Do not use rust-stained steel form-facing material.
- F . Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G . Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H . Do not chamfer exterior corners and edges of permanently exposed concrete.
- I . Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J . Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- K . Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L . Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

### 3.2 EMBEDDED ITEM INSTALLATION

- A . Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.
  2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
  3. Install dovetail anchor slots in concrete structures as indicated.

### 3.3 REMOVING AND REUSING FORMS

- A . General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.
1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
  2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B . Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material are not acceptable for exposed surfaces. Apply new form-release agent.

C . When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

### 3.4 SHORING AND RESHORING INSTALLATION

A . Comply with ACI 318 (ACI 318M) and ACI 301 (ACI 301M) for design, installation, and removal of shoring and reshoring.

1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.

B . In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.

C . Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

### 3.5 VAPOR-RETARDER INSTALLATION

A . Sheet Vapor Retarders, Horizontal: Place, protect, and repair sheet vapor retarder according to ASTM E1643, manufacturer's written instructions, and Section 03 30 03.

1. Lap joints 6 inches and seal with manufacturer's recommended tape.

B . Coordinate with work of vertical vapor retarder, where applicable, with Section 07 25 00 - Weather Barriers.

### 3.6 STEEL REINFORCEMENT INSTALLATION

A . General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B . Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

C . Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

1. Weld reinforcing bars according to AWS D1.4/D1.4M, where indicated.

D . Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E . Install welded-wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

### 3.7 JOINTS

A . General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B . Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection. Provide joint layout on slabs as indicated on Structural and Architectural Plans, and Structural General Notes.
4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C . Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D . Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Section 07 90 05 - Joint Sealers, are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E . Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

### 3.8 WATERSTOP INSTALLATION

- A . Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of the Work. Field fabricate joints in waterstops according to manufacturer's written instructions.
- B . Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

### 3.9 CONCRETE PLACEMENT

- A . Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.
- B . Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect and Engineer.
- C . Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301 (ACI 301M).
  - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- D . Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
  - 1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
  - 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301 (ACI 301M).
  - 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- E . Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
  - 1. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
  - 2. Maintain reinforcement in position on chairs during concrete placement.
  - 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
  - 4. Slope surfaces uniformly to drains where required.
  - 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

### 3.10 FINISHING FORMED SURFACES

A . Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to public view, unless specified otherwise on Architectural or Structural plans.

B . Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view, to receive a rubbed finish, or to be covered with a coating or covering material applied directly to concrete unless specified otherwise on Architectural or Structural plans.

C . Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

### 3.11 FINISHING FLOORS AND SLABS

A . General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B . Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in one direction.

1. Apply scratch finish to surfaces indicated on drawings and to receive concrete floor toppings.

C . Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraighening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces to receive trowel finish.

D . Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

### 3.12 MISCELLANEOUS CONCRETE ITEM INSTALLATION

A . Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B . Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C . Equipment Bases and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.
2. Construct concrete bases 4 inches high unless otherwise indicated, and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated or unless required for seismic anchor support. Electrical equipment housekeeping pads shall be in accordance with Division 26.
3. Minimum Compressive Strength: 4000 psi at 28 days.
4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.
6. Prior to pouring concrete, place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
7. Cast anchor-bolt insert into bases. Install anchor bolts to elevations required for proper attachment to supported equipment.

### 3.13 CONCRETE PROTECTING AND CURING

A . General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305.1 (ACI 305.1M) for hot-weather protection during curing.

B . Evaporation Retarder: Apply evaporation retarder to unformed 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.

C . Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.

D . Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E . Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture 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. Cure for not less

than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.

- a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
  - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
  - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies does not interfere with bonding of floor covering used on Project.
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.
- a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.
4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a 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. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

### 3.14 LIQUID FLOOR TREATMENT APPLICATION

A . Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment according to manufacturer's written instructions.

1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
2. Do not apply to concrete that is less than seven days' old.
3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing. Rinse with water; remove excess material until surface is dry. Apply a second coat in a similar manner if surface is rough or porous.

B . Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller according to manufacturer's written instructions. 3.15

### JOINT FILLING

A . Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least one month. Do not fill joints until construction traffic has permanently ceased.

B . Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.

C . Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

### 3.16 CONCRETE SURFACE REPAIRS

- A . Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B . Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C . Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brushcoat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
  2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar matches surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
  3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.
- D . Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
  2. After concrete has cured at least 14 days, correct high areas by grinding.
  3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
  4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
  5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
  6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete,

except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E . Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar as per Structural drawings.

F . Repair materials and installation not specified above may be used, subject to Architect's approval.

### 3.17 FIELD QUALITY CONTROL

A . Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B . Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

C . Inspections (See Structural General Notes for additional requirements):

1. Steel reinforcement placement.
2. Headed bolts and studs.
3. Verification of use of required design mixture.
4. Concrete placement, including conveying and depositing.
5. Curing procedures and maintenance of curing temperature.
6. Verification of concrete strength before removal of shores and forms from beams and slabs.

D . Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C172/C172M shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
2. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
  - a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
3. Slump: ASTM C143/C143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
4. Air Content: ASTM C231/C231M, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

5. Concrete Temperature: ASTM C1064/C1064M; one test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
6. Unit Weight: ASTM C 567/C 567M, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
7. Compression Test Specimens: ASTM C31/C31M.
  - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
  - b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.
8. Compressive-Strength Tests: ASTM C39/C39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
  - a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
  - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
9. When strength of field-cured cylinders is less than 85 percent of companion laboratorycured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
10. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
11. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
12. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
13. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
14. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
15. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

E . Measure floor and slab flatness and levelness according to ASTM E1155 (ASTM E1155M) within 24 hours of finishing.

A. Site Stairs and Loading Dock

1. Broom Finish in long direction of stair on walking surface
2. Smooth troweled finish on risers/vertical surfaces
3. Cast in place nosing
4. Embedded handrails per architectural details

B. Site Ramps and Plaza

1. Broom finish on walking surfaces
2. Sawcut expansion joints per architectural plans

C. Site Planter Walls and CIP Benches

1. Architectural grade smooth finish, both sides
2. If form ties are required, locate in a shop drawing for architect's review prior to forming
3. No chamfered edges of formwork permitted
4. Finish grade to be architectural finish. During pouring, take all precautionary measures to avoid air pockets. Review condition of all walls with architect and owner once formwork is removed to determine if sacking is required to achieve desired finish.

END OF SECTION

**PART 1 GENERAL**

1.1 SECTION INCLUDES

- A. Delegated design of metal fabrications.
- B. Metal Fabrications.

1.2 RELATED REQUIREMENTS

- A. 01 74 19 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.
- B. 09 90 00 - Painting and Coating: Field applied paint finish.

1.3 SUBMITTALS

- A. Qualification Data: For fabricator and design engineer.
- B. Delegated-Design Submittal: For assemblies indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Product Data: On all cleaning, galvanizing, and finishing products, including VOC content.
- D. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
  - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
- E. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.
- F. Maintenance Data: For users operation and maintenance of system including:
  - 1. Methods for maintaining system's materials and finishes.
  - 2. Precautions about cleaning materials and methods that could be detrimental to components, finishes, and performance.

1.4 QUALITY ASSURANCE

- A. Designer Qualifications: Professional structural engineer with 5 years of documented experience in design of this work and licensed in the location of the project.
- B. Fabricators Qualifications: A qualified steel fabricator that is accredited by the International Accreditation Service (IAS) Fabricator Inspection Program for Structural Steel (AC172). Company specializing in performing the work of this section with minimum 5 years' experience on projects of similar size and complexity.

- C. All field welding to be performed by a WABO-certified welder.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. As required by the manufacturer for a warrantable installation of the installed products to meet the Performance and Design Criteria.

### **PART 2 PRODUCTS**

#### 2.1 DESCRIPTION

- A. Items designed and shop fabricated out of steel and aluminum sections, tubing, plates and pipe for exposed and concealed locations.

#### 2.2 PERFORMANCE AND DESIGN CRITERIA

- A. Provide materials that meet industry guidelines

#### 2.3 MATERIALS

##### A. Steel:

##### 1. Steel Sections:

- a. ASTM A36/A36M.

##### 2. Steel Tubing:

- a. ASTM A500/A500M, Grade B cold-formed structural tubing.

##### 3. Plates:

- a. ASTM A283/A283M.

##### 4. Pipe:

- a. ASTM A53/A53M, Grade B Schedule 40, black finish.

##### 5. Slotted Channel Framing:

- a. ASTM A653/A653M, Grade 33.

##### 6. Slotted Channel Fittings:

- a. ASTM A1011/A1011M.

##### 7. Fasteners:

- a. To suit application. Unless noted otherwise, match fasteners exposed to view with the material and color/finish of the material being fastened if metal; color and finish if not metal. Fasteners not exposed to view: Galvanized steel unless otherwise noted.

8. Bolts, Nuts, and Washers:
  - a. ASTM A325 (ASTM A325M), Type 1, galvanized to ASTM A153/A153M where connecting galvanized components.
9. Welding Materials:
  - a. AWS D1.1/D1.1M; type required for materials being welded.
10. Touch-Up Primer for Galvanized Surfaces: See Section 09 90 00.

B. Aluminum

1. Cast aluminum stair nosings for exterior applications
  - a. 5/16" thick surface, 1/4" angled nose, 3" depth, length to match tread less 6"

2.4 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Continuously seal joined members by continuous welds.
- D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.5 FABRICATED MATERIALS

- A. Metal Stair Nosing:
  1. Basis of Design: Abrasive Cast Safety Treads and Nosing by Wooster Products.
  2. Type 101: for poured concrete, cast-in-place.
  3. Finish: Non-slip.
  4. Location: All exterior CIP stairs.
- B. Steel angle protection at loading dock
  1. Shop primed, field painted. Fabricate with studs for poured concrete, cast in place.
- C. Site bench accessories; steel angles and plates per plans and details
  1. Shop primed, field painted

## 2.6 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

## 2.7 FINISHES

### A. Steel:

- 1. Prime paint all steel items.
  - a. Exceptions:
    - 1) Galvanize items to be embedded in concrete or masonry.
    - 2) Galvanize items specified for galvanized finish.
    - 3) Do not prime surfaces indicated for spray fire proofing, weathering steel or blackened steel finish.
    - 4) Field welding is required.
  - b. See Section 09 90 00 - Painting and Coating for field finish painting.
- 2. Prime Painting: One coat.
- 3. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M or ASTM A153/A153M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.
- 4. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating

## 2.8 ACCESSORIES

- A. All accessory materials required by the fabricator for a complete installation of the installed products in a manner that meets the Performance and Design Criteria.
- B. All accessory materials required to comply with EQ credit: Low Emitting Materials, Option 1 in accordance with Section 01 35 15 - LEED Certification Procedures.

## **PART 3 EXECUTION**

### 3.1 EXAMINATION

- A. Verify existing conditions meet the manufacturer's requirements before starting work.

### 3.2 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components indicated.
- D. Perform field welding in accordance with AWS D1.1/D1.1M.
- E. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.
- F. All miscellaneous installation materials required to comply with EQ credit: Low Emitting Materials, Option 1 in accordance with Section 01 35 15 - LEED Certification Procedures.

### 3.3 INSTALLATION TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

### 3.4 CLEANING

- A. Dispose of all waste material in accordance with project's Waste Management Plan.
  - 1. See Section 01 74 19 - Construction Waste Management and Disposal for additional requirements.

### 3.5 PROTECTION

- A. Protect installed work as required by the fabricator to maintain finishes, product performance, design criteria, and warranty.

### 3.6 SCHEDULE

- A. CIP Stair Nosings
- B. CIP angle for edge protection at loading dock
- C. Angle, plates, and associated steel parts of site benches
- D. See Also: specification section 055213 for Pipe and tube Handrails

END OF SECTION

**PART 1 GENERAL**

1.1 SECTION INCLUDES

- A. Delegated design of metal railings.
- B. Handrails at site stairs and ramps where NOT identified as internally illuminated handrail product

1.2 RELATED REQUIREMENTS

- A. 01 60 00 - Product Requirements: For substitution and additional product requirements.
- B. 01 74 19 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.
- C. 09 90 00 - Painting and Coating: Paint finish.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week before starting work of this section in accordance with Section 01 30 00 - Administrative Requirements.
  - 1. Review preparation and installation procedures and coordinating and scheduling required with related work.

1.4 SUBMITTALS

- A. Qualification Data: For manufacturer, design engineer, and welder.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, corner finish, anchorage, size and type of fasteners, and accessories verified with field dimensions.
- C. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in the engineering and manufacturing of metal railings, with not less than five years of experience.
- B. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in the location of the project, or personnel under direct supervision of such an engineer.
- C. Welder Qualifications: Show certification of welders employed on the Work, verifying AWS qualification within the previous 12 months.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. As required by the manufacturer for a warrantable installation of the installed products to meet the Performance and Design Criteria.

- B. As required by SMACNA Guideline Chapter 3 and Section 01 35 15 - LEED Certification Procedures.

## **PART 2 PRODUCTS**

### 2.1 DESCRIPTION

- A. Delegated design steel, stainless steel, and aluminum pipe and tube railings.

### 2.2 PERFORMANCE AND DESIGN CRITERIA

- A. Products to be shop primed for outdoor use with a zinc-rich primer system compatible with finish paint.

### 2.3 RAILINGS - GENERAL REQUIREMENTS

- A. Comply with applicable accessibility requirements of ADA Standards.
- B. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of ASTM E985 and applicable local code.
- C. Linear Loads: Design railing assembly, wall rails, and attachments to resist a linear load of 50 pounds per linear foot, or as amended by local code, applied to the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.
- D. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated load of 200 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.
- E. Allow for expansion and contraction of members and building movement without damage to connections or members.
- F. Configuration limitations:
  - 1. Shop assembled in lengths not to exceed 24 feet for field erection.
  - 2. Post spacing shall be a maximum of 6 feet.
  - 3. Do not interrupt the continuation of the top rail at any point along the railing, including corners and end terminations with posts.
- G. Dimensions: See drawings for configurations and heights.
- H. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable, provide flush countersunk fasteners.
  - 1. For anchorage to concrete, provide inserts to be cast into concrete, for welding anchors.
  - 2. For anchorage to stud walls, provide backing plates, for bolting anchors.

- I. Provide welding fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

## 2.4 STEEL RAILING SYSTEM

### C. Steel Pipe:

1. ASTM A53/A53M, Grade B Schedule 40, shop primed with zinc-rich outdoor coating system; see division 9.

### D. Exposed Fasteners:

1. No exposed bolts or screws.

### E. Straight Splice Connectors:

1. Steel welding collars.

## 2.5 FABRICATION

- A. Accurately form components to suit specific project conditions and for proper connection to building structure.
- B. Fit and shop assemble components in largest practical sizes for delivery to site.
- C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.
- D. Welded Joints:
  1. Exterior Components: Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
  2. Corners to be mitered and fully welded.
  3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

## 2.6 STEEL FINISHES

- A. Shop prime and field finish per Section 09 90 00 - Painting and Coating.

## **PART 3 EXECUTION**

### 3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

- B. Verify products have been stored, and will be installed, in accordance with project's Construction Indoor Air Quality Management Plan specified in Section 01 35 15 - LEED Certification Procedures.

### 3.2 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply items required to be cast into concrete, embedded in masonry, or placed in partitions with setting templates, for installation as work of other sections.

### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.
- C. Anchor railings securely to structure.
- D. Field weld anchors as indicated on drawings. Touch-up welds with primer. Grind welds smooth.
- E. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.
- F. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.
- G. All miscellaneous installation materials required to comply with EQ credit: Low Emitting Materials, Option 1 in accordance with Section 01 35 15 - LEED Certification Procedures.

### 3.4 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.
- B. Maximum Offset From Adjoining Pieces: 1/32 inch.
- C. Maximum Offset From True Alignment: 1/4 inch.
- D. Maximum Out-of-Position: 1/4 inch.

### 3.5 CLEANING

- A. Dispose of all waste material in accordance with project's Waste Management Plan.
  - 1. See Section 01 74 19 - Construction Waste Management and Disposal for additional requirements.

### 3.6 SCHEDULE

- A. Hand Rail and Guard Rail:

1. Diameter: 1-1/2 inch outside diameter.
2. Material: 1-1/4" -inch Schedule 40.
3. Finish: Painted.
4. Location: Exterior stairs and ramps where drawings do not call for illuminated handrail product

END OF SECTION

**PART 1 - GENERAL**

1.1 SECTION INCLUDES

- A . Preservative treated wood materials at foundations.
- B . Miscellaneous wood nailers, furring, and grounds.

1.2 RELATED REQUIREMENTS

- A . 01 30 00 - Administrative Requirements: For additional requirements of preinstallation meeting.
- B . 01 43 39 - Mockups: For additional requirements related to the mockups in this section.
- C . 01 60 00 - Product Requirements: For substitution and additional product requirements.
- D . 01 74 19 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.
- E . 05 50 00 - Metal Fabrications: Miscellaneous steel connectors and support angles for rough carpentry.
- F . General Structural Notes: For additional requirements. In the event of any conflicting requirements, the General Structural Notes shall supersede the specification.

1.3 REFERENCE STANDARDS

- A . AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2017a.
- B . ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- C . ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2020.
- D . ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples 2018a.
- E . AWPA M4 - Standard for the Care of Preservative-Treated Wood Products 2015.
- F . AWPA U1 - Use Category System: User Specification for Treated Wood 2018.
- G . SBC-2018 - Seattle Building Code 2018.
- H . PS 1 - Structural Plywood 2009.
- I . PS 20 - American Softwood Lumber Standard 2020.
- J . UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials Current Edition, Including All Revisions.

1.4 DEFINITIONS

- A . Preservative-treated wood: Wood products that, conditioned with chemicals by a pressure process or other means, exhibit reduced susceptibility to damage by fungi, insects or marine borers.

#### 1.5 ADMINISTRATIVE REQUIREMENTS

- A . Preinstallation Meeting: Convene one week before starting work of this section in accordance with Section 01 30 00 - Administrative Requirements.
  - 1. Review preparation and installation procedures and coordinating and scheduling required with related work.

#### 1.6 SUBMITTALS

- A . Qualification Data: For fabricator.
- B . Product Data: Provide product criteria, characteristics, accessories, jointing and seaming methods, and termination conditions.
- C . Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.
- D . Accessory Material VOC Content Certification:
- E . Manufacturer's Installation Instructions: Indicate special preparation of substrate, installation and attachment methods, and perimeter conditions requiring special attention.
- F . Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.
- G . Maintenance Data: For users' operation and maintenance of system including:
  - 1. Methods for maintaining system's materials and finishes.
  - 2. Precautions about cleaning materials and methods that could be detrimental to components, finishes, and performance.

#### 1.7 QUALITY ASSURANCE

- A . Manufacturer Qualification: Company specializing in the manufacture of work specified in this section with minimum 5 years of experience.
- B . Fabricators Qualifications: Company specializing in performing the work of this section with minimum 5 years of experience on projects of similar size and complexity.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A . As required by the manufacturer for a warrantable installation of the installed products to meet the Performance and Design Criteria.
- B . General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- C . Preservative Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

D . As required by SMACNA Guideline Chapter 3 and Section 01 35 15 - LEED Certification Procedures.

## **PART 2 - PRODUCTS**

### 2.1 DESCRIPTION

A . Provide miscellaneous rough carpentry items including treated wood materials, miscellaneous wood nailers, furring, and grounds.

B . Wood Framing: Species and grade as noted by Structural.

### 2.2 PERFORMANCE AND DESIGN CRITERIA

A . Provide Preservative-Treated Wood in locations required by IBC-2018, Section 2304.12.1 through 2304.12.7, "Locations requiring water-borne preservatives or naturally durable wood," complying with the following requirements:

1. Comply with American Wood Protection Association AWPA U1 and AWPA M4.
2. Identification of Preservative-Treated Wood:
  - a. Provide all preservative-treated wood, identified in accordance with SBC-2018, Section 2303.1.9.1, to include: identification of the treating manufacturer; type of preservative used; minimum preservative retention (pcf); end use for which the product is treated; AWPA standard to which the product was treated; identity of the accredited inspection agency.
3. Moisture Content of Preservative-Treated Wood:
  - a. Where preservative-treated wood is used in enclosed locations where drying in service cannot readily occur, such wood shall be at a moisture content of 19 percent or less before being covered with insulation, interior wall finish, floor covering or other materials; in accordance with SBC-2018, Section 2303.1.9.2.
4. Fastener requirements at Preservative-Treated Wood:
  - a. Fasteners and connectors in contact with preservative-treated wood, in accordance with SBC-2018, Section 2304.10.5; ASTM A153/A153M, ASTM F1667.
    - 1) Fasteners or connectors for preservative-treated wood, including exceptions, in accordance with SBC-2018, Section 2304.10.5.1.

### 2.3 MATERIALS

A . Lumber, General:

1. Comply with DOC PS 20 and with applicable grading rules of inspection agencies certified by the American Lumber Standards Committee's (ALSC) Board of Review. Provide dressed lumber, S4S, with each piece factory marked with grade stamp of inspection agency.

B . Wood-Preservative-Treated Materials:

1. Comply with applicable requirements of AWPA C2 (lumber) and AWPA C9 (plywood). Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC's Board of Review. Dimension Lumber: Provide dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of

the inspection agency indicated. Refer to Structural "General Notes" located in the Drawings.

C . Miscellaneous Lumber:

1. Provide No. 3 or Standard grade lumber of any species for support or attachment of other construction, including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, and similar members.

2.4 ACCESSORIES

A . All accessory materials required by the manufacturer for a warrantable installation of the installed products in a manner that meets the Performance and Design Criteria.

B . Fasteners and Anchors:

1. Metal and Finish: Stainless steel for exterior, high humidity or preservative-treated wood locations, unfinished steel elsewhere.

C . Sill Flashing:

1. Sill Flashing: As specified in Section 07 62 00 - Sheet Metal Flashing and Trim.

D . All accessory materials required to comply with EQ credit: Low Emitting Materials, Option 1 in accordance with Section 01 35 15 - LEED Certification Procedures.

**PART 3 - EXECUTION**

3.1 EXAMINATION

A . Verify existing conditions meet the manufacturer's requirements before starting work.

B . Verify products have been stored, and will be installed, in accordance with project's Construction Indoor Air Quality Management Plan specified in Section 01 35 15 - LEED Certification Procedures.

3.2 PREPARATION

A . Prepare surfaces to receive work in accordance with manufacturer's instructions.

3.3 INSTALLATION - GENERAL

A . Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

B . All miscellaneous installation materials required to comply with EQ credit: Low Emitting Materials, Option 1 in accordance with Section 01 35 15 - LEED Certification Procedures.

3.4 FRAMING INSTALLATION

A . Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.

- B . Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
- C . Install structural members full length without splices unless otherwise specifically detailed.
- D . Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AFPA (WFCM) Wood Frame Construction Manual.
- E . Install horizontal spanning members with crown edge up and not less than 1-1/2 inches of bearing at each end.
- F . Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.
- G . Provide bridging at joists in excess of 8 feet span as detailed. Fit solid blocking at ends of members.
- H . Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

### 3.5 TOLERANCES

- A . Framing Members: 1/4 inch from true position, maximum.
- B . Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.
- C . Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

### 3.6 CLEANING

- A . Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
- B . Prevent sawdust and wood shavings from entering the storm drainage system.
- C . Dispose of all waste material in accordance with project's Waste Management Plan.
  - 1. See Section 01 74 19 - Construction Waste Management and Disposal for additional requirements.

### 3.7 PROTECTION

- A . Protect installed work as required by the manufacturer to maintain product performance, design criteria and warranty.

### 3.8 SCHEDULE

- A . Preservative-treated wood materials:
  - 1. Any wood required to be treated by the local authority having jurisdiction.
  - 2. Classification and location as indicated.
  - 3. Preservative-treated products by location:

- a. Wood framing members less than 8-inches above grade.
- b. Wood contacting concrete and masonry, roofing membrane and elsewhere as indicated or required.
- c. Wood floor plates that are installed over concrete slab-on-grade.
- d. Plywood where indicated or required.
- e. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, coping substrate and similar members in connection with roofing, flashing, vapor barriers and waterproofing.
- f. Wood sills, sleepers, blocking, furring, stripping and similar concealed members in contact with masonry or concrete.
- g. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.

B . Location: As indicated on the drawings.

END OF SECTION

## **PART 1 GENERAL**

### 1.1 SECTION INCLUDES

- A. Exterior paint systems on Steel Substrate.
- B. Exterior paint systems on Cement Board cladding at trash enclosure

### 1.2 RELATED REQUIREMENTS

- A. 01 43 39 - Mockups: For additional requirements related to the mockups in this section.
- B. 01 60 00 - Product Requirements: For substitution and additional product requirements.
- C. 01 74 19 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

### 1.3 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week before starting work of this section in accordance with Section 01 30 00 - Administrative Requirements.
  - 1. Review preparation and installation procedures and coordinating and scheduling required with related work.

### 1.4 SUBMITTALS

- A. Product Data: Provide product criteria, characteristics, accessories, jointing and seaming methods, and termination conditions.
- B. Sample: Submit three paper chip samples, 8.5 x 11 inch in size illustrating range of colors and textures available for each surface finishing product scheduled.
- C. Manufacturer's Installation Instructions: Indicate special preparation of substrate, installation and attachment methods, and perimeter conditions requiring special attention.
- D. Maintenance Data: For user's operation and maintenance of system including:
  - 1. Methods for maintaining system's materials and finishes.
  - 2. Precautions about cleaning materials and methods that could be detrimental to components, finishes, and performance.
  - 3. Recommendations on maintenance schedule.

### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in the manufacture of paint and coating products used in the work of this section with minimum ten years of experience.

- B. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years of experience on projects of similar size and complexity.

1.6 MOCKUP

- A. Visual and Constructability Mockup:
  - 1. Construct and participate as specified in Section 01 43 39 - Mockups.
- B. Paint one railing to serve as a mockup.
- C. Mockups may remain as part of the Work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. As required by the manufacturer for a warrantable installation of the installed products to meet the Performance and Design Criteria.

**PART 2 PRODUCTS**

2.1 DESCRIPTION

- A. Surface preparation and field application of paints, stains, varnishes, and other coatings.

2.2 PERFORMANCE AND DESIGN CRITERIA

- A. Provide materials that are intended for outdoor use on specified substrate and can be maintained by library maintenance over the life of the building.

2.3 MANUFACTURERS

- A. Provide all paint and coating products used in any individual system from the same manufacturer; unless noted otherwise below.
- B. Substitutions for products by manufacturers other than those listed above: See Section 01 60 00 - Product Requirements.

2.4 MATERIALS

- A. Exterior paints
  - 1. Paint surfaces in accordance with the following MPI Painting Manual designations.
    - a. Exterior Paint at Steel
      - 1 Product: Zinc-Rich Urethane/Inorganic Water-Based Epoxy/ Polyurethane.
      - 2 Manufacturers: Tnemec Tneme-Zinc w/ Unibond DF or approved equal.
      - 3 Sheen: Eggshell

4 Coats: Shop Primers + 2 coats.

b. Exterior Paint at Cement Board

1 Product: Latex, exterior grade.

2 Manufacturers: Benjamin Moore Aura or approved equal.

3 Sheen: Soft Gloss (N632)

4 Coats: Shop Primers + 2 coats.

2. Colors:

a. Color 1 (TBD): All Railings and steel elements within benches and site construction. Architect will select from manufacturer's standards of approved paint product.

b. Color 2 (TBD): Cement board at Trash Enclosure. Custom matched to paint on pre-fabricated building siding.

2.5 ACCESSORIES

A. All accessory materials required by the manufacturer for a warrantable installation of the installed products in a manner that meets the Performance and Design Criteria.

**PART 3 EXECUTION**

3.1 EXAMINATION

A. Verify existing conditions meet the manufacturer's requirements before starting work.

3.2 PREPARATION

A. Prepare surfaces to receive work in accordance with manufacturer's instructions.

3.3 INSTALLATION

A. General: Install all materials in accordance with manufacturer's instructions based on conditions present.

3.4 CLEANING

A. Dispose of all waste material in accordance with project's Waste Management Plan.

1. See Section 01 74 19 - Construction Waste Management and Disposal for additional requirements.

3.5 PROTECTION

- A. Protect installed work as required by the manufacturer to maintain product performance, design criteria, and warranty.

END OF SECTION

**PART 1 GENERAL**

1.1 SECTION INCLUDES

- A. Molded Rubber Bumpers for Loading Dock
- B. Bike Racks

1.2 RELATED REQUIREMENTS

- A. 01 60 00 - Product Requirements: For substitution and additional product requirements.
- B. 01 74 19 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's printed product literature for each type of specialty, indicating colors, locations, overall dimensions.
- B. Samples: Submit sample of finish options for verification.
- C. Manufacturer's Installation Instructions: Include installation templates and attachment devices.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. As required by the manufacturer for a warrantable installation of the installed products to meet the Performance and Design Criteria.

**PART 2 PRODUCTS**

2.1 Miscellaneous Specialties

A. Rubber Bumpers at Loading Dock

- 1. Style: 10" x 30" x 4" thick molded rubber bumper
- 2. Quantity: 3
- 3. Basis of Design: Durable Corporation model M-30 or approved equal
- 4. Fasteners by contractor, approved for substrate

B. Cane Detectable (ADA Compliant) Exterior Bike Racks

- 1. Style: Square Tube Inverted-U Narrow Rack w/ In-Ground Mount

2. Basis of Design: Cane Detectable Square Tube Inverted-U Narrow Rack by Sportworks, Woodinville WA, or approved equal

3. Materials:

- a Inverted U Tubes: 2" x 0.188" Square Tubing (stainless steel or mild steel)
- b Cross Bar: 1" x 2" x 0.120"
- c Tubing (stainless steel or mild steel)
- d Finish TGIC Polyester Powder
- e Dimensions A. 22 3/4" long x 6" wide x 45" high
- f Mounting A. Embedded in concrete
  - i Rack embedment legs should each be completely embedded in concrete.
  - ii Install bicycle rack in accordance with APBP (Association of Pedestrian and Bicycle Professionals) recommendations for location and spacing.
  - iii The installer is responsible for ensuring the mounting surface and installation method are adequate to safely secure the bicycle rack.

### **PART 3 EXECUTION**

#### 3.1 EXAMINATION

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

#### 3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install neatly, with horizontal edges level.
- C. Protect from damage until Substantial Completion; repair or replace damage items.

#### 3.3 CLEANING

- A. Dispose of all waste material in accordance with project's Waste Management Plan.
  - 1. See Section 01 74 19 - Construction Waste Management and Disposal for additional requirements.

END OF SECTION

## **PART 1 - GENERAL**

### 1.1 SUMMARY

- A . Provide all materials and labor for the installation of a pathway system underground circuits. Work in this section includes excavation and trenching, duct (raceway) construction, cutting and patching, concrete, underground cable vault (UCV) construction, and landscaping.
  - 1. This Section includes requirements for the above work which specifically pertain to outside plant communications and which are more stringent, additional to, or different from that of the Division 2, Division 3, Division 26, and Division 31 sections listed under Related Sections, below.

### 1.2 REFERENCES

- A . The applicable portions of the following specifications, standards, codes and regulations (latest editions and/or amendments) shall be incorporated by reference into these specifications.
  - 1. General:
    - a. National Electrical Code (NEC)
    - b. National Electrical Safety Code (NESC)
    - c. Washington Industrial Safety and Health Act (WISHA)
    - d. Occupational Safety and Health Act (OSHA)
    - e. WSDOT/APWA 1998 Standards Specifications for Road, Bridge and Municipal Construction (APWA Standard Specifications)
  - 2. Communications:
    - a. TIA/EIA - 758: Customer-owned Outside Plant Telecommunications Cabling Standard
    - b. TIA/EIA - 568A: Commercial Building Telecommunications Cabling Standard
    - c. TIA/EIA - 569: Commercial Building Standard for Telecommunication Pathways and Spaces
    - d. TIA/EIA - 606: The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
    - e. TIA/EIA - 607: Commercial Building Grounding and Bonding Requirements for Telecommunications
    - f. ISO/IEC IS 11801: Generic Cabling for Customer Premises
  - 3. Trenching and Backfill:
    - a. ASTM D1557: Test Method for Laboratory Compaction Characteristics Using Modified Effort

### 1.3 DEFINITIONS

- A . Aggregate: The mineral materials such as sand or stone used in making concrete.

- B . Backfill: Earth material used specifically for filling and grading excavations back to a finished state. Backfill is placed on top of the bedding surrounding encased ductbanks and directburied conduits.
- C . Base: Earth material used specifically to level and grade an excavation's subgrade for the subsequent placement of encased ductbanks, direct-buried conduit, and UCVs. Base material is placed on top of the subgrade and beneath the bedding surrounding encased ductbanks, conduits, or UCVs.
- D . Bedding: Earth material used specifically for filling excavations. Bedding is placed around encased ductbank, conduits, or UCVs. Bedding is placed on top of the base and beneath the backfill.
- E . Fill: The collective term for base, bedding, and backfill.
- F . Handhole/Pullhole: A small UCV in which it is expected that a person cannot enter to perform work. Handholes/pullholes are used for the placement of cable only, they are not used for splicing or for equipment.
- G . Manhole: A large UCV in which it is expected that a person can enter to perform work. Manholes may be used for splicing and outside-rated telecommunications equipment. H .
- RNC: Rigid Non-Metallic Conduit (PVC) I . RGC: Rigid Galvanized Steel Conduit.
- J . PSC: PVC Coated Rigid Steel Conduit.
- K . Underground Cable Vault (UCV): Underground vaults (manholes, or handholes/pullholes) which are used for the routing of communications cable.

## **PART 2 - PRODUCTS**

### 2.1 GENERAL

- A . Materials shall consist of fill, topsoil, concrete formwork, concrete, raceway, UCVs, and other incidentals and accessories as required.

### 2.2 BASE, BEDDING AND BACKFILL

- A . Use of on-site soils for base, bedding, and backfill is not acceptable.
- B . Base: Base material shall have size and shape characteristics that will allow it to compact readily and shall conform with the following gradation requirements.

1. For UCVs (provide gravel):

<u>Sieve Size</u>	<u>Percent Passing</u>
1" Square	100
¼ " Square	25 - 80
U.S. No. 200	15.0 max
Sand Equivalent	30 min

2. For Trenches (provide sand):

<u>Sieve Size</u>	<u>Percent Passing</u>
U.S. No. 10	35 - 100
U.S. No. 20	20 - 80
U.S. No. 40	10 - 55
U.S. No. 100	0 - 10
U.S. No. 200	0 - 3

- C. Bedding: Same as Base - For Trenches, above.

- D. Backfill:

1. For UCVs - Same as Base - For UCVs, above.  
2. For Trenches

<u>Sieve Size</u>	<u>Percent Passing</u>
½ " Square	100
¼ " Square	65 - 100
U.S. No. 10	40 - 100
U.S. No. 50	3 - 50
U.S. No. 100	0 - 4
U.S. No. 200	0 - 3

### 2.3 DUCTS AND DUCTBANKS

- A. Ducts: Provide in locations as shown on the drawings. Refer to Part - 3, Execution for details on when to use each type. All conduit, fittings, and adhesives shall be provided by the same manufacturer.

1. Types:
- a. Rigid Non-Metallic Conduit (RNC):
    - 1) RNC shall be NEMA TC 2 schedule 40 or 80 (see Part - 3, Execution for details on when to use each type) rigid polyvinyl chloride (PVC) approved for direct burial without concrete encasement. RNC shall be UL listed.
    - 2) Fittings shall be NEMA TC3, matched to conduit and material.
    - 3) Bends and sweeps shall be PSC or Fiberglass
  - b. Rigid Galvanized Steel Conduit (RGC):
    - 1) RSC shall be rigid steel conduit hot-dipped galvanized inside and out with threaded ends meeting ANSI C80.1.
    - 2) Couplings: Unsplit, NPT threaded with galvanizing equal to and compatible with conduit. Running thread or set screw threaded fittings (except for three piece and watertight split couplings) are not acceptable.

- 3) Nipples: Factory made through eight inches with no running threads.
  - c. PVC Coated Rigid Steel Conduit (PSC):
    - 1) PSC shall be NEMA RN 1 rigid steel conduit coated with rigid polyvinyl chloride (PVC) inside and out.
    - 2) Fittings shall be NEMA RN 1.
  - d. Fiberglass Conduit
    - 1) The conduit shall be listed by UL, Underwriters Laboratories, to the UL 2420 Below Ground standard. All conduit shipped shall contain UL labels.
2. Fittings:
- a. Bends/Sweeps:
    - 1) Unless otherwise noted on the Drawings, bends/sweeps shall be factory manufactured.
    - 2) Unless otherwise shown on the Drawings, bends shall consist of a single arc of not less than a 15 foot radius. Where this is not possible, a bend radius shall not be less than 10 times the internal diameter of the conduit for communications circuits.
    - 3) Unless otherwise shown on the Drawings, the use of 90 degree elbows, LB's, condulets, or the use of a UCV in place of a bend/sweep is not acceptable for communications circuits.
  - b. End Caps (Plugs): Provide pre-manufactured water-tight end caps for all ducts during construction. Tape is not an acceptable end cap or cover.
  - c. End Bells: Provide end bells for terminating conduit in UCVs. Do not provide for conduit ends terminating in UCVs which are equipped with TERM-A-DUCT.
3. Pull Cords: Provide nylon pull cord indicating length measurement for each duct. Pull cord strength shall be a minimum of 130 pounds.
- B. Ductbanks:
1. Duct Spacers/Supports: Provide high-density plastic interlocking spacers/supports to maintain uniformity of multiple ducts within a ductbank. Spacers shall be:
    - a. Underground Devices Inc.: WUNPEECE
  2. Warning Tape: Provide metallic warning tape above each ductbank. Tape shall be 6" wide and orange in color.
  3. Grounding/Bonding: Provide #2 bare ground along length of ductbank.

### **PART 3 - EXECUTION**

#### **3.1 GENERAL**

- A. The Contractor is solely responsible for the safety of the public and workers in accordance with all applicable rules, regulations, building codes and ordinances. Fenced barriers, steel plate covers, warning indicators, proper shoring, etc. are all the sole responsibility of the Contractor.

- B . The Contractor shall follow all applicable safety rules and regulations including OSHA and WISHA. The National Electrical Safety Code (NESC) and the NEC shall be strictly followed except where local codes and/or regulations are more stringent, in which case the local codes and/or regulations shall govern.
- C . All work shall comply with the standards, references and codes listed in Part 1 — References above. Where questions arise regarding which standards, references, or codes apply, the more stringent shall prevail.
- D . The Contractor shall install all components strictly to manufacturer's recommendations.
- E . Upon project completion, all surplus material and debris shall be cleared from the job site and disposed of in a legal manner by the contractor.

### 3.2 EXCAVATING, TRENCHING AND FILL

- A . Excavation:
  - 1. Excavations shall not be performed where the outside temperature is less than 35 F or when there is standing water or snow on the subgrade.
  - 2. Excavations requiring crossing of concrete or asphalt shall be performed only after the surface material has been saw cut and removed. Concrete shall be removed in complete sections from control joint to control joint regardless of the width of the excavation. Concrete and asphalt shall be replaced to match existing depth, strength, color, and type of material. Coordinate with and obtain approval from AHJ.
  - 3. Adjacent structures which may be compromised or damaged by excavation work shall be underpinned as evaluated and recommended by a registered structural engineer employed by the Contractor prior to proceeding with the work.
  - 4. The Contractor shall maintain adequate separation between the excavation and adjacent underground utilities. The excavation shall be located such that ductbank and UCVs, when installed, shall have a minimum separation of twelve (12) inches between the ductbank and UCV and the nearest underground utility. For gas lines a minimum separation of eighteen (18) inches is required. For water/sewer a minimum separation of thirty-six (36) inches is required.
  - 5. Excavations shall not be left unprotected at the end of the work shift. Excavations shall be covered with steel sheets and barricaded prior to leaving the job site, in accordance with all applicable rules, regulations, building codes, and ordinances.
  - 6. The Contractor shall not allow water to accumulate in excavations. The Contractor shall install, operate and maintain all pump or dewatering equipment necessary to meet this requirement.
  - 7. Depth of excavation
    - a. For UCVs: Depth shall allow for the overall assembled height of the vault plus the added height of risers, covers and bedding material consisting of a minimum six (6) to twelve (12) inches of base. Width of excavation for UCVs shall provide for a minimum of six (6) inches clearance around each side of the UCV.
    - b. For trenches: Depth shall be sufficient to cover a minimum of twenty-four (24) inches over the conduit or ductbank formation. Width of excavation for trenches shall be a minimum of six (6) inches to each side of the ductbank formation. Depth of excavation for trenches shall allow for the proper alignment of ducts into UCVs.

8. Soft spots in the subgrade shall be over-excavated, filled, and compacted under supervision of soils engineer.
  9. Excavation for trenching shall run true and as straight as practicable. Trenches shall be clear of stones and soft spots.
  10. Coordinate slope with actual conditions in field.
  11. Trench grade shall be sloped to fall 3 inches per 100 feet in general and ¼" per foot where possible. Slope shall fall toward lower UCVs or from high points toward both UCVs.
- B . Fill:
1. Prior to the placement of fill, all groundwater and surface water shall be drained and/or pumped from the recipient area.
  2. Frozen fill shall not be placed.
  3. Base:
    - a. The subgrade bed to receive fill shall be scarified and moisture conditioned prior to placing materials.
    - b. Base material shall be moisture conditioned to within three (3) percent of optimum moisture content and shall be placed in loose, horizontal layers.
    - c. The subgrade bed shall be leveled using sand for trenches and gravel for UCVs as necessary to form an even base.
  4. Bedding:
    - a. For Direct-buried Ductbank:
      - 1) Lifts/layers shall not exceed 1 to 2 inches before compaction until the top of the ductbank is reached and shall not exceed 4 inches thereafter. Bedding shall be placed simultaneously on both sides of ductbank for the full width of the trench. The materials shall be carefully worked above, to each side, and below the ducts with a tool capable of preventing the formation of void spaces and without damaging the structure or waterproofing of the ducts.
  5. Backfill:
    - a. Backfill lifts/layers shall not exceed 6 inches before compaction.
  6. Compaction: Compaction shall be performed using a vibratory plate or roller or other mechanical device. Compaction through jetting and/or ponding is not acceptable. Compact per APWA Standard Specification Paragraph 7-10.3 (11).
    - a. Bedding: Material shall be compacted to a dense state equaling at least 95% of the maximum dry density per ASTM D1557.
    - b. Backfill: Material shall be compacted to within two (2) feet of the finished surface with a minimum relative compaction of 90% of the maximum dry density per ASTM D1557. Material within two (2) feet of the finished surface shall be compacted with a minimum relative compaction of 95% of the maximum dry density per ASTM D1557.
- C . Waste Disposal: The Contractor shall remove all excavation materials and other construction debris from the site in a timely manner. Materials shall be disposed of legally.

### 3.3 DUCTS AND DUCTBANKS

#### A. Ducts:

1. The type of duct to use shall be dictated by the application:
  - a. Outdoor underground – direct buried: Provide RNC Schedule 40 (Type I) or PSC.
    - 1) Transition to PSC at stub up locations and at entrances to buildings or other locations where the raceway changes from direct buried to encased in concrete or exposed conditions.
    - 2) Transition to PSC or RGC for short radius bends (i.e. bends with less than 15foot radii sweeps).
  - b. Outdoor underground – concrete encased: Provide RNC Schedule 40 (Type 1).
    - 1) Transition to PSC at stub up locations and at entrances to buildings or other locations where the raceway changes from encased in concrete to direct buried or exposed conditions.
  - c. Exposed or within five feet of steam lines or Utilidor trenches : Provide RGC.
2. Fittings:
  - a. Duct ends shall be cut square and reamed to remove burrs and sharp ends. Duct shall extend the maximum distance into all fittings, couplings, and/or connectors. All fittings shall be tightened securely and sealed watertight (see below).
  - b. Ensure that bends/sweep radii are detailed on the drawings.
  - c. Bends/Sweeps:
    - 1) Unless otherwise shown on the Drawings, bends shall consist of a single arc of net less than a 15 foot radius. Where this is not possible, a bend radius shall not be less than 10 times the internal diameter of the conduit for communications circuits.
    - 2) Unless otherwise shown on the Drawings, an individual bend shall not exceed 90-degrees.
    - 3) Unless otherwise shown on the Drawings, a duct section may have no more than the equivalent of two 90-degree bends (a total of 180 degrees) between pull points. The 180-degree maximum shall include kicks and offsets. Where it is not possible to construct a section of duct within the 180-degree bend maximum, intermediary UCVs must be installed.
    - 4) Two 90-degree bends separated by less than 10' is not permissible.
    - 5) Bends for ducts within a common ductbank shall be parallel, measured from the same center-point.
    - 6) Where factory manufactured bends cannot be obtained due to a unique bend radius, bends shall be formed only with factory recommended equipment and shall be manufactured in such a way as to ensure that the internal diameter of the duct is not changed.
  - d. End Caps (Plugs): End caps shall be placed on all duct ends throughout construction in order to prevent the intrusion of water or debris. End caps shall be installed on all duct that is not directly being worked on during the work day and on all ducts at night. End caps shall be left in place upon final completion of the work.

- e. End Bells: For UCVs which are not equipped with TERM-A-DUCT, install protective end bells on ducts flush with UCV wall.
  3. Sealing: Duct connections shall be made waterproof and rustproof by application of a watertight, conductive thread compound (for RGC and PSC) or by solvent-type cement (for RNC). Duct terminations in UCVs shall be sealed and grouted (to ensure that all voids in the joints are filled).
  4. Test Mandrels: Each duct, once installed, shall be cleaned of debris with a wire brush or swab and shall be proven out with a minimum 16 inch long test mandrel which is  $\frac{1}{4}$  inch smaller than the inside diameter of the duct. Test mandrel shall be pulled after backfilling but prior to the replacement of landscaping. The Contractor shall repair any duct that does not prove out at no cost to the Owner.
  5. Duct Entrances: Duct entrances at opposite ends of a UCV shall be at the same level and in the same position with respect to the side walls. The Contractor shall ensure that each duct leaving a UCV in any position shall enter the next UCV in the same relative position.
  6. Ensure that maximum lengths are calculated.
  7. Length: Unless otherwise shown on the Drawings, the maximum length of a duct run shall not exceed 600 feet between UCVs or pulling points. Install additional UCVs as required to maintain spacing.
  8. Pull Cords: Install in each duct immediately after the duct has been mandreled. Leave a minimum of 10 feet looped and tied off at each end of the duct.
  9. Protection: Insure that after installation all duct coatings and finishes are without damage. Repair as follows:
    - a. PVC Coated Rigid Steel Conduit: Patch all nicks and scrapes in PVC coating after installing conduits.
    - b. Rigid Galvanized Steel Conduit: Repair damage to galvanized finishes with zincrich paint as recommended by the manufacturer.
    - c. Rigid Non-metallic Conduit: Repair damage with matching touchup coating recommended by the manufacturer.
- B . Ductbanks:
1. Duct Spacers/Supports: Supports shall be spaced on five (5) foot centers otherwise. Spacers shall be interlocked horizontally only. Spacers encased in concrete shall be staggered at least six (6) inches vertically.
  2. Warning Tape: Install metallic warning tape six (6) inches below grade and eighteen (18) inches above the ductbank
  3. Grounding/Bonding: Install ground wire along length of ductbank.

END OF SECTION

Lakewood Library	
Lakewood, WA	
BuildingWork	<b>Bid Set</b>
	<b>8/4/2023</b>

Lighting fixtures will take between 6-8 weeks to arrive on site after the manufacturer receives the purchase order documentation. 6-8 weeks are standard lead times for most off-the-shelf lighting fixtures. Longer times will apply if customization, changes, or special requests are needed. Coordination for fixtures on this project has been done between lighting designer and local sales reps. Contractor and distributor to allow for Seattle Sales Reps to prepare and submit submittal packages for Blanca review, when applicable.

Lighting designer does not specify voltage and emergency lighting requirements, Electrical Engineer and/or Electrical Contractor to define, specify and document. Lighting designer does not design or specify any seismic bracing required for fixtures.

**For multifamily projects, fixture efficacy within units required by local energy code is XXXX.**

For lighting fixture mounting details refer to details in architectural documentation.

Dimming protocol is 0-10V to 1%, unless otherwise noted (U.O.N.).

All standard finishes, U.O.N. All 90 CRI minimum.

Refer to Project Manual for specification sections defining Interior and Exterior Lighting System Components.

Refer to issued lighting fixture cuts for manufacturer's catalog pages. Lighting Manufacturer updates their catalog pages often. Contractor to verify that the most updated fixture cut is used in the submittal process. Please submit shop drawings as requested within fixture descriptions for approval as part of submittal process.

For all installation related information refer to manufacturer's published instructions.

Some fixtures will require aiming and high-end trimming after install at the direction of the lighting designer. The aiming and dimming settings of lighting fixtures shall occur after dark when daylight prevents accurate evaluation of lighting system performance. The Contractor shall provide all necessary personnel and equipment for aiming and adjusting of light fixtures, and programming of lighting control systems.

All LED luminaires are integrated LED Fixtures with a dedicated LED light source, U.O.N.  
 "L"=LED fixture, "XL"= Exterior LED



Lakewood Library	
Lakewood, WA	
BuildingWork	<b>Bid Set</b>
	<b>8/4/2023</b>

Type Rev.	Description	Mfr.	Catalog	Source	Fixture Watts	Dim.	Location
<b>EXTERIOR</b>							
<b>XL2</b>	Clear lens pedestrian pole. Fixture to be constructed out of aluminum with a clear lens and silver finish. Fixture to measure 7" diameter x 12' tall. Fixture to be IP65 rated for wet locations.	Ragni	TIG-10-AS2-3-35-T5-VOLT-FINISH TIGP-C-12-S-SLV	2345lm 3000K	18.5	0-10V to %	Exterior Paths
<b>XL3</b>	Recessed slim steplight. Fixture to be constructed out of die-cast aluminum with an aluminum finish. Fixture to measure 4 1/8" wide x 2 61/64" tall x 1 59/64" deep. Fixture to be IP 65 rated for wet locations.	Performance in Lighting	IN0-CL-6-AM-3K-UNV-0-NA	188lm 3000K	6	NA	Front stair way and ramp
<b>XL4</b>	Underbench strip light. Fixture to be measure .4" wide x .4" tall x lengths as shown in drawing. Fixture to be IP67 rated for wet locations. Fixture to be provide with all parts and pieces for installation.	Tech Lighting	ESLTP-LENGTH-335-930-POWER-7	335lm/ft 3000K 95CRI	4.4w/ft	0-10V to %	Entrance
<b>XL5</b>	Wall sconce. Fixture to be constructed of die-cast aluminum with silicone rubber gaskets and stainless steel external screws. Fixture to have an aluminum finish. Fixture to measure 1-31/32" in diameter x 4-3/4" tall x 4-19/32" wide. Fixture to have wide-flood 48-degree downward-only distribution.	Arcluce	TULA P-TU0113US-21A	650LM 3000K 80CRI	10	NA	Entrance



Lakewood Library	
Lakewood, WA	
BuildingWork	<b>Bid Set</b>
	<b>8/4/2023</b>

Type Rev.	Description	Mfr.	Catalog	Source	Fixture Watts	Dim.	Location
<b>XL6</b>	18' parking lot pole downlight. Fixture to be constructed out of cast aluminum with a silver metallic finish. Fixture to measure 28"-29" long x 4"-10" tall x 15.28" wide. Fixture to be IP65 rated for wet locations. Fixture to have Type III distribution. Fixture to be provided with adjustable louver light shield option.	Visionaire Lighting	VMX-II-T3-48LC-3-3K-VOLT-SAM-SL-PCR-ADJLS	6994lm 3000K 70CRI	52	0-10V	Parking Lot
<b>XL6A</b>	18' parking lot pole downlight. Fixture to be constructed out of cast aluminum with a silver metallic finish. Fixture to measure 28"-29" long x 4"-10" tall x 15.28" wide. Fixture to be IP65 rated for wet locations. Fixture to have Type V wide distribution. Fixture to be provided with adjustable louver light shield option.	Visionaire Lighting	VMX-II-T5W-48LC-3-3K-VOLT-SAM-SL-PCR-ADJLS	6994lm 3000K 70CRI	52	0-10V	Parking Lot



Lakewood Library	
Lakewood, WA	
BuildingWork	<b>Bid Set</b>
	<b>8/4/2023</b>

Type Rev.	Description	Mfr.	Catalog	Source	Fixture Watts	Dim.	Location
P1	Pole to be used with XL6 & XL6A. Fixture to be constructed out of ASTM A500 Grade B tubing and a rolled steel base plate with a black finish. Fixture to measure 4" diameter x 18' height.	Visionaire Lighting	RNTS-4R-11-18'-9BC-343-S1-SL				Parking Lot
XL7	Handrail with integrated lighting. Fixture to be constructed out of extruded aluminum with a stainless steel finish. Fixture to measure 1.5" diameter x 3' length at north side plaza entrance and 5' length at east side plaza entrance. Fixture post to have a 2" diameter x 36" height. Post to house integral driver.	Intense	ICR15-SPI-ST-P36-HO-30-60S-	202lm/ft 3000K 85CRI	4.6w/ft		Plaza



## LIGHTING FIXTURE CUTS

Lakewood Library	<b>Type:</b>
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

Lighting fixtures will take between 6-8 weeks to arrive on site after the manufacturer receives the purchase order documentation. 6-8 weeks are standard lead times for most off-the-shelf lighting fixtures. Longer times will apply if customized, changes, or special requests are needed.

Lighting designer does not specify voltage and emergency lighting requirements, Electrical Engineer and/or Electrical Contractor to define, specify and document.

For multifamily projects, fixture efficacy required by local energy code is XXXX.

For lighting fixture mounting details refer to details in architectural documentation.

Dimming protocol is 0-10V TO 1%, unless otherwise noted (U.O.N.).

All standard finishes, U.O.N.

All sources to be LED and 90 CRI minimum.

Refer to Project Manual for specification sections defining Interior and Exterior Lighting System Components.

Refer to issued lighting fixture cuts for manufacturer's catalog pages. Lighting Manufacturer updates their catalog pages often. Contractor to verify that the most updated fixture cut is used in the submittal process.

For all installation related information refer to manufacturer's published instructions.

# LIGHTING FIXTURE CUTS

Lakewood Library	<b>Type: XL2</b>
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

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## TIGEA LED

### BOLLARD RANGE

#### technical characteristics (Customer requested sizes available with no upcharge)

	Tigea 3500	Tigea 4000	Tigea 4500	Tigea 5000
<b>Height (ft)</b>	11.5	13.1	14.8	16.4
<b>Weight (lbs)</b>	63.9	71.7	79.8	88.0
<b>Protection index</b>				
Optical unit			IP 65	
Electrical compartment			IP 54	
<b>Shock resistance</b>			IK 10	
<b>Materials:</b>				
Body			Aluminum	
Protector			Frosted PC with Anti-UV Treatment	

#### electrical characteristics

- Power current up to 800mA
- Electrical class: II
- Incorporated driver
- Varistor (protection against high voltages)
- Optional lighting management systems: automatic time-related lowering of intensity with up to 5 levels, presence detection, constant flux, graduation by means of voltage variation, command 1-10V, communication DALI or PWM.

#### lighting distributions

- Type IV
- Type V

All information is subject to change without notice  
Last Updated: 07/22/2021

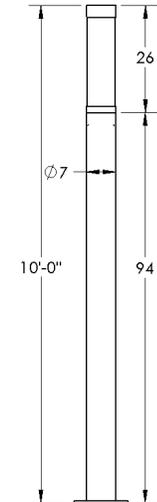
[www.ragni-lighting.com](http://www.ragni-lighting.com)



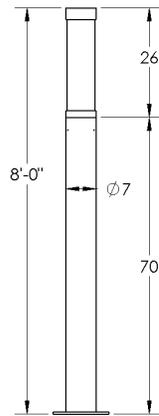
# LIGHTING FIXTURE CUTS

Lakewood Library	Type: XL2
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

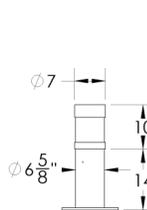
## dimensions (in/ft)



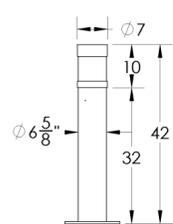
26" Luminaire Section with 94" Pole



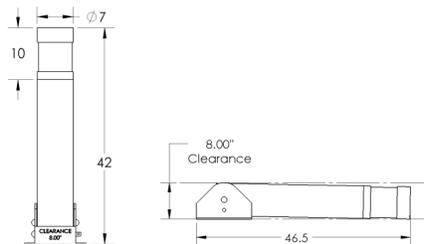
26" Luminaire Section with 70" Pole



10" Luminaire Section with -14" Pole



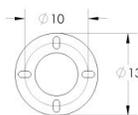
10" Luminaire Section with -32"-Std



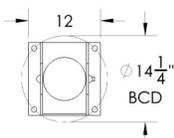
OPTIONAL: Bollard with Hinged Base



TIG-10 Base Plate



TIG-10 with TIG-32-Hinge



 [www.ragni-lighting.com](http://www.ragni-lighting.com)

# LIGHTING FIXTURE CUTS

Lakewood Library	Type: XL2
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23



## POWER AND LUMINOUS INTENSITY - luminaire output data

3000K Number of LEDs	350 mA			500 mA			700 mA		
	P <sub>i</sub> (W)	Φ (lm)	(lm/W)	P <sub>i</sub> (W)	Φ (lm)	(lm/W)	P <sub>i</sub> (W)	Φ (lm)	(lm/W)
8	18.5	2345	125	26.5	3320	124	38.5	4480	116

4000K Number of LEDs	350 mA			500 mA			700 mA		
	P <sub>i</sub> (W)	Φ (lm)	(lm/W)	P <sub>i</sub> (W)	Φ (lm)	(lm/W)	P <sub>i</sub> (W)	Φ (lm)	(lm/W)
8	18.5	2460	132	26.5	3485	131	38.5	4706	122

P<sub>t</sub> (W) = Total power consumption including driver consumption • Φ Nominal flux (lm) • Luminous efficiency (lm/W)

## ORDERING INFORMATION

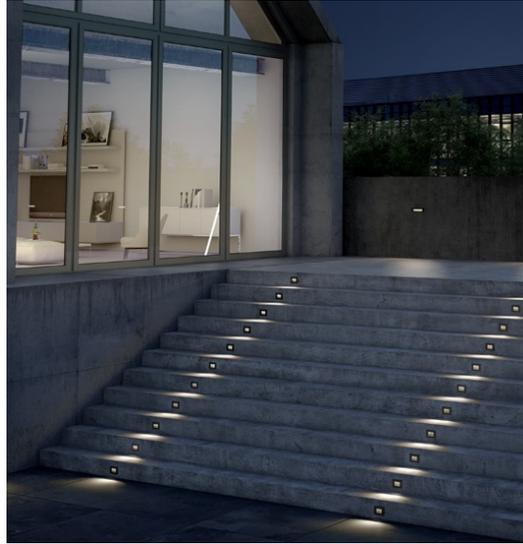
Fixture	Head Size	Module	Drive Current	Distribution	Line Voltage	Color	
TIG	10"	AS2	3 - (3000K)	35 - (350 mA)	T4	1 - (120 - 277)	BLK - (Black)
	26"		4 - (4000K)	50 - (500 mA)	T5	3 - (347 - 480)	BRZ - (Bronze)
	C-CUSTOM			70 - (700 mA)			SLV - (Silver)
				Custom			WHT - (White)
							RAL #

Pole	Pole Height	Pole Style	Color
TIGP	14"	S- Standard Column	BLK- Black
	32"	EM- Embedded	BRZ- Bronze
	70"	R- Removable	SLV- Silver
	94"	H-Hinged Base	WHT- White
	C-CUSTOM		RAL #

# LIGHTING FIXTURE CUTS

Lakewood Library	Type: XL3
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

## INSERT+ ZERO



Recessed wall steplight series. Fixtures consist of:

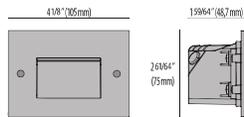
- Multi-step powder-coat painting process, optimized against UV rays and corrosion.
- Copper-free precision die-cast aluminum housing and ring/faceplate.
- Frosted, flat, tempered silk-screened soda-lime glass diffuser.
- Custom molded, anti-aging gasket(s).
- Stainless steel external hardware.
- Custom MCPCB utilized to maximize heat dissipation and promote a long LED life.

- IESNA Type II light distribution.
- Input voltage: 120-277 V (50 / 60 Hz), integral driver.
- Mud Ring included for INSERT+ ZERO / ZERO CLIPS (J-Box provided by others).
- Consult factory for dimming options, custom finishes (please specify RAL color), and non-cataloged CCT (Kelvin) options including static colors.
- Product meets Buy American Act requirements within ARRA.
- 5-year warranty.
- Marine Grade finish.
- Suitable for Natatorium applications.

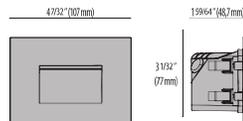


### FINISHES

- AN-96 / Iron gray / Textured
- GR-94 / Aluminum metallic / Textured
- WH-87 / White / Textured
- BK-81 / Black / Textured
- RB-10 / Iron rust / Textured



INSERT+  
ZERO



INSERT+  
ZERO CLIPS



Scan here  
for installation  
instructions

Lumen Output	27K	3K	35K	4K	5K	6K
Insert+Zero Screw 4W	134	140	146	153	159	165
Insert+Zero Screw 6W	184	188	192	196	200	204
Insert+Zero Clips 4W	154	162	170	178	186	194
Insert+Zero Clips 6W	213	217	221	225	229	233

Revision 03  
11/22

# LIGHTING FIXTURE CUTS

Lakewood Library	Type: XL3
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

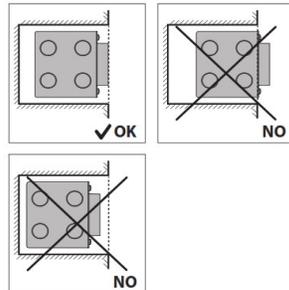
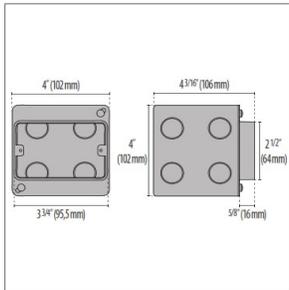
## Order Guide - Insert+Zero



Order code example **INO-SC-6W-AM-3K-120-NA**

Housing Style	Wattage	Finish	Kelvin	Voltage	Controls	Accessories
SC Screw Version	4 4 watt	AM Aluminum Metallic	27K 2700k	UNV 120-277V	NA Non Dimming	PHC* Photocell
	6 6 watt (max)	IG Iron Gray	3K 3000k		0-10V 0-10V Dimming (Remote Driver Only)	OCC* Occupancy Sensor
CL Clip Version	XX Specify Wattage Must be below max	IR Iron Rust	35K 3500k	ELV ELV Dimming (Remote Driver Only)	LVR* Louver Cover	JBOX* Jbox Cover Plate
		BK Textured Black	4K 4000k			LVR* Louver Cover
		WH Textured White	5K 5000k			GFCI GFCI Outlet
		CC Custom Color	65K 6500k			Contact factory for details on non-standard installation
		AMW Anti-Microbial White	RED Static Red			PHC,OCC and GFCI Requires 3-Gang Jbox
		GRN Static Green	BLU Static Blue			
AMB Static Amber						

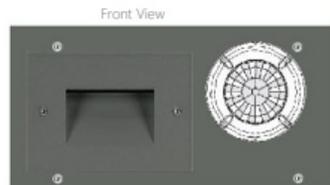
### JBOX BY OTHERS MUDRING INCLUDED WITH FIXTURE



Louver Cover



PHC Option



OCC Option

Performance in Lighting reserves the right to make all necessary changes without prior notice.  
 Performance in Lighting - 2621 Keys Pointe - Conyers, Georgia 30013 - USA - voice 770.822.2115 - info.usa@pilighting.com  
[www.performanceinlighting.com](http://www.performanceinlighting.com)

Revision 03  
11/22

# LIGHTING FIXTURE CUTS

Lakewood Library	Type: XL4
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23



## ESSENCE™ STATIC WHITE LED STRIP WET IP67

ESSENCE premium 24VDC low-voltage flexible Static White LED Strip is durable, IP67 rated for use in wet environments, and delivers high-quality color rendering 95, and flicker-free illumination for linear and accent lighting solutions used in residential, retail, commercial, hospitality, entertainment, and public space applications.

### CLEAN AESTHETIC WITH MINIMAL SHADOWING

- Tight LED pitch (72 LEDs/ft)

### EASE OF SPECIFYING AND INSTALLATION

- Strip is ordered in 0.98-inch increments
- Field cuttable and sealable on the jobsite
- Includes 3M™ Tape for robust mounting
- Translucent mounting straps available

### ROBUST AND RELIABLE

- IP67 rated for indoor wet location use and recommended for outdoor use
- Ultra-premium electrical conductivity, performance and reliability
- Copper substrate minimizes voltage drop for consistent brightness along run

### APPLICATION VERSATILITY

- Standard reverse-phase, forward-phase, and TRIAC dimming down to 0.1%, Lutron Hi-lume EcoSystem down to 0.1% and eldoLED 0-10V down to 0.1%
- Registered CEC appliance database. Complies with CEC 2019 Title 24 Part 6
- UL Listed, Class 2; Wet IP67 rated for outdoor applications; approved for use in closet storage spaces per NEC Article 410.16



STATIC WHITE LED STRIP WET IP67

### LUMEN MULTIPLIER (CRI/CCT)

CCT	MULTIPLIER
2400K	0.90
2700K	0.95
3000K	1.00
3500K	1.05
4200K	1.10

Lumen output will vary by CCT.  
See photometric charts for more information.

### SPECIFICATIONS

P-SERIES STATIC WHITE	
DELIVERED LUMENS/FT	335
WATTS/FT	4.4
EFFICACY	76
CCT	2400K, 2700K, 3000K, 3500K, or 4200K
COLOR CONSISTENCY	2-step
COLOR QUALITY	CRI 95+, R <sub>9</sub> 90+, R <sub>r</sub> 90+, R <sub>g</sub> 95-105
CRI	95+
VOLTAGE	LED strip: 24VDC input Power supplies: 120V or 277VAC input; 24VDC output
OPERATING AMBIENT TEMPERATURE	T <sub>a</sub> : -4° to 133° F (-20° to 45° C)
DIMMING	Standard reverse-phase, forward-phase, and TRIAC dimming (indoor down to 0.2%; wet IP66 down to 0.1%) Standard 0-10V dimming (indoor down to 5%; wet IP66 down to 0.1%) eldoLED 0-10V dimming (indoor down to 0.1%) Lutron Hi-Lume EcoSystem/3-wire (indoor down to 0.1%)
POWER SUPPLY	Constant voltage with +0.9 power factor and +80% efficiency. Class 2 up to 100W.
GENERAL LISTINGS	UL Listed, Class 2. IP67 rated for wet applications.
CALIFORNIA TITLE 24	Registered CEC appliance database. Complies with CEC 2019 Title 24 Part 6.
L70	50,000 hours min
WARRANTY	5 years

Data in chart reflect 3000K values unless noted.

Ordering grids available on page 2.

Visit [Techlighting.com](http://Techlighting.com) for specific warranty limitations and details.

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UPDATED 11/2/22

# LIGHTING FIXTURE CUTS

Lakewood Library	<b>Type: XL4</b>
Lakewood, WA	
BuildingWork	
<b>Bid Set</b>	
<b>8/4/23</b>	



## ESSENCE™ STATIC WHITE LED STRIP WET IP67

### ORDERING GRIDS

#### LED STRIP P-SERIES (2-STEP)

PRODUCT	NOMINAL LENGTH IN INCHES	OUTPUT/FT	CRI/CCT	POWER FEED TYPE	WET
ESLTP ESSENCE LED STRIP P-SERIES (2-STEP)	<b>6-252</b> (SEE OVERALL LENGTH CHART)	<b>335</b> 335 LM/FT	<b>924</b> 95 CRI, 2400K	<b>1</b> 1 FEED, SOLDERED LEADS <b>2</b> 2 FEEDS, SOLDERED LEADS	<b>7</b> WET IP67
			<b>927</b> 95 CRI, 2700K		
			<b>930</b> 95 CRI, 3000K		
			<b>935</b> 95 CRI, 3500K		
			<b>942</b> 95 CRI, 4200K		
<b>ESLTP</b>		<b>335</b>			<b>7</b>

### OVERALL LENGTH CHART FOR STATIC WHITE

When ordering for Static White LED Strip Wet IP67, refer to the chart below to identify the nominal length referenced in the item number.

NOMINAL LENGTH	ACTUAL LENGTH 1 FEED	ACTUAL LENGTH 2 FEEDS	NOMINAL LENGTH	ACTUAL LENGTH 1 FEED	ACTUAL LENGTH 2 FEEDS	NOMINAL LENGTH	ACTUAL LENGTH 1 FEED	ACTUAL LENGTH 2 FEEDS	NOMINAL LENGTH	ACTUAL LENGTH 1 FEED	ACTUAL LENGTH 2 FEEDS	NOMINAL LENGTH	ACTUAL LENGTH 1 FEED	ACTUAL LENGTH 2 FEEDS
6	5-3/4"	5-3/8"	56	55-11/16"	55-3/8"	106	105-11/16"	105-3/8"	156	155-11/16"	155-5/16"	206	205-5/8"	205-5/16"
7	6-11/16"	6-3/8"	57	56-11/16"	56-3/8"	107	106-11/16"	106-5/16"	157	156-5/8"	156-5/16"	207	206-5/8"	206-5/16"
8	7-11/16"	7-3/8"	58	57-11/16"	57-5/16"	108	107-5/8"	107-5/16"	158	157-5/8"	157-5/16"	208	207-5/8"	207-1/4"
9	8-11/16"	8-5/16"	59	58-5/8"	58-5/16"	109	108-5/8"	108-5/16"	159	158-5/8"	158-1/4"	209	208-9/16"	208-1/4"
10	9-5/8"	9-5/16"	60	59-5/8"	59-5/16"	110	109-5/8"	109-1/4"	160	159-9/16"	159-1/4"	210	209-9/16"	209-1/4"
11	10-5/8"	10-5/16"	61	60-5/8"	60-1/4"	111	110-9/16"	110-1/4"	161	160-9/16"	160-1/4"	211	210-9/16"	210-3/16"
12	11-5/8"	11-1/4"	62	61-9/16"	61-1/4"	112	111-9/16"	111-1/4"	162	161-9/16"	161-3/16"	212	211-1/2"	211-3/16"
13	12-9/16"	12-1/4"	63	62-9/16"	62-1/4"	113	112-9/16"	112-3/16"	163	162-1/2"	162-3/16"	213	212-1/2"	212-3/16"
14	13-9/16"	13-1/4"	64	63-9/16"	63-3/16"	114	113-1/2"	113-3/16"	164	163-1/2"	163-3/16"	214	213-1/2"	213-1/8"
15	14-9/16"	14-3/16"	65	64-1/2"	64-3/16"	115	114-1/2"	114-3/16"	165	164-1/2"	164-1/8"	215	214-1/2"	214-1/8"
16	15-1/2"	15-3/16"	66	65-1/2"	65-3/16"	116	115-1/2"	115-1/8"	166	165-1/2"	165-1/8"	216	215-7/16"	215-1/8"
17	16-1/2"	16-3/16"	67	66-1/2"	66-1/8"	117	116-1/2"	116-1/8"	167	166-7/16"	166-1/8"	217	216-7/16"	216-1/16"
18	17-1/2"	17-1/8"	68	67-1/2"	67-1/8"	118	117-7/16"	117-1/8"	168	167-7/16"	167-1/16"	218	217-7/16"	217-1/16"
19	18-1/2"	18-1/8"	69	68-7/16"	68-1/8"	119	118-7/16"	118-1/16"	169	168-7/16"	168-1/16"	219	218-3/8"	218-1/16"
20	19-7/16"	19-1/8"	70	69-7/16"	69-1/16"	120	119-7/16"	119-1/16"	170	169-3/8"	169-1/16"	220	219-3/8"	219-1/16"
21	20-7/16"	20-1/16"	71	70-7/16"	70-1/16"	121	120-3/8"	120-1/16"	171	170-3/8"	170-1/16"	221	220-3/8"	221"
22	21-7/16"	21-1/16"	72	71-3/8"	71-1/16"	122	121-3/8"	121-1/16"	172	171-3/8"	172"	222	221-5/16"	222"
23	22-3/8"	22-1/16"	73	72-3/8"	72-1/16"	123	122-3/8"	123"	173	172-5/16"	173"	223	222-5/16"	222-5/16"
24	23-3/8"	23-1/16"	74	73-3/8"	74"	124	123-3/8"	124"	174	173-5/16"	173-5/16"	224	223-5/16"	223-5/16"
25	24-3/8"	25"	75	74-5/16"	75"	125	124-5/16"	124-15/16"	175	174-5/16"	174-15/16"	225	224-1/4"	224-5/16"
26	25-5/16"	26"	76	75-5/16"	75-15/16"	126	125-5/16"	125-15/16"	176	175-1/4"	175-15/16"	226	225-1/4"	225-7/8"
27	26-5/16"	26-15/16"	77	76-5/16"	76-15/16"	127	126-1/4"	126-15/16"	177	176-1/4"	176-7/8"	227	226-1/4"	226-7/8"
28	27-5/16"	27-15/16"	78	77-1/4"	77-15/16"	128	127-1/4"	127-7/8"	178	177-1/4"	177-7/8"	228	227-3/16"	227-7/8"
29	28-1/4"	28-15/16"	79	78-1/4"	78-7/8"	129	128-1/4"	128-7/8"	179	178-3/16"	178-7/8"	229	228-3/16"	228-15/16"
30	29-1/4"	29-7/8"	80	79-1/4"	79-7/8"	130	129-3/16"	129-7/8"	180	179-3/16"	179-13/16"	230	229-3/16"	229-13/16"
31	30-1/4"	30-7/8"	81	80-3/16"	80-7/8"	131	130-3/16"	130-13/16"	181	180-3/16"	180-13/16"	231	230-1/8"	230-13/16"
32	31-3/16"	31-7/8"	82	81-3/16"	81-13/16"	132	131-3/16"	131-13/16"	182	181-1/8"	181-13/16"	232	231-1/8"	231-3/4"
33	32-3/16"	32-13/16"	83	82-3/16"	82-13/16"	133	132-1/8"	132-13/16"	183	182-1/8"	182-3/4"	233	232-1/8"	232-3/4"
34	33-3/16"	33-13/16"	84	83-1/8"	83-13/16"	134	133-1/8"	133-3/4"	184	183-1/8"	183-3/4"	234	233-1/16"	233-3/4"
35	34-1/8"	34-13/16"	85	84-1/8"	84-3/4"	135	134-1/8"	134-3/4"	185	184-1/16"	184-3/4"	235	234-1/16"	234-1/16"
36	35-1/8"	35-3/4"	86	85-1/8"	85-3/4"	136	135-1/16"	135-3/4"	186	185-1/16"	185-11/16"	236	235-1/16"	235-1/16"
37	36-1/8"	36-3/4"	87	86-1/16"	86-3/4"	137	136-1/16"	136-11/16"	187	186-1/16"	186-11/16"	237	237"	237-5/8"
38	37-1/16"	37-3/4"	88	87-1/16"	87-11/16"	138	137-1/16"	137-11/16"	188	188"	187-11/16"	238	238"	238-5/8"
39	38-1/16"	38-11/16"	89	88-1/16"	88-11/16"	139	139"	138-11/16"	189	189"	188-5/8"	239	239"	238-5/8"
40	39-1/16"	39-11/16"	90	90"	89-11/16"	140	140"	139-5/8"	190	190"	189-5/8"	240	239-15/16"	239-5/8"
41	41"	40-11/16"	91	91"	90-5/8"	141	141"	140-5/8"	191	190-15/16"	190-5/8"	241	240-15/16"	240-9/16"
42	42"	41-5/8"	92	92"	91-5/8"	142	141-15/16"	141-5/8"	192	191-15/16"	191-9/16"	242	241-15/16"	241-9/16"
43	43"	42-5/8"	93	92-15/16"	92-5/8"	143	142-15/16"	142-9/16"	193	192-15/16"	192-9/16"	243	242-7/8"	242-9/16"
44	43-15/16"	43-5/8"	94	93-15/16"	93-9/16"	144	143-15/16"	143-9/16"	194	193-7/8"	193-9/16"	244	243-7/8"	243-9/16"
45	44-15/16"	44-9/16"	95	94-15/16"	94-9/16"	145	144-7/8"	144-9/16"	195	194-7/8"	194-9/16"	245	244-7/8"	244-1/2"
46	45-15/16"	45-9/16"	96	95-7/8"	95-9/16"	146	145-7/8"	145-9/16"	196	195-7/8"	195-1/2"	246	245-13/16"	245-1/2"
47	46-7/8"	46-9/16"	97	96-7/8"	96-9/16"	147	146-7/8"	146-1/2"	197	196-13/16"	196-1/2"	247	246-13/16"	246-1/2"
48	47-7/8"	47-9/16"	98	97-7/8"	97-1/2"	148	147-13/16"	147-1/2"	198	197-13/16"	197-1/2"	248	247-13/16"	247-7/16"
49	48-7/8"	48-1/2"	99	98-13/16"	98-1/2"	149	148-13/16"	148-1/2"	199	198-13/16"	198-7/16"	249	248-3/4"	248-7/16"
50	49-13/16"	49-1/2"	100	99-13/16"	99-1/2"	150	149-13/16"	149-7/16"	200	199-3/4"	199-7/16"	250	249-3/4"	249-7/16"
51	50-13/16"	50-1/2"	101	100-13/16"	100-7/16"	151	150-3/4"	150-7/16"	201	200-3/4"	200-7/16"	251	250-3/4"	250-3/8"
52	51-13/16"	51-7/16"	102	101-3/4"	101-7/16"	152	151-3/4"	151-7/16"	202	201-3/4"	201-3/8"	252	251-11/16"	251-3/8"
53	52-3/4"	52-7/16"	103	102-3/4"	102-7/16"	153	152-3/4"	152-3/8"	203	202-11/16"	202-3/8"			
54	53-3/4"	53-7/16"	104	103-3/4"	103-3/8"	154	153-11/16"	153-3/8"	204	203-11/16"	203-3/8"			
55	54-3/4"	54-3/8"	105	104-11/16"	104-3/8"	155	154-11/16"	154-3/8"	205	204-11/16"	204-5/16"			

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# LIGHTING FIXTURE CUTS

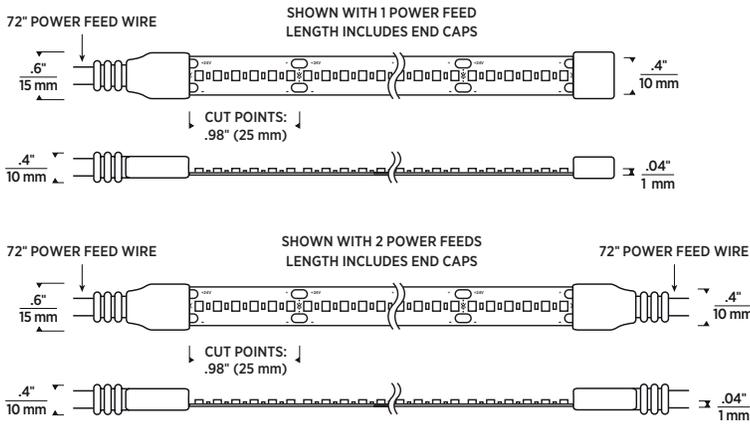
Lakewood Library	Type: XL4
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23



## ESSENCE™

STATIC WHITE LED STRIP WET IP67

### DIMENSIONS



Follow the installation instructions for field-cutting to maintain the IP67 rating; failure to follow the instructions will compromise the IP67 rating and void the warranty.

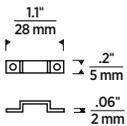
### ACCESSORIES



#### LED STRIP MOUNTING STRAP

Provides support to the LED Strip.  
Recommended for outdoor installations.  
10 per pack.

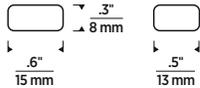
ORDERING INFORMATION  
ESLTCPLU107



#### LED STRIP END CAP

Used in conjunction with silicone glue  
to seal the cut end of Wet LED Strip.  
Required only when cutting the Wet IP67  
LED Strip to a shorter length.

ORDERING INFORMATION  
ESLTEC10W



#### LED STRIP SILICONE GLUE

Used in conjunction with the LED Strip  
End Cap to seal the cut end of Wet LED  
Strip. Required only when cutting the  
Wet IP67 LED Strip.

ORDERING INFORMATION  
ESLTGLW

# LIGHTING FIXTURE CUTS

Lakewood Library	Type: XL4
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23



## ESSENCE™ STATIC WHITE LED STRIP WET IP67

REMOTE POWER SUPPLIES - INDOOR DAMP LOCATION

Indoor power supplies may be used with Wet IP67 LED Strip as long as the power supply is installed in a dry indoor location.

POWER SUPPLY	ITEM NUMBER	MINIMUM <sup>1</sup> DIMMING LEVEL	FEATURES
<b>REVERSE PHASE, FORWARD PHASE, TRIAC</b>			
 <p>INDOOR - 60W      INDOOR - 96W</p>	<b>60W:</b> ESPR06024ELV120 8.1"L x 4.1"W x 1.8"H <b>96W:</b> ESPRI0024ELV120 13.5"L x 4.5"W x 2.4"H	0.2%	<ul style="list-style-type: none"> <li>120V input voltage; 24VDC output voltage</li> <li>Complies with CEC 2019 Title 24 Part 6</li> </ul>
<b>0-10V</b>			
 <p>INDOOR - 60W      INDOOR - 96W</p>	<b>Standard</b> <b>60W:</b> ESPR060240I0120-277 8.1"L x 4.1"W x 1.8"H <b>96W:</b> ESPRI00240I0120-277 13.5"L x 4.5"W x 2.4"H	5%	<ul style="list-style-type: none"> <li>Universal 120V-277V input voltage; 24VDC output voltage</li> <li>Complies with CEC 2019 Title 24 Part 6</li> </ul>
 <p>INDOOR - 60W AND 96W</p>	<b>EidoLED LINEARdrive</b> <b>60W:</b> ESPR06024I010120-277 8.1"L x 4.1"W x 1.8"H <b>96W:</b> ESPRI0024I010120-277 8.1"L x 4.1"W x 1.8"H	0.1%	
<b>LUTRON HI-LUME ECOSYSTEM / 3-WIRE 0.1% DIMMING</b>			
 <p>INDOOR - 100W</p>	<b>100W:</b> ESPRI0024HLECO120-277 10.5"L x 5.5"W x 2"H	0.1%	<ul style="list-style-type: none"> <li>Used when a Lutron Hi-lume control system is required</li> <li>Universal 120V-277V input voltage; 24VDC output voltage</li> <li>Complies with CEC 2019 Title 24 Part 6</li> <li>Static white only; not available with warm dim</li> </ul>
<b>NON-DIMMING</b>			
 <p>INDOOR - 60W AND 96W</p>	<b>60W:</b> ESPR06024ND120-277 8.1"L x 4.1"W x 1.8"H <b>96W:</b> ESPRI0024ND120-277 8.1"L x 4.1"W x 1.8"H	Not dimmable	<ul style="list-style-type: none"> <li>Used when dimming is not required</li> <li>Universal 120V-277V input voltage; 24VDC output voltage</li> </ul>

<sup>1</sup>Minimum dimming levels vary by dimmer. For more information reference the ESSENCE architectural light channels and LED strip dimmer compatibility chart available for download on Techlighting.com.

# LIGHTING FIXTURE CUTS

Lakewood Library	<b>Type: XL4</b>
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23



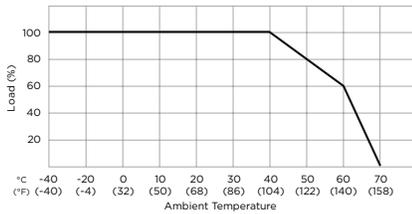
## ESSENCE™ STATIC WHITE LED STRIP WET IP67

REMOTE POWER SUPPLY - OUTDOOR WET IP66 LOCATION

POWER SUPPLY	ITEM NUMBER	MINIMUM <sup>1</sup> DIMMING LEVEL	FEATURES
UNIVERSAL DIMMING: REVERSE-PHASE, FORWARD-PHASE, TRIAC, AND 0-10V			
 WET IP66 - 96W	<b>96W:</b> ESPRO9624U120-2776 8.7"L x 3.8"W x 1.6"H	0.1%	<ul style="list-style-type: none"> <li>• Universal 120V-277V input voltage; 24VDC output voltage</li> <li>• IP66 rated</li> <li>• Complies with CEC 2019 Title 24 Part 6</li> <li>• Operating ambient temperature: -40° to 140° F (-40° to 60° C)</li> <li>• De-rating required above ambient operating temperature of 104° F (40° C); see derating curve below</li> </ul>

<sup>1</sup>Minimum dimming levels vary by dimmer. For more information reference the ESSENCE architectural light channels and LED strip dimmer compatibility chart available for download on Techlighting.com.

Power Supply Universal Dimming IP66  
Derating Curve  
ESPRO9624U120-2776



# LIGHTING FIXTURE CUTS

Lakewood Library	Type: XL5
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

Wall and facade luminaires

Generated on: 02-02-2023 12:30 am



## TULA (Model)



### TECHNICAL INFORMATION

[IES Files](#) ↓

<b>Watt</b>	5W – 10W
<b>Luminaire</b>	Up to 900lm
<b>CCT</b>	3000K – 4000K
<b>CRI</b>	>80
<b>Wiring</b>	120V 60Hz
<b>LED life time</b>	> 60000h - L80 - B20 (Ta 25°C)
<b>Color</b>	Grey - 16 / Aluminium - 21

### DESCRIPTION

#### Construction

- Die-cast aluminium body (EN 47100).
- Double layer polyester powder paint resistant to corrosion and salt spray fog.
- Silicone rubber gaskets.
- AISI 316 stainless steel external screws.

#### Electrical & Optics

- Wiring on removable galvanized steel tray.
- High-efficacy LEDs with standard 3000K, 4000K (2700K or other CCTs available on request).
- PMMA lenses for LEDs.
- Opal PMMA screen or 3/16" thermal-shock resistant tempered safety glass.

#### Listings

- UL certified to U.S. and Canadian standards, suitable for wet locations (cULus mark).
- Rated IP66 per EN60598.
- Luminaire rated for -25°C minimum ambient.
- High quality LED sources characterized according to IES TM-30, with high color consistency <3SDCM and long useful life >60000 hours at L80.

#### Installation

- Wall mounted.
- Waterproof grommet for single cable entry.
- Die-cast aluminium base (EN 47100) for anchoring with rawlplugs.
- Available accessory for mounting on standard junction boxes.

IP66

IK07

⊕

ETL

0.21 ft<sup>2</sup>

### VERSIONS *(Click on below link to configure your product)*



[oneway](#)

Size:  
Ø 1" 31/32  
4" 3/4  
4" 19/32



[oneway - opal](#)

Size:  
Ø 1" 31/32  
4" 3/4  
5" 7/16



[twoway](#)

Size:  
Ø 1" 31/32  
4" 3/4  
5" 5/32



[twoway - opal](#)

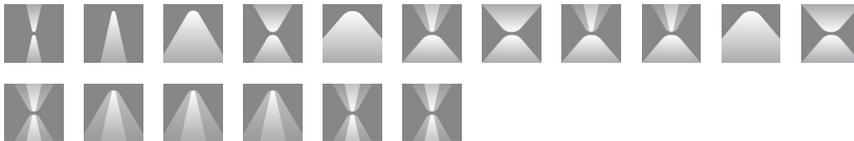
Size:  
Ø 1" 31/32  
4" 3/4  
6" 7/8



[twoway - opal + blade](#)

Size:  
Ø 1" 31/32  
4" 3/4  
6" 3/32

### OPTICS



See accessories in the next page

Arcluce North America Inc. 333 Bush Street - San Francisco, CA 94104 - Ph. +1 (408) 655-6275 - export4@arcluce.it

arcluce-us.com

# LIGHTING FIXTURE CUTS

Lakewood Library	<b>Type: XL5</b>
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

Accessories

Generated on: 02-02-2023 12:30 am



## WALL PLATE TULA ANTHRACITE

Arcluce Code **X-TU-WPCUS-16**  
Code Ref. **1099379X-16US**



### TECHNICAL INFORMATION

**Color** Grey - 16

**Weight** 0.88 lb

## WALL PLATE TULA ALUMINIUM

Arcluce Code **X-TU-WPCUS-21**  
Code Ref. **1099379X-21US**



### TECHNICAL INFORMATION

**Color** Aluminium - 21

**Weight** 0.88 lb

# LIGHTING FIXTURE CUTS

Lakewood Library	<b>Type:XL6/XL6A</b>
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

## VMX-II LED Specifications



Project Name:

Catalog Number:

Type:

The **VMX-II LED** Series offers clean, functional styling that is defined by its sleek low profile design and rugged construction. It combines the latest LED technology, advanced LED thermal management and provides outdoor lighting that is both energy efficient and aesthetically pleasing.

The LED's performance and the driver's life are maximized by enclosing them in two separate cast aluminum housings. Easy tool-less access for mounting and maintenance.

The LED light assemblies come with 48 to 96 LEDs. Eight optical distribution patterns are available. Choose between 3000, 4000 or 5000 Kelvin temperature of the LEDs.

A durable polyester powder coat finish is guaranteed for five years; and is available in standard or custom colors.

The **VMX-II LED** series is an exceptional choice for commercial parking lots, office complexes, architectural projects, and other general lighting projects.

### Ordering Information

MODEL	OPTICS	LEDs	CURRENT	KELVIN	VOLTAGE	MOUNTING	FINISH	OPTIONS	OPTIONS	OPTIONS
<b>VMX-II</b>	<b>T1</b> Type 1	<b>48LC</b>	<b>3</b> 350mA	<b>3K</b> 3000K	<b>UNV</b> 120-277V	<b>AM</b> Arm Mount	<b>BZ</b> Bronze	<b>PCR-120</b>	<b>WSC-8</b> Motion Sensor 8' Mounting Height	<b>UPMA-S</b> Universal Square Pole Mount Adaptor
	<b>T2</b> Type 2	<b>64LC</b>	<b>5</b> 530mA	<b>4K</b> 4000K	<b>8</b> 347V	<b>SAM</b> Straight Arm Mount W/ Terminal Block (New Construction)	<b>BK</b> Black	<b>PCR-208</b>		
	<b>T3</b> Type 3	<b>80LC</b>	<b>7</b> 700mA	<b>5K</b> 5000K	<b>5</b> 480V		<b>SBK</b> Smooth Black	<b>PCR-240</b>	<b>WSC-20</b> Motion Sensor 9-20' Mounting Height	<b>UPMA-R</b> Universal Round Pole Mount Adaptor
	<b>T4</b> Type 4	<b>96LC</b>	<b>10</b> 1050mA *Not available in 96LC			<b>UAM</b> Universal ArmW/ Terminal Block Mount (Retrofit)	<b>WH</b> White	<b>PCR-347</b>		<b>BAWP</b> Cast Wall Plate
	<b>T4A</b> Type 4 Automotive					<b>MAF</b> Mast Arm Fitter	<b>SWH</b> Smooth White	<b>PCR-480</b> Photocell & Receptacle	<b>WSC-40</b> Motion Sensor 21-40' Mounting Height *The WSC option will require (1) FSR 100 remote for programming	<b>ROT-R</b> Rotated Optics Right Side
	<b>T5</b> Type 5					<b>KM</b> Knuckle Mount	<b>GP</b> Graphite	<b>5PINPER</b> Receptacle w/shorting cap Requires Dimming Driver		<b>ROT-L</b> Rotated Optics Left Side
	<b>T5W</b> Type 5 Wide					<b>WM</b> Wall Mount *Requires BAWP	<b>GY</b> Grey	<b>DIM</b> 0-10v Dimming Driver	<b>UMAP</b> Universal Mast arm fitter	<b>CLS</b> Backside cutoff shield *Not to be used with KM
	<b>T5WR</b> Type 5 Wide Round					<b>AWM</b> Adjustable Wall Mount	<b>SL</b> Silver Metallic	<b>RPP-3"</b> <b>RPP-4"</b> <b>RPP-5"</b> Round Pole Plate Adaptor	<b>ECLS</b> Egg Crate Louver Shield	<b>RCLS</b> Rightside cutoff shield *Not to be used with KM
						*Round Pole Plate Adaptors (RPP) are to be ordered separately.	<b>CC</b> Custom Color	<b>VWC</b> Visionaire Wireless Controls *Consult Factory	<b>ADJLS</b> Adjustable Louver Light Shield	<b>LCLS</b> Leftside cutoff shield *Not to be used with KM
						*BAWP to be ordered separately			<b>BD</b> Barn Door Shield	<b>HS</b> House shield



# LIGHTING FIXTURE CUTS

Lakewood Library	Type:XL6/XL6A
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

## Features & Specifications

**VMX-II**

### Heatsink

Cast aluminum heatsink with integral cooling fins for thermal management.

### Mounting Arm/Driver Compartment

Durable two-piece die cast aluminum driver compartment utilizes stainless steel hardware and sealed with a one-piece silicone gasket.

### Thermal Management

- The VMX-II series provides excellent thermal management by mounting the LEDs to the substantial heat sink of the housing. This enables the Luminaire to withstand higher ambient temperatures and driver currents without degrading LED life.
- The L70 test determines the point in an LEDs life when it reaches 70 percent of its initial output. The VMX-II series LEDs have been determined to last 100,000+ hours in 25° C environments when driven at 350 mA.

### Optical System

- The highest lumen output, LEDs are utilized in the VMX-II series. IES distribution Types I, II, III, IV, IV-A, V, V-WR are available. The optical system qualifies as IES full cutoff to restrict light trespass, glare and light pollution.
- CRI values are 70.

### Quali-Guard® Finish

- The finish is a Quali-Guard® textured, chemically pretreated through a multiple-stage washer, electrostatically applied, thermoset polyester powder coat finish, with a minimum of 3-5 millimeter thickness. Finish is oven-baked at 400° F to promote maximum adherence and finish hardness. All finishes are available in standard and custom colors.
- Finish is guaranteed for five (5) years.

### Electrical Assembly

- The VMX-II LED series is supplied with a choice of 350, 530, 700 or 1050 mA high-performance LED drivers that accept 120v thru 480v, 50 Hz to 60 Hz, input. Power factor of 90%. Rated for -40°C operations.
- 10 kV surge protector supplied as standard.
- Terminal block supplied as standard on AM, SAM and UAM as standard

### Warranty

- Five (5) year Limited Warranty on entire system, including finish. For full warranty information, please visit [visionairelighting.com](http://visionairelighting.com).

### Options

- Photocell & Receptacle
- Photo Receptacle with Shorting Cap
- 0-10v Dimming Driver
- Motion Sensor
- Round pole plate adapter
- Universal Pole Mount Adaptor
- Cast Wall Plate
- Rotated Optics
- Cutoff Louver Shielding (CLS)
- Visionaire Wireless Controls
  - Enables high end trim
  - Based on Zigbee wireless communication protocol

### Listings

- The VMX-II Series is cUL Listed
- IP65 Rated Housing
- ANSI Certification
- Powder Coated Tough
- IDA Certification
- DLC Listed



VMX-II - ELECTRICAL LOAD (A)							
Ordering Nomenclature	System Watts	120	208	240	277	347	480
VMX-II-T5-48LC-3	52	0.43	0.25	0.22	0.19	0.15	0.11
VMX-II-T5-48LC-5	78	0.65	0.38	0.33	0.28	0.22	0.16
VMX-II-T5-48LC-7	106	0.88	0.51	0.44	0.38	0.31	0.22
VMX-II-T5-48LC-10	161	1.34	0.77	0.67	0.58	0.46	0.34
VMX-II-T5-64LC-3	70	0.58	0.34	0.29	0.25	0.20	0.15
VMX-II-T5-64LC-5	107	0.89	0.51	0.45	0.39	0.31	0.22
VMX-II-T5-64LC-7	142	1.18	0.68	0.59	0.51	0.41	0.30
VMX-II-T5-64LC-10	218	1.82	1.05	0.91	0.79	0.63	0.45
VMX-II-T5-80LC-3	87	0.73	0.42	0.36	0.31	0.25	0.18
VMX-II-T5-80LC-5	132	1.10	0.63	0.55	0.48	0.38	0.28
VMX-II-T5-80LC-7	177	1.48	0.85	0.74	0.64	0.51	0.37
VMX-II-T5-80LC-10	272	2.27	1.31	1.13	0.98	0.78	0.57
VMX-II-T5-96LC-3	104	0.87	0.50	0.43	0.38	0.30	0.22
VMX-II-T5-96LC-5	157	1.31	0.75	0.65	0.57	0.45	0.33
VMX-II-T5-96LC-7	212	1.77	1.02	0.88	0.77	0.61	0.44

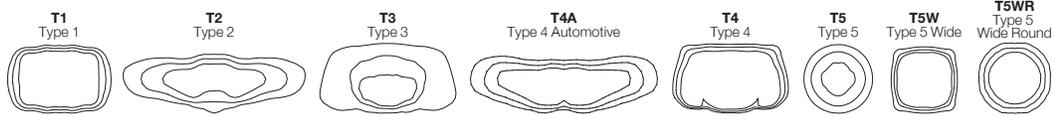
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# LIGHTING FIXTURE CUTS

Lakewood Library	<b>Type:XL6/XL6A</b>
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

## VMX-II LED Specifications

### Photometric Optical Summary

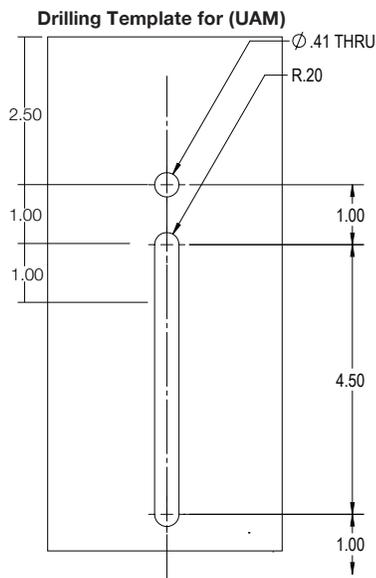
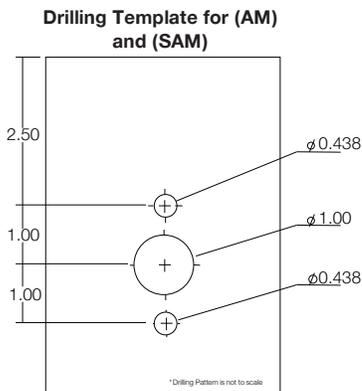


EPA Data							
	1.25	1.49	2.19	2.29	2.28	2.22	

VMX-II-KM EPA DATA										
Degree of Tilt	0°	10°	20°	30	40°	50°	60°	70°	80°	90°
EPA	0.76	0.88	1.26	1.69	2.07	2.40	2.66	2.86	2.97	2.98

### Dimensions

<b>Width:</b>	VMX-II 15.5"
<b>Depth:</b>	VMX-II 29"
<b>Height:</b>	VMX-II 4.0"
<b>Overall Height:</b>	VMX-II 10.75"
<b>Weight:</b>	49 LBS



# LIGHTING FIXTURE CUTS

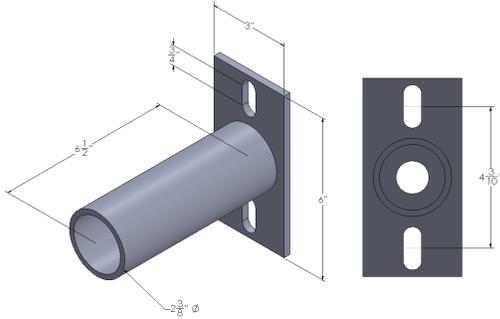
Lakewood Library	Type:XL6/XL6A
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

LED Specifications **VMX-II**

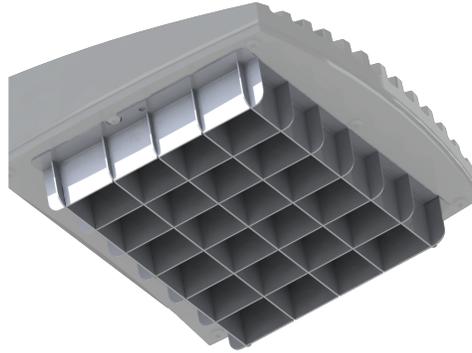
## VMX-II Options

### Universal Mast Arm Fitter

**UMAP – The Universal Mast Arm Fitter** is a simple solution for retrofit applications where a fixture needs to mount to an existing pole, the UMAP is meant to be use to with knuckle mounts and also Mast Arm Fitters. The UMAP has a bolt slot ranging from 7" all the way down to 3.5". The UMAP also has a Round Pole Plate Adaptor (RPP) for mounting to round poles.



### Egg Crate Light Shield



### Adjustable Louver Light Shield



### Barn Door Light Shield



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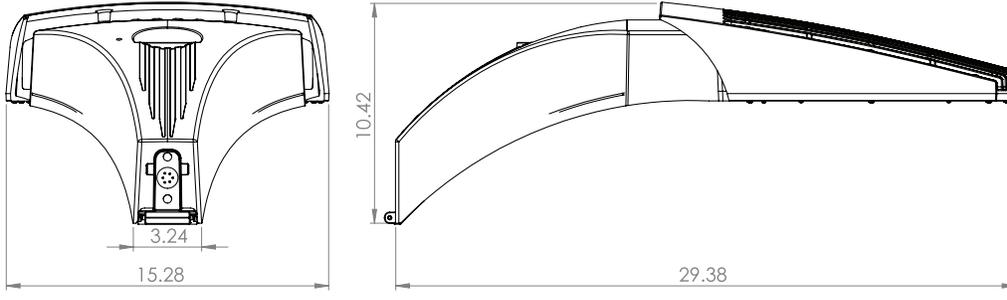
# LIGHTING FIXTURE CUTS

Lakewood Library	<b>Type:XL6/XL6A</b>
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

## VMX-II LED Specifications

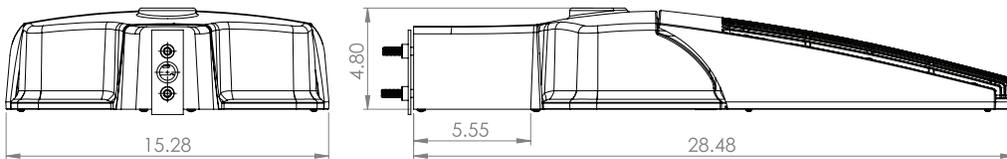
### Arm Mount (AM)

The Arm Mount (AM) utilizes a 2 piece cleat system for easy installation, a terminal block is supplied as standard. A Round Pole Plate Adapter (RPP) is required for mounting to round poles.



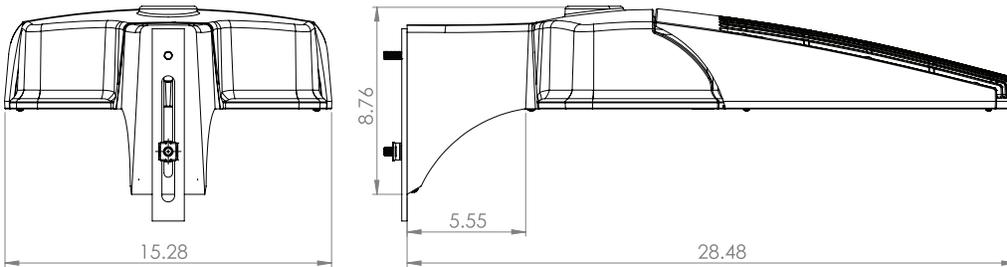
### Straight Arm Mount (SAM)

The Straight Arm Mount (SAM) uses a 2 piece mounting system, a terminal block is supplied as standard. A Round Pole Plate Adapter (RPP) is required for mounting to round poles.



### Universal Arm Mount (UAM)

The Universal Arm Mount (UAM) is meant for retrofit Applications and has a drilling templat raning from 3" to 5.5". A Round Pole Plate Adapter (RPP) is required for mounting to round poles.



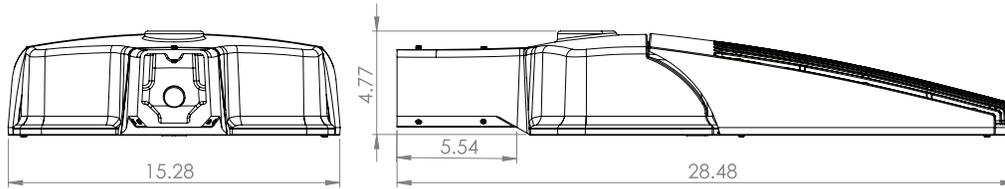
# LIGHTING FIXTURE CUTS

Lakewood Library	Type:XL6/XL6A
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

## LED Specifications **VMX-II**

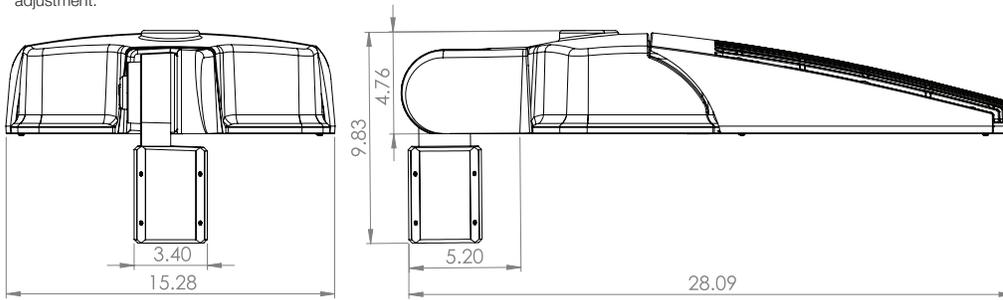
### Mast Arm Fitter (MAF)

Mast Arm Fitter fits over a 1 5/8" - 2 3/8" tenon.



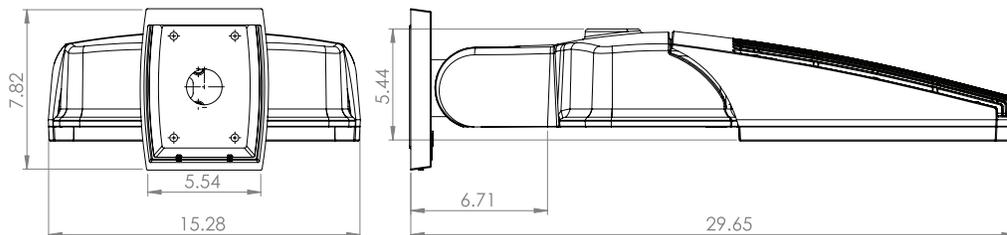
### Knuckle Mount (KM)

An adjustable knuckle slip fits over a 2 3/8" Tenon, and allows for up to 90° degrees of vertical adjustment in 10° degree increments from horizontal, as well as full side to side adjustment.



### Adjustable Wall Mount (AWM)

Wall Mount - Adjustable up to 50° in 10° increments



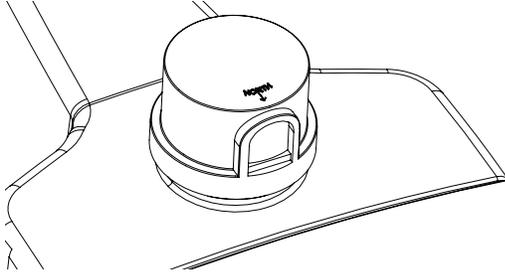
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# LIGHTING FIXTURE CUTS

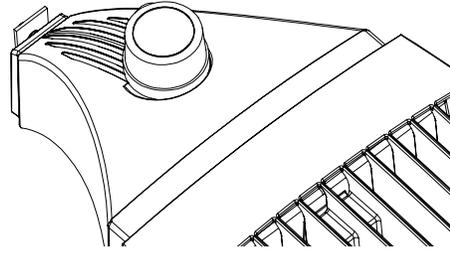
Lakewood Library	<b>Type:XL6/XL6A</b>
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

## VMX-II LED Specifications

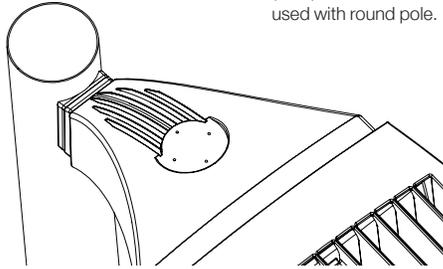
Twist lock Photocell & Receptacle - Dusk to dawn sensor.



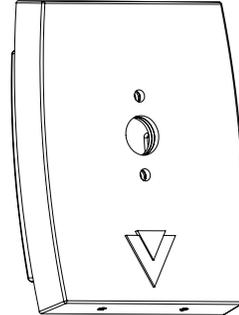
Photocell Receptacle and Shorting Cap



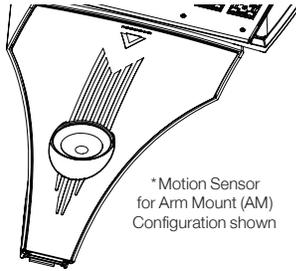
Round Pole Plate Adaptor (RPP) - Round Pole Plate Adaptor (RPP) to be used with round pole.



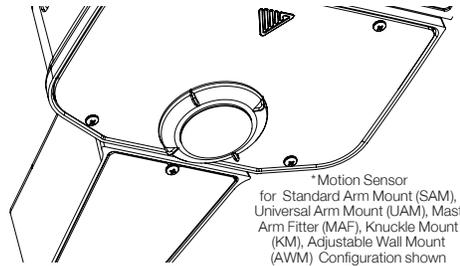
Cast Wall Plate - Arm Mount Wall Plate is needed to wall mount the VMX-II.



Motion Sensor -  
\*This option will require one FSIR 100 remote for programming.



Motion Sensor (for SAM, UAM, MAF, KM, AWM) -  
\*This option will require one FSIR 100 remote for programming.



The FSP-211 by Legrand is integrated into the VMX housing and provides multi-level control based on motion and/or daylight contribution.

### Lens Coverage Patterns:

WSC-8	360° lens, maximum coverage 48'; diameter from 8' height
WSC-20	360° lens, maximum coverage 48'; diameter from 20' height
WSC-40	360° lens, maximum coverage 100'; diameter from 40' height

### Motion Sensor Default Settings

High Mode	0 Volts
Low Mode	1 Volts
Time Delay	5 Minutes
Cut Off	1 Hour
Sensitivity	Maximum
Hold Off Set Point	4ft
Candles	N/A
Ramp Up	None
Fade Down	None
Force Off Set Point With Occupied	Disable

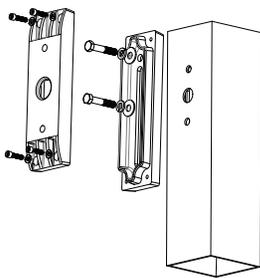
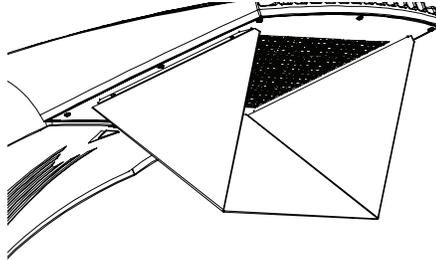
**VISIONAIRE LIGHTING**

# LIGHTING FIXTURE CUTS

Lakewood Library	Type:XL6/XL6A
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

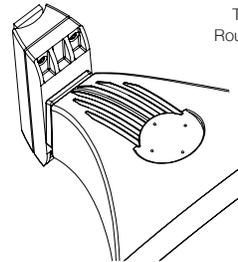
## LED Specifications **VMX-II**

House Shield - Provides solid back light cutoff



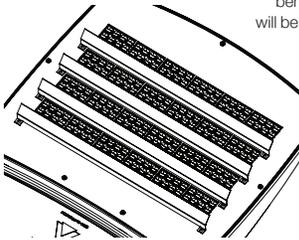
### UPMA

The Universal Pole Mount Adaptor is ideal for retrofit applications with existing square poles. This adaptor is slotted to fit any existing drilling pattern, up to 6 1/2" bolt to bolt maximum.



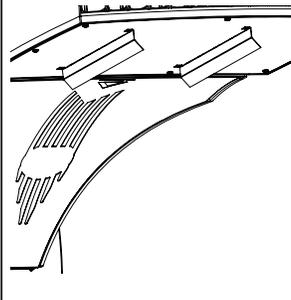
### UPMA-R

The Universal Pole Mount Adaptor Round is ideal for retrofit applications with existing round poles. This adaptor is slotted to fit any existing drilling pattern, up to 6 1/2" bolt to bolt maximum.



### CLS

The Back Side Cutoff Louver Shield will reduce light output behind the fixture, all of the light will be focused in front of the VMX.  
\* Not to be used with KM

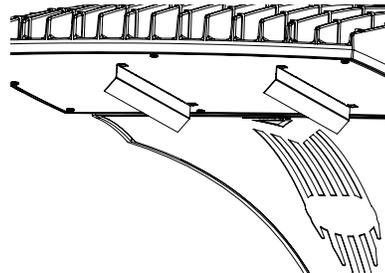


### LCLS

The Left Side Cutoff Louver Shield will reduce light output on the left side of the fixture, all of the light be focused on the right side of the VMX.  
\* Not to be used with KM

### RCLS

The Right Side Cutoff Louver Shield will reduce light output on the right side of the fixture, all of the light be focused on the left side of the VMX.  
\* Not to be used with KM



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# LIGHTING FIXTURE CUTS

Lakewood Library	<b>Type:XL6/XL6A</b>
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

## VMX-II LED Specifications

VMX-II - 3K Lumen Data										
#LED's	mA	Type 1	Type 2	Type 3	Type 4	Type 4A	Type 5	Type 5W	Type 5WR	Watts
48	350	7311	6909	7243	6994	7321	7506	7333	7191	52
	530	9808	9269	9717	9383	9822	10070	9838	9648	78
	700	12786	12084	12668	12232	12805	13128	12826	12578	106
	1050	17509	16547	17347	16750	17534	17977	17563	17223	161
64	350	9309	8798	9223	8906	9323	9558	9338	9158	70
	530	13763	13007	13636	13167	13783	14131	13806	13539	107
	700	16888	15960	16732	16156	16912	17339	16940	16612	142
	1050	23222	21946	23007	22215	23255	23843	23293	22843	218
80	350	11512	10880	11406	11013	11529	11820	11547	11324	87
	530	16640	15726	16486	15918	16664	17084	16691	16368	132
	700	20813	19670	20621	19911	20844	21370	20878	20474	177
	1050	29027	27433	28759	27769	29069	29803	29117	28554	272
96	350	13714	12961	13588	13120	13734	14081	13757	13491	104
	530	19516	18444	19336	18670	19544	20038	19576	19198	157
	700	24739	23380	24511	23667	24775	25400	24815	24336	212
VMX-II - 4K Lumen Data										
#LED's	mA	Type 1	Type 2	Type 3	Type 4	Type 4A	Type 5	Type 5W	Type 5WR	Watts
48	350	7695	7273	7624	7362	7707	7901	7719	7627	52
	530	10324	9757	10229	9876	10339	10600	10356	10232	78
	700	13459	12720	13335	12876	13479	13819	13501	13340	106
	1050	18430	17418	18260	17631	18457	18923	18487	18267	161
64	350	9799	9261	9709	9375	9814	10061	9830	9713	70
	530	14487	13692	14354	13860	14509	14875	14532	14359	107
	700	17777	16800	17612	17006	17802	18252	17831	17619	142
	1050	24444	23101	24218	23385	24479	25097	24519	24227	218
80	350	12118	11452	12006	11593	12135	12442	12155	12010	87
	530	17515	16553	17354	16756	17541	17984	17569	17360	132
	700	21909	20705	21707	20959	21941	22495	21977	21715	177
	1050	30555	28876	30273	29231	30599	31372	30649	30284	272
96	350	14436	13643	14303	13811	14457	14822	14481	14308	104
	530	20543	19415	20354	19653	20573	21092	20607	20361	157
	700	26041	24611	25801	24912	26079	26737	26122	25810	212
VMX-II - 5K Lumen Data										
#LED's	mA	Type 1	Type 2	Type 3	Type 4	Type 4A	Type 5	Type 5W	Type 5WR	Watts
48	350	7384	6979	7316	7064	7395	7582	7407	7264	52
	530	9907	9362	9815	9477	9921	10172	9937	9745	78
	700	12915	12206	12796	12356	12934	13261	12955	12705	106
	1050	17685	16714	17522	16919	17711	18158	17740	17397	161
64	350	9403	8887	9317	8996	9417	9655	9433	9250	70
	530	13902	13138	13774	13300	13922	14274	13945	13675	107
	700	17058	16121	16901	16319	17083	17514	17111	16780	142
	1050	23456	22168	23240	22440	23490	24083	23529	23074	218
80	350	11628	10989	11521	11124	11645	11939	11664	11439	87
	530	16808	15884	16653	16079	16832	17257	16860	16534	132
	700	21024	19869	20830	20112	21054	21586	21089	20681	177
	1050	29320	27710	29050	28050	29363	30104	29411	28842	272
96	350	13853	13092	13725	13253	13873	14223	13896	13627	104
	530	19713	18630	19531	18859	19742	20240	19774	19392	157
	700	24989	23616	24758	23906	25025	25657	25066	24581	212



# LIGHTING FIXTURE CUTS

Lakewood Library	<b>Type:XL6/XL6A</b>
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

## LED Specifications **VMX-II**

VMX-II - 3K Lumen Per Watt Data									
#LED's	mA	Type 1	Type 2	Type 3	Type 4	Type 4A	Type 5	Type 5W	Type 5WR
48	350	141	133	139	134	141	144	141	138
	530	125	118	124	120	125	129	126	123
	700	121	114	120	115	121	124	121	119
	1050	109	103	108	104	109	112	109	107
64	350	133	126	132	127	133	137	133	131
	530	129	122	127	123	129	132	129	127
	700	119	112	118	114	119	122	119	117
	1050	107	101	106	102	107	109	107	105
80	350	133	125	131	127	133	136	133	130
	530	126	119	125	121	126	130	127	124
	700	118	111	117	112	118	121	118	116
	1050	107	101	106	102	107	110	107	105
96	350	132	125	131	127	132	136	133	130
	530	125	118	123	119	125	128	125	123
	700	117	110	116	112	117	120	117	115
VMX-II - 4K Lumen Per Watt Data									
#LED's	mA	Type 1	Type 2	Type 3	Type 4	Type 4A	Type 5	Type 5W	Type 5WR
48	350	148	140	147	142	148	152	148	147
	530	132	125	131	126	132	135	132	131
	700	127	120	126	121	127	130	127	126
	1050	114	108	113	110	115	118	115	113
64	350	140	132	139	134	140	144	140	139
	530	135	128	134	130	136	139	136	134
	700	125	118	124	120	125	129	126	124
	1050	112	106	111	107	112	115	112	111
80	350	140	132	138	133	140	143	140	138
	530	133	126	132	127	133	136	133	132
	700	124	117	123	118	124	127	124	123
	1050	112	106	111	108	113	115	113	111
96	350	139	132	138	133	139	143	140	138
	530	131	124	130	125	131	135	132	130
	700	123	116	122	118	123	126	123	122
VMX-II - 5K Lumen Per Watt Data									
#LED's	mA	Type 1	Type 2	Type 3	Type 4	Type 4A	Type 5	Type 5W	Type 5WR
48	350	142	134	141	136	142	146	142	140
	530	127	120	125	121	127	130	127	124
	700	122	115	121	117	122	125	122	120
	1050	110	104	109	105	110	113	110	108
64	350	134	127	133	129	135	138	135	132
	530	130	123	129	124	130	133	130	128
	700	120	114	119	115	120	123	121	118
	1050	108	102	107	103	108	110	108	106
80	350	134	127	133	128	134	137	134	132
	530	128	121	126	122	128	131	128	125
	700	119	112	118	114	119	122	119	117
	1050	108	102	107	103	108	111	108	106
96	350	134	126	132	128	134	137	134	131
	530	126	119	125	120	126	129	126	124
	700	118	111	117	113	118	121	118	116

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# LIGHTING FIXTURE CUTS

Lakewood Library	<b>Type:XL6/XL6A</b>
Lakewood, WA	
BuildingWork	
Bid Set	
8/4/23	

## VMX-II LED Specifications

VMX-II - 3K BUG Data																									
LED's	mA	Type 1			Type 2			Type 3			Type 4			Type 4A			Type 5			Type 5W			Type T5WR		
		B	U	G	B	U	G	B	U	G	B	U	G	B	U	G	B	U	G	B	U	G	B	U	G
48	350	2	0	2	2	0	2	1	0	2	2	0	2	1	0	1	3	0	1	3	0	2	3	0	2
	530	3	0	3	2	0	3	1	0	2	2	0	2	2	0	1	3	0	2	3	0	2	4	0	2
	700	3	0	3	3	0	3	2	0	2	2	0	3	2	0	2	3	0	2	4	0	2	4	0	2
	1050	4	0	3	3	0	3	2	0	3	3	0	3	3	0	2	4	0	2	4	0	2	4	0	2
64	350	3	0	3	2	0	3	1	0	2	2	0	2	2	0	1	3	0	2	3	0	2	4	0	2
	530	3	0	3	3	0	3	2	0	2	2	0	3	2	0	2	4	0	2	4	0	2	4	0	2
	700	4	0	3	3	0	3	2	0	3	3	0	3	3	0	2	4	0	2	4	0	2	4	0	2
	1050	4	0	4	3	0	4	3	0	3	3	0	3	3	0	2	4	0	2	5	0	3	5	0	3
80	350	3	0	3	2	0	3	2	0	2	2	0	2	2	0	1	3	0	2	4	0	2	4	0	2
	530	4	0	3	3	0	3	2	0	3	3	0	3	3	0	2	4	0	2	4	0	2	4	0	2
	700	4	0	4	3	0	4	3	0	3	3	0	3	3	0	2	4	0	2	5	0	3	5	0	3
	1050	5	0	4	3	0	4	3	0	4	3	0	4	3	0	3	5	0	3	5	0	3	5	0	3
96	350	3	0	3	3	0	3	2	0	2	2	0	3	2	0	2	4	0	2	4	0	2	4	0	2
	530	4	0	4	3	0	3	2	0	3	3	0	3	3	0	2	4	0	2	4	0	2	5	0	3
	700	4	0	4	3	0	4	3	0	4	3	0	4	3	0	2	4	0	2	5	0	3	5	0	3

VMX-II - 4K BUG Data																									
LED's	mA	Type 1			Type 2			Type 3			Type 4			Type 4A			Type 5			Type 5W			Type T5WR		
		B	U	G	B	U	G	B	U	G	B	U	G	B	U	G	B	U	G	B	U	G	B	U	G
48	350	3	0	3	2	0	2	1	0	2	2	0	2	1	0	1	3	0	1	3	0	2	3	0	2
	530	3	0	3	2	0	3	2	0	2	2	0	2	2	0	1	3	0	2	4	0	2	4	0	2
	700	3	0	3	3	0	3	2	0	2	2	0	3	2	0	2	4	0	2	4	0	2	4	0	2
	1050	4	0	3	3	0	3	2	0	3	3	0	3	3	0	2	4	0	2	4	0	2	5	0	3
64	350	3	0	3	2	0	3	1	0	2	2	0	2	2	0	1	3	0	2	3	0	2	4	0	2
	530	3	0	3	3	0	3	2	0	2	3	0	3	2	0	2	4	0	2	4	0	2	4	0	2
	700	4	0	3	3	0	3	2	0	3	3	0	3	3	0	2	4	0	2	4	0	2	4	0	2
	1050	4	0	4	3	0	4	3	0	4	3	0	4	3	0	2	4	0	2	5	0	3	5	0	3
80	350	3	0	3	2	0	3	2	0	2	2	0	2	2	0	1	3	0	2	4	0	2	4	0	2
	530	4	0	3	3	0	3	2	0	3	3	0	3	3	0	2	4	0	2	4	0	2	4	0	2
	700	4	0	4	3	0	4	3	0	3	3	0	3	3	0	2	4	0	2	5	0	3	5	0	3
	1050	5	0	4	3	0	5	3	0	4	3	0	4	3	0	3	5	0	3	5	0	4	5	0	4
96	350	3	0	3	3	0	3	2	0	2	2	0	3	2	0	2	4	0	2	4	0	2	4	0	2
	530	4	0	4	3	0	4	3	0	3	3	0	3	3	0	2	4	0	2	5	0	3	5	0	3
	700	4	0	4	3	0	4	3	0	4	3	0	4	3	0	2	4	0	2	5	0	3	5	0	3

VMX-II - 5K BUG Data																									
LED's	mA	Type 1			Type 2			Type 3			Type 4			Type 4A			Type 5			Type 5W			Type T5WR		
		B	U	G	B	U	G	B	U	G	B	U	G	B	U	G	B	U	G	B	U	G	B	U	G
48	350	2	0	2	2	0	2	1	0	2	2	0	2	1	0	1	3	0	1	3	0	2	3	0	2
	530	3	0	3	2	0	3	2	0	2	2	0	2	2	0	1	3	0	2	3	0	2	4	0	2
	700	3	0	3	3	0	3	2	0	2	2	0	3	2	0	2	4	0	2	4	0	2	4	0	2
	1050	4	0	3	3	0	3	2	0	3	3	0	3	3	0	2	4	0	2	4	0	2	4	0	2
64	350	3	0	3	2	0	3	1	0	2	2	0	2	2	0	1	3	0	2	3	0	2	4	0	2
	530	3	0	3	3	0	3	2	0	2	2	0	3	2	0	2	4	0	2	4	0	2	4	0	2
	700	4	0	3	3	0	3	2	0	3	3	0	3	3	0	2	4	0	2	4	0	2	4	0	2
	1050	4	0	4	3	0	4	3	0	3	3	0	3	3	0	2	4	0	2	5	0	3	5	0	3
80	350	3	0	3	2	0	3	2	0	2	2	0	2	2	0	1	3	0	2	4	0	2	4	0	2
	530	4	0	3	3	0	3	2	0	3	3	0	3	3	0	2	4	0	2	4	0	2	4	0	2
	700	4	0	4	3	0	4	3	0	3	3	0	3	3	0	2	4	0	2	5	0	3	5	0	3
	1050	5	0	4	3	0	4	3	0	4	3	0	4	3	0	3	5	0	3	5	0	4	5	0	4
96	350	3	0	3	3	0	3	2	0	2	2	0	3	2	0	2	4	0	2	4	0	2	4	0	2
	530	4	0	4	3	0	4	3	0	3	3	0	3	3	0	2	4	0	2	5	0	3	5	0	3
	700	4	0	4	3	0	4	3	0	4	3	0	4	3	0	2	4	0	2	5	0	3	5	0	3



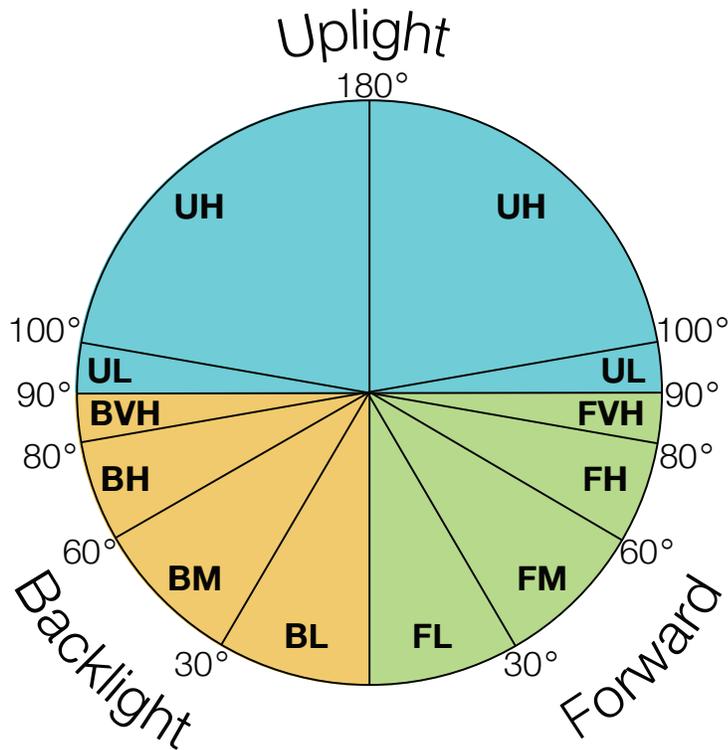
# LIGHTING FIXTURE CUTS

Lakewood Library	<b>Type:XL6/XL6A</b>
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

LED Specifications **VMX-II**

## Bug Rating -

The subzones are individually rated on a scale from 0 to 5, going from lowest to highest luminous flux. The highest rating of a subzone is considered the overall rating for that zone, and these readings are compiled into the BUG lighting classification: for example, B3 U1 G0. The tables below, which are based on the standards established by the IES, show the thresholds for each subzone.

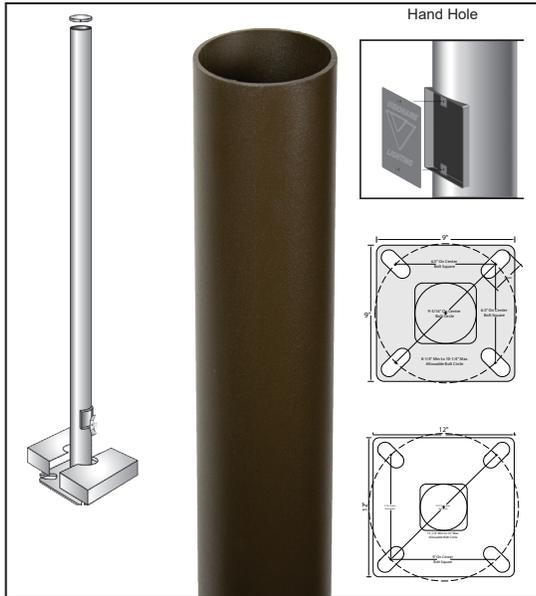


19645 Rancho Way · Rancho Dominguez, CA 90220 · Phone: 310 512 6480 Fax 310 512 6486  
www.visionairelighting.com

# LIGHTING FIXTURE CUTS

Lakewood Library	Type: P1
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

## RNTS Specifications



Project Name:

Catalog Number:

Type:

### Round Non Tapered Steel Pole

#### Pole Shaft

• ASTM A500 Grade B tubing with minimum yield strength of 46,000 PSI. Shaft is furnished with ground lug inside pole, opposite hand hole opening. Center line of hand hole is 12" from base plate.

#### Base Plate

• Steel Plate base is ASTM-A36 hot rolled steel, meets or exceeds minimum yield strength of 36,000 PSI.  
• Base templates provided with order. Do not pre-pour.

#### Base Cover

• Die-formed from heavy gauge quality aluminum. Two piece cover for easy installation.  
• Consult factory for DCB bolt circle info.

#### Pole Cap

• Color-impregnated polymer snap-to-close pole cap provided in black.  
Finish

• All poles are shot-blasted and cleaned to a near-white finish prior to painting. A Quali-Guard® textured thermoset polyester powder coat is then applied to a minimum of 3 millimeters and then oven-baked at a temperature of 400 °F to promote exceptional adherence and finish hardness. Pole finish is warranted for a full two (2) years. An optional five (5) year extended warranty is also available (prime coat and rust inhibiting internal coating).

#### Anchor Bolts

• Poles are provided with hot-dip galvanized anchor bolts, with a "J" bend on one end and two flat hex bolts end and two flat washers per bolt. Anchor bolts meet or exceed a minimum of 36,000 PSI. Anchor bolts conform to ASTM F1554 grade 36 and are provided.

### Ordering Information

MODEL	SHAFT SIZE	GAUGE	HEIGHT	BASE	ANCHORAGE	MOUNTING	FINISH	OPTIONS											
<b>RNTS</b> Round Non Tapered Steel	<b>4R</b> 4" Ø	11	10'	<b>9BC</b> 9" Base 9 3/16" BC	<b>343</b> 3/4" X 30"	<b>S1</b> Single Bolt-On Arm	<b>BZ</b> Bronze	<b>GFI</b> GFI Receptacle *Standard location is in hand hole											
			12'					7	<b>12BC</b> 12" Base 12 3/4" BC	<b>136</b> 1" X 36"	<b>D9</b> Double 90° Bolt-On Arm	<b>SWH</b> Smooth White	<b>CUP</b> Coupling *Specify size and location						
			14'										<b>5R</b> 5" Ø	11	<b>12BC</b> 12" Base 12 3/4" BC	<b>136</b> 1" X 36"	<b>T9</b> Triple 90° Bolt-On Arm	<b>GY</b> Grey	<b>HCR</b> Rust-Inhibiting Internal Coating & Primer *Required for Direct Burial Poles
			16'																<b>6R</b> 6" Ø
18'	7	<b>12BC</b> 12" Base 12 3/4" BC	<b>136</b> 1" X 36"	<b>GD</b> Graphite	<b>GN</b> Tennis Green	<b>FG</b> Forest Green													
20'						7	<b>12BC</b> 12" Base 12 3/4" BC	<b>136</b> 1" X 36"	<b>SL</b> Silver Metallic	<b>GN</b> Tennis Green	<b>CC</b> Custom Color								
<b>5R</b> 5" Ø	11	7	<b>12BC</b> 12" Base 12 3/4" BC	<b>136</b> 1" X 36"	<b>T9</b> Triple 90° Bolt-On Arm						<b>GY</b> Grey	<b>T238R</b> 2 3/8"							
						<b>6R</b> 6" Ø	7	<b>12BC</b> 12" Base 12 3/4" BC	<b>136</b> 1" X 36"	<b>QD</b> Quad Bolt-On Arm		<b>SL</b> Silver Metallic	<b>GN</b> Tennis Green	<b>T3R</b> 3"					
														<b>6R</b> 6" Ø	7	<b>12BC</b> 12" Base 12 3/4" BC	<b>136</b> 1" X 36"	<b>QD</b> Quad Bolt-On Arm	<b>SL</b> Silver Metallic
<b>6R</b> 6" Ø	7	<b>12BC</b> 12" Base 12 3/4" BC	<b>136</b> 1" X 36"	<b>QD</b> Quad Bolt-On Arm	<b>SL</b> Silver Metallic	<b>GN</b> Tennis Green	<b>XX+GAL</b> Powder Coat Paint Over Galvanized												
							<b>6R</b> 6" Ø	7	<b>12BC</b> 12" Base 12 3/4" BC	<b>136</b> 1" X 36"	<b>QD</b> Quad Bolt-On Arm	<b>SL</b> Silver Metallic	<b>GN</b> Tennis Green	<b>FG</b> Forest Green					
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<b>6R</b> 6" Ø	7	<b>12BC</b> 12" Base 12 3/4" BC	<b>136</b> 1" X 36"	<b>QD</b> Quad Bolt-On Arm	<b>SL</b> Silver Metallic	<b>GN</b> Tennis Green								<b>XX+GAL</b> Powder Coat Paint Over Galvanized					
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							<b>6R</b> 6" Ø	7	<b>12BC</b> 12" Base 12 3/4" BC	<b>136</b> 1" X 36"	<b>QD</b> Quad Bolt-On Arm	<b>SL</b> Silver Metallic	<b>GN</b> Tennis Green	<b>GAL</b> Galvanized *No Paint					
<b>6R</b> 6" Ø	7	<b>12BC</b> 12" Base 12 3/4" BC	<b>136</b> 1" X 36"	<b>QD</b> Quad Bolt-On Arm	<b>SL</b> Silver Metallic	<b>GN</b> Tennis Green								<b>XX+GAL</b> Powder Coat Paint Over Galvanized					
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							<b>6R</b> 6" Ø	7	<b>12BC</b> 12" Base 12 3/4" BC	<b>136</b> 1" X 36"	<b>QD</b> Quad Bolt-On Arm	<b>SL</b> Silver Metallic	<b>GN</b> Tennis Green	<b>GAL</b> Galvanized *No Paint					
<b>6R</b> 6" Ø	7	<b>12BC</b> 12" Base 12 3/4" BC	<b>136</b> 1" X 36"	<b>QD</b> Quad Bolt-On Arm	<b>SL</b> Silver Metallic	<b>GN</b> Tennis Green								<b>XX+GAL</b> Powder Coat Paint Over Galvanized					
							<b>6R</b> 6" Ø	7	<b>12BC</b> 12" Base 12 3/4" BC	<b>136</b> 1" X 36"	<b>QD</b> Quad Bolt-On Arm	<b>SL</b> Silver Metallic	<b>GN</b> Tennis Green	<b>CC</b> Custom Color					
<b>6R</b> 6" Ø	7	<b>12BC</b> 12" Base 12 3/4" BC	<b>136</b> 1" X 36"	<b>QD</b> Quad Bolt-On Arm	<b>SL</b> Silver Metallic	<b>GN</b> Tennis Green								<b>GAL</b> Galvanized *No Paint					
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<b>6R</b> 6" Ø	7	<b>12BC</b> 12" Base 12 3/4" BC	<b>136</b> 1" X 36"	<b>QD</b> Quad Bolt-On Arm															

# LIGHTING FIXTURE CUTS

Lakewood Library	Type: P1
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

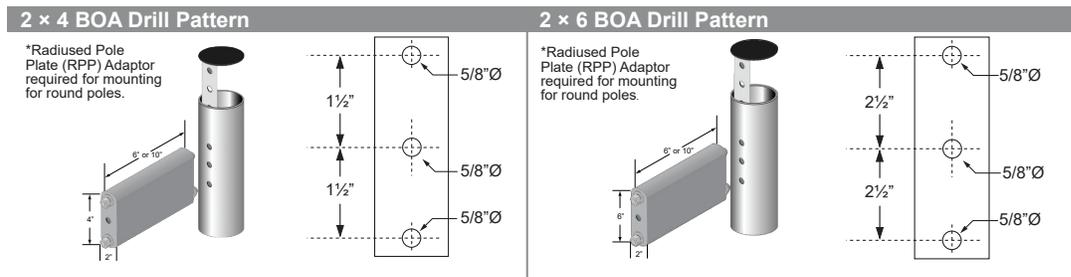
## Features & Specifications

RNTS

Pole EPA for Round Non-Tapered Steel Poles													
Pole Height	Maximum Allowable EPA (ft <sup>2</sup> ) with 1.3 gust factor							O.D.	Pole Gauge	Base Plate	Bolt Circle	Anchor Bolts	
	80 mph	90 mph	100 mph	110 mph	120 mph	130 mph	140 mph						
10'	17.5	13.4	10.7	8.6	7.0	5.9	4.7	4"	11	9"sq x 3/4"	9-3/16"	3/4" x 30"	
12'	14.0	10.7	8.3	6.7	5.3	4.5	3.4	4"	11	9"sq x 3/4"	9-3/16"	3/4" x 30"	
14'	11.5	8.7	6.7	5.2	4.0	3.4	2.4	4"	11	9"sq x 3/4"	9-3/16"	3/4" x 30"	
16'	9.0	6.6	5.0	3.7	2.8	2.4	1.5	4"	11	9"sq x 3/4"	9-3/16"	3/4" x 30"	
18'	7.3	5.2	3.8	2.7	1.8	1.5	-	4"	11	9"sq x 3/4"	9-3/16"	3/4" x 30"	
20'	6.1	4.2	2.9	1.9	1.2	1.0	-	4"	11	9"sq x 3/4"	9-3/16"	3/4" x 30"	
20'	9.9	7.2	5.3	3.9	2.8	2.4	1.6	4"	7	9"sq x 3/4"	9-3/16"	3/4" x 30"	
20'	10.6	7.5	5.5	3.9	2.7	2.3	1.1	5"	11	12"sq x 1"	12-3/4"	1" x 36"	
20'	16.8	13.2	9.5	7.2	5.5	4.6	3.1	5"	7	12"sq x 1"	12-3/4"	1" x 36"	
22'	4.6	3.0	1.8	1.0	-	-	-	4"	11	12"sq x 1"	12-3/4"	1" x 36"	
22'	7.9	5.6	4.0	2.7	1.8	1.5	-	4"	7	12"sq x 1"	12-3/4"	1" x 36"	
22'	8.2	5.7	3.9	2.5	1.5	1.3	-	5"	11	12"sq x 1"	12-3/4"	1" x 36"	
22'	13.6	9.9	7.4	5.4	3.9	3.3	1.8	5"	7	12"sq x 1"	12-3/4"	1" x 36"	
25'	3.2	1.8	-	-	-	-	-	4"	11	12"sq x 1"	12-3/4"	1" x 36"	
25'	6.2	4.1	2.7	1.7	-	-	-	4"	7	12"sq x 1"	12-3/4"	1" x 36"	
25'	6.3	4.0	2.5	1.2	-	-	-	5"	11	12"sq x 1"	12-3/4"	1" x 36"	
25'	11.0	7.7	5.5	3.7	2.5	2.1	-	5"	7	12"sq x 1"	12-3/4"	1" x 36"	
28'	4.4	2.4	1.1	-	-	-	-	4"	7	12"sq x 1"	12-3/4"	1" x 36"	
28'	4.3	2.3	1.0	-	-	-	-	5"	11	12"sq x 1"	12-3/4"	1" x 36"	
28'	8.4	5.6	3.6	2.2	1.0	0.9	-	5"	7	12"sq x 1"	12-3/4"	1" x 36"	
28'	7.6	4.7	2.7	1.2	-	-	-	6"	11	12"sq x 1"	12-3/4"	1" x 36"	
28'	13.7	9.6	6.6	4.5	2.8	2.4	-	6"	7	12"sq x 1"	12-3/4"	1" x 36"	
30'	3.3	1.5	-	-	-	-	-	5"	11	12"sq x 1"	12-3/4"	1" x 36"	
30'	7.2	4.6	2.8	1.3	-	-	-	5"	7	12"sq x 1"	12-3/4"	1" x 36"	
30'	6.3	3.7	1.7	-	-	-	-	6"	11	12"sq x 1"	12-3/4"	1" x 36"	
30'	12.0	8.2	5.5	3.3	1.8	1.5	-	6"	7	12"sq x 1"	12-3/4"	1" x 36"	
35'	4.2	2.1	-	-	-	-	-	5"	7	12"sq x 1"	12-3/4"	1" x 36"	
35'	7.8	4.7	2.4	-	-	-	-	6"	7	12"sq x 1"	12-3/4"	1" x 36"	

### For Direct Burial EPA, consult factory

CAUTION: If any additional stress such as flags, banners, streamers, ropes, or any other such items are added to poles, Visionaire Lighting's normal product guarantee is null and void. Additionally, adding such items to any pole may create severely hazardous conditions. Poles are calculated to withstand steady wind velocities of between 70 and 100 mph wind zones with a 1.3 gust factor depending on height, wall thickness, and width/ diameter. For an exact rating on a specific order, contact Visionaire directly.



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www.visionairelighting.com

823

# LIGHTING FIXTURE CUTS

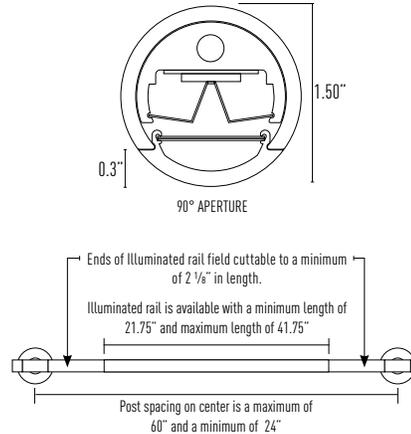
Lakewood Library	Type: XL7
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

## IVR15-SPI

1.5" Solid State Illuminated Rail  
2" Post Integral Power Supply

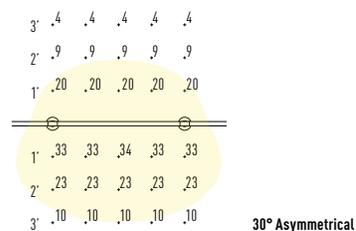
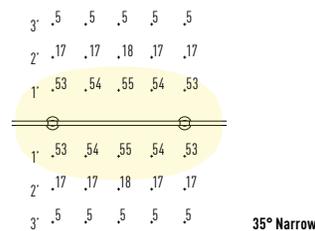
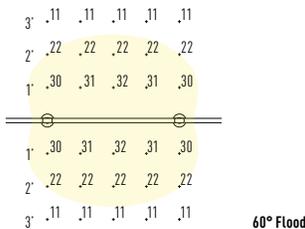


JOB NAME	CATALOG NUMBER
NOTES	TYPE



### PHOTOMETRIC DATA

- LED: 4.6W High Output
- CC: 3500K
- Illuminated Rail Length: 41"
- Rail Height: 36"
- Post Spacing: 48"



### CONSTRUCTION

**Internal Rail Construction:** Heavy duty extruded 6061-T6 Aluminum Alloy.  
**External Rail Jacket:** Available in 304 or 316 stainless steel. Consult factory for custom powder coat finishes (AAMA 2604).

### LED LIGHT SOURCE

Closely packed array of small LEDs allow for smooth seamless illumination with immediate overlap to avoid pixilation and provide a continuous flow of light. Color temperatures options include 2700K, 3000K, 3500K or 4000K.

- 85 CRI
- 50,000 hours of average rated life at 70% output
- LED components are easily accessible to allow for easy maintenance
- Maximum run length per driver: 8'

### LED LIGHT ENGINE (PER FOOT)

- System Power Consumption: 4.6W
- Cool White 4000K: 219 lm
- Neutral White 3500K: 207 lm
- Warm White 3000K: 202 lm
- Warm White 2700K: 194 lm

### OPTICAL SYSTEM

Innovative optical system includes integral reflector and light shaping diffuser. 92% Transmission efficiency provides precise shaping, control and distribution of light. High-impact acrylic lens is secured with (2) countersunk flush screws, (1) at each end. Distributions include flood, narrow and asymmetrical.

### MOUNTING / INSTALLATION

Each rail support is secured to the swivel mount on specified mounting system. Post or embedded mount is available. See mounting submittal sheets for detailed information.

### EMERGENCY

Remote emergency inverter available. Can be remote up to 1000 ft. available. See IB-IIS specification sheet.

### WARRANTY / LISTINGS

- 5-Year Intense LED Limited Warranty (LED & Power Supply Only)
- ETL Wet Location Listed
- IDA Approved
- ADA Compliant

### AWARD

- 2013 Next Generation Luminaires - "Recognized Winner"

IVR15-LM-18420-P1

INTENSE LIGHTING | 3340 E La Palma Ave, Anaheim, CA 92806 | tel 714 630-9877 | fax 714 630-9883  
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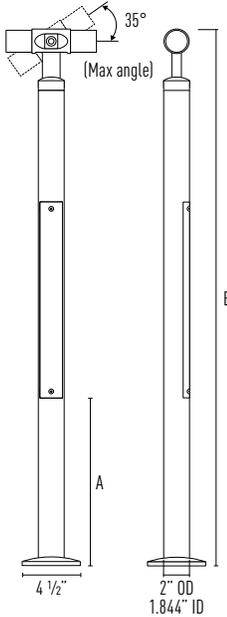
# LIGHTING FIXTURE CUTS

Lakewood Library	Type: XL7
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

## IVR15-SPI

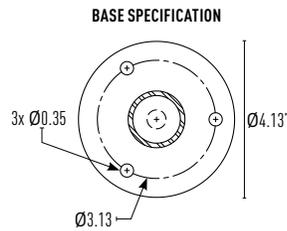
2" Post Mount Assembly

JOB NAME		CATALOG NUMBER	
NOTES		TYPE	



**DIMENSIONS**

	Guardrail	Handrail
A	17"	14"
B	42"	36"



### CONSTRUCTION

Post mount assembly is available in No.4 polished 304 stainless steel. Consult factory for custom powder coat finishes (AAMA 2604).

### MAINTENANCE

Posts include a driver access door where power supply components are easily accessible. Tamper proof hardware and special tools are standard and included.

### MOUNTING / INSTALLATION

Post are to be spaced at a maximum of 60" and minimum of 24" on centers. Post mount is to be surface mounted to concrete utilizing 3/8" anchor bolts (supplied by others). Anchoring means must be determined by local codes. Not to be supplied or engineered by Intense Lighting. See post mount installation chart for more information. Anchorage template available by request.

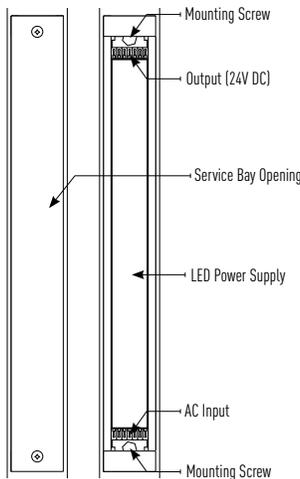
### OPERATION

Post with integral power supply will power up-to 83 1/2" of illuminated rail.

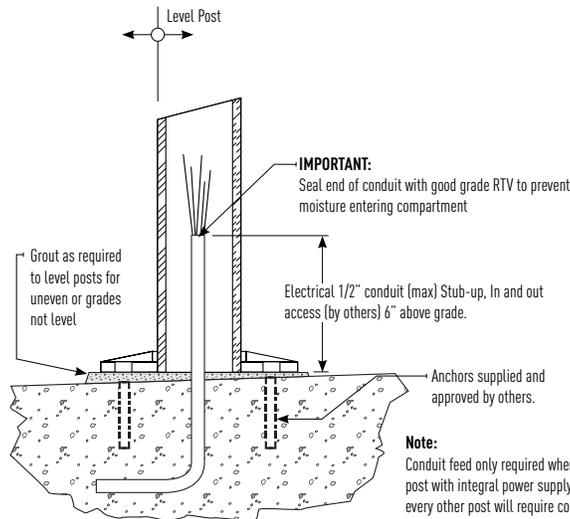
### FITTINGS

Consult factory for standard fittings and epoxy weld adhesive specification.

## Post Specification



## Post Mount Installation Detail



YRAL\_LM\_110420\_P.2

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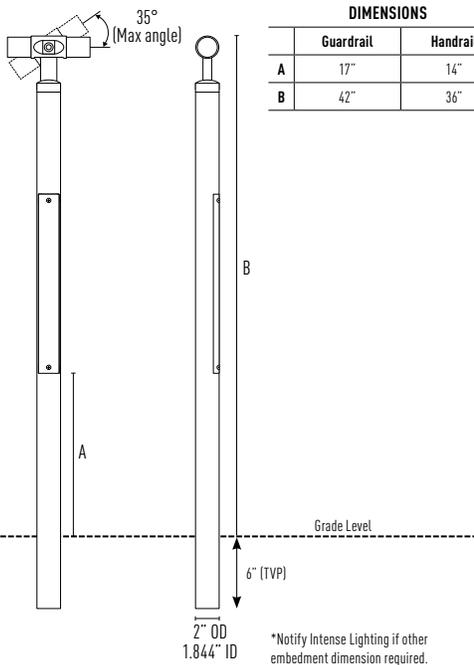
# LIGHTING FIXTURE CUTS

Lakewood Library	Type: XL7
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

## IVR15-SPI

2" Post Embedded Assembly

JOB NAME	CATALOG NUMBER
NOTES	TYPE



	Guardrail	Handrail
A	17"	14"
B	42"	36"

### CONSTRUCTION

Post mount assembly is available in No.4 polished 304 stainless steel. Consult factory for custom powder coat finishes (AAMA 2604).

### MAINTENANCE

Posts include a driver access door where power supply components are easily accessible. Tamper proof hardware and special tools are standard and included.

### MOUNTING / INSTALLATION

Post are to be spaced at a maximum of 60" and minimum of 24" on centers. Embedded mount post are set into place using Rockite® or Kwixset® anchor cement. A minimum of 6" post must be embedded into concrete to structurally secure post. Anchoring means must be determined by local codes. Not to be supplied or engineered by Intense Lighting. See Embedded Mount Installation chart for more information.

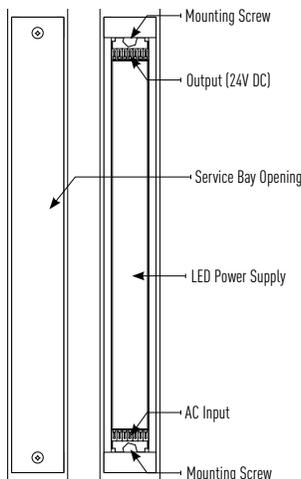
### OPERATION

Post with integral power supply will power up-to 83 1/2" of illuminated rail.

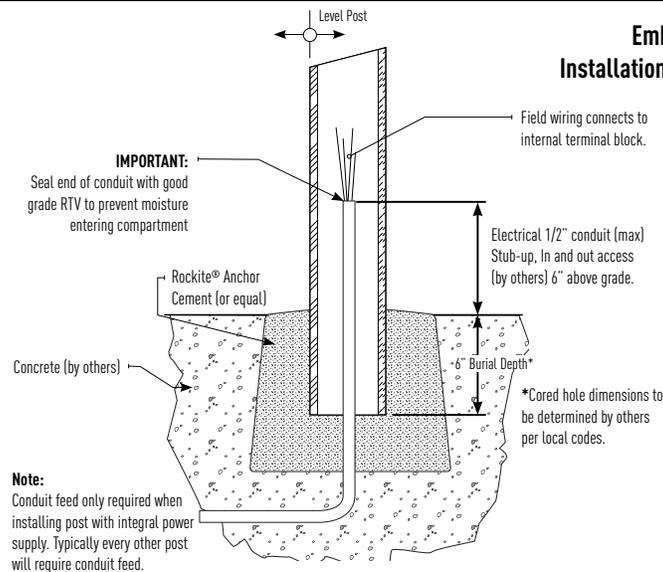
### FITTINGS

Consult factory for standard fittings and epoxy weld adhesive specification.

## Post Specification



## Embedded Installation Detail



VRAL LM-1042P-3

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# LIGHTING FIXTURE CUTS

Lakewood Library	Type: XL7
Lakewood, WA	
BuildingWork	Bid Set
	8/4/23

## IVR15-SPI

1.5" Solid State Illuminated Rail  
Specification Guide

JOB NAME	CATALOG NUMBER
NOTES	TYPE

V-Rail Part Number (Example: IVR15-SPI-ST-P36-H027-60S)  
(Specify Quantity By Foot)

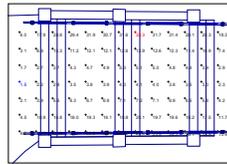
A: Family	B: Finish	C: Mounting/Height	D: LED Output	E: CCT	F: Light Distribution	G: Electrical	H: Options
IVR15-SPI	<input type="checkbox"/> -ST (304 Stainless Steel) <sup>1</sup> <input type="checkbox"/> -C (Custom) <sup>2</sup>	<input type="checkbox"/> -P36 (36" Post Mount) <input type="checkbox"/> -P42 (42" Post Mount) <input type="checkbox"/> -E36 (36" Embedded Mount) <input type="checkbox"/> -E42 (42" Embedded Mount)	<input type="checkbox"/> -HO (High Output 4.6W)	<input type="checkbox"/> 27 (2700K) <input type="checkbox"/> 30 (3000K) <input type="checkbox"/> 35 (3500K) <input type="checkbox"/> 40 (4000K)	<input type="checkbox"/> -60S (60° Flood) <input type="checkbox"/> -35S (35° Narrow) <input type="checkbox"/> -30AS (30° Asymmetric)	<input type="checkbox"/> blank ERP VLM Series 120/277V Input Driver <input type="checkbox"/> -LUT2 Lutron LTEA 2-Wire 1% Dim 120V Input Driver	<input type="checkbox"/> -I (Infil) <sup>3</sup>

- Notes:**
- 316 Stainless steel available by special order
  - Special order, consult factory
  - No LED (rail only), see IVR15-RPS

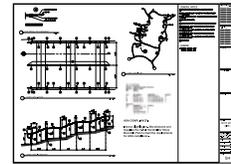
## Specification and Delivery Process

Architectural drawings or detailed elevation drawings are required for a V-Rail quotation. A photometric layout will be provided if requested. Once an order is placed, Intense Lighting will provide detailed shop drawings for approval.

V-Rail will be delivered to the job site ready for installation. A detailed assembly drawing will be provided along with dimensions and locations for remote power supplies. All products included will be labeled clearly to match the assembly drawing. Certain tools and equipment will be required for the assembly of V-Rail. A detailed list of tools can be found in the V-Rail Installation Guide. Installation guide available upon request, consult factory.



Photometric Layout



Shop Drawing / Assembly Guide



Completed Project

Notes:

V-RAIL LM-10430 P-4

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**PART 1 GENERAL**

1.1 SECTION INCLUDES

- A. Semi- custom fence and gate of trash enclosure

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 09 90 00 – Painting and Coatings

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to start of work of this section; require attendance by affected installers.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Shop Drawings:
  - 1. Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, gates, and schedule of components.
- D. Manufacturer's Installation Instructions: Indicate installation requirements.
- E. Manufacturer's Warranty.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Experienced with type of construction involved and materials and techniques specified and approved by fence manufacturer.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Store materials in a manner to ensure proper ventilation and drainage. Protect against damage, weather, vandalism and theft.

1.7 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.

**PART 2 PRODUCTS**

2.1 DECORATIVE METAL FENCE AND GATES:

A. Commercial Grade Black Finish Chain Link Fence Structure

- 1. Material: Chain Link fence structure, wood framing per details, painted cement board cladding
- 2. Finish: Prefinished and Painted.
- 3. Height: 8-feet.
- 4. Basis of Design: Master Halco or approved equal
- 5. Materials:
  - i Posts: 4" O.D. Terminal/End/Corner; 2 7/8" O.D. Line
  - ii Top rail: 1 5/8" O.D.
  - iii Middle Rail: 1 5/8" O.D
  - iv Bottom Rail: 1 5/8" O.D
  - v Post Caps: Dome Style
  - vi Footings: Terminal posts 48" deep x 14"; Line Posts 48" x 12"
  - vii Concrete: 3000 PSI
  - viii Cladding: Smooth finish painted cement board planks. James Hardie Trim Boards or Approved Equal
- 6. Fully engineered gates including Commercial Grade Hinges and Wheels at base. XLG Master Halco Series 8600 or Similar
- 7. Location: Trash Enclosure.

2.2 ACCESSORIES

- A. Caps: Cast steel galvanized; sized to post diameter, set screw retainer.
- B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; steel.

**PART 3 EXECUTION**

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Set fence posts in accordance with the manufacturer recommended spacing.
- C. When cutting rails immediately seal the exposed surfaces by:
  - 1. Removing metal shavings from cut area.
  - 2. Apply zinc-rich primer to thoroughly cover cut edge and drilled hole; allow to dry.
  - 3. Apply two coats of custom finish spray paint matching fence color.
  - 4. Failure to seal exposed surfaces in accordance with manufacturer's instructions will negate manufacturer's warranty.
- D. Space gate posts according to the manufacturers' drawings, dependent on standard out-to-out gate leaf dimensions and gate hardware selected.
  - 1. Base type and quantity of gate hinges on the application, weight, height, and number of gate cycles.
  - 2. Identify the necessary hardware required for the application on the manufacturer's gate drawings.
  - 3. Provide gate hardware by the manufacturer of the gate and install in compliance with manufacturer's recommendations.
- E. Excavate post holes in accordance with Section 31 23 16.
- F. Install operator in accordance with manufacturer's instructions and in accordance with NFPA 70.

3.4 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch.
- B. Maximum Offset From Indicated Position: 1 inch.

- C. Minimum Distance from Property Line: 6 inches.

### 3.5 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Layout: Verify that fence installation markings are accurate to design, paying attention to gate locations, underground utilities, and property lines.
- C. Post Settings: Randomly inspect three locations against design for:
  - 1. Hole diameter.
  - 2. Hole depth.
  - 3. Hole spacing.
- D. Fence Height: Randomly measure fence height at three locations or at areas that appear out of compliance with design.
- E. Gates: Inspect for level, plumb, and alignment.

### 3.6 CLEANING

- A. Leave immediate work area neat at end of work day.
- B. Clean jobsite of excess materials; scatter excess material from post hole excavations uniformly away from posts. Remove excess material if required.
- C. Clean fence with mild household detergent and clean water rinse well.
- D. Remove mortar from exposed posts and other fencing material using a 10 percent solution of muriatic acid followed immediately by several rinses with clean water.
- E. Touch up scratched surfaces using materials recommended by manufacturer. Match touched-up paint color to factory-applied finish.
- F. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.

### 3.7 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.

### 3.8 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair, or replace damaged products before Date of Substantial Completion.

END OF SECTION

**PART 1 - GENERAL**

1.1 SECTION INCLUDES

- A. This Section includes piping, valves, sprinklers, specialties, controls, and wiring for automatic-control irrigation system.
- B. Related sections:
  - 1. Division 31 Section "Earth Moving" for utility trench excavation, backfilling, compacting, and grading requirements.
  - 2. Division 32 Section "Plants" for tree and shrub planting.
  - 3. Division 26 Section "Common Work Results for Electrical" for providing electrical connection to irrigation controller(s).

1.2 DEFINITIONS

- A. Mainline: Piping downstream from irrigation point of connection to valves. Piping is under constant pressure.
- B. Lateral Line: Piping downstream from control valves to sprinklers, outlets, and drain valves. Piping is not under constant pressure.
- C. The following are industry abbreviations for plastic materials:
  - 1. PE: Polyethylene plastic.
  - 2. PP: Polypropylene plastic.
  - 3. PVC: Polyvinyl chloride plastic.
  - 4. TFE: Tetrafluoroethylene plastic.

1.3 SUBMITTALS

- A. Materials List: Within 30 days after award of Contract, and before any irrigation system materials are delivered to the job site, submit to the Owner's Representative a complete list of all irrigation system materials proposed to be furnished and installed. Submit catalog data, including manufacturer's name and catalog number, model number, specifications, brochures, or other data giving complete information about each item.
- B. Shop Drawings:
  - 1. Provide shop drawing of irrigation controller panel(s) showing all equipment to be supplied as part of pre-assembled irrigation controller assembly. Provide one shop drawing for each unique controller panel configuration.
  - 2. Provide shop drawings for the irrigation system showing mainline routing, all sleeve locations, final zone and remote control valve locations, control wire routing, and final flow and operating pressure for each zone.

- C. Record Drawings: Provide Record Drawings illustrating actual as-built locations for all irrigation equipment per Division 01 Section "Closeout Submittals."
1. During the course of installation, carefully show in red line on a print of the irrigation system Drawings, all changes made to the irrigation system during installation. This drawing to be labeled "Record Copy". Make available for inspection. Do not use for construction.
  2. Note lateral sizing on "Record Copy" as the system is installed. Use lateral sizing chart shown on the Drawings to size lateral lines.
  3. Upon completion of the work, transfer all changes to a complete set of the construction drawings. Changes to work drawn to be cleanly erased and new work professionally drafted in proper locations. Dimension and note clearly all underground work located horizontally and vertically. Clearly mark each sheet with the words "As-Built" and date.
  4. Submit As-Built Drawings for approval. If Drawings are not clear, or information is not complete, revise and resubmit for approval. Project will not be complete until As-Built Drawings are submitted and accepted by Owner's Representative.
  5. Submit As-Built Digital Drawings after hard-copy drawings are approved. Digital drawings shall be in Auto CAD release 14 format or newer and copied onto a compact disk or zip disk. Submit at time of final examination for irrigation system.
- D. Tools: Submit to the Owner two sets each, as appropriate, of controller keys, quick coupler operating keys with hose swivels, gate valve keys, air compressor valve keys, valve box keys, wrenches for removal and adjustment of type of sprinkler head, and unique tools or devices needed to access, operate, adjust or maintain the system. Submit at time of final examination for irrigation system.
- E. Zone Map: Submit a laminated irrigation plan sized to fit inside each controller enclosure indicating by varying colors the area of coverage for each control valve. Showing which valves are activated by each station on the controller. Show the location and valve number of each valve and the corresponding controller station number. The valve numbers shall be the valve numbers shown on the As Built Drawings. The Zone Map may be made from a cropped copy of the As-Built Drawings. Submit to the Owner's Representative at time of final inspection for irrigation.
- F. Guide Manuals: Submit operating and maintenance guides for the entire system and for each piece of equipment in the system. Instructions for system weatherization are to be included. Submit to the Owner's Representative at the time of the final examination of irrigation system.
- G. Irrigation Schedule: Submit six 8-1/2 inches by 11 inches copies of an irrigation schedule. On the schedule, indicate the day(s) of the week each zone is watered, and the duration each zone is watered (in minutes).
1. Provide Irrigation schedule based on results of Irrigation Water Audit.
- H. Testing Certificates:
1. Certification of backflow devices.
  2. Hydrostatic pressure testing.

1.4 QUALITY ASSURANCE

- A. Provide at least one person who shall be present at all times during execution of this portion of the Work, and who is thoroughly familiar with the type of materials being installed and the manufacturer's recommended methods of installation, and who shall direct all work performed under this Section.
- B. Except where more stringent requirements are specified, conform to the "Uniform Plumbing Code" as adopted and modified by the State of Oregon and all legally constituted authorities having jurisdiction. If more restrictive than those specified herein, notify the Owner's Representative prior to starting work.
- C. All materials and equipment in the system to be new and be brands and types as shown in the Drawings or as specified herein, or as accepted by the Owner's Representative.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.
- B. Store materials in areas designated by the Owner.
- C. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.
- D. Use all means necessary to protect irrigation system materials from damage, theft and vandalism before, during, and after installation.
- E. In the event of damage, immediately make all repairs and replacements necessary to the satisfaction of the Owner's Representative, and at no additional cost to the Owner.

1.6 PROJECT CONDITIONS

- A. Meet with Owner's Representative and Owner's maintenance staff on site to review scope of Work prior to installing any parts of the system.
- B. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:
  - 1. Notify Owner's Representative no fewer than five days in advance of proposed interruption of water service.
  - 2. Do not proceed with interruption of water service without written permission of the Owner's Representative.

- C. Locate and identify, with visible marking, existing underground utilities in the areas of work. Call for utility locations prior to digging – Dial 811. If utilities are to remain in place, provide adequate means of protection during excavation operations.
- D. Should uncharted piping or other utilities be encountered during excavation, consult the utility owner immediately for directions. Cooperate with the owner and public and private utility companies in keeping their respective services and facilities in operation. Repair damaged utilities to the satisfaction of the utility owner. The cost of repairing charted utilities shall be paid by the Contractor at no additional cost to the Owner.
- E. Protect buildings, equipment, utilities, sidewalks, paving, reference points, monuments, and markers on the site. Take extreme caution when trenching at adjacent to aggregate base courses, play area surfaces and around existing trees and their root systems. No root cutting is allowed without prior approval. Protect adjacent properties. Protect work by others. Replace or repair damaged items at no cost to the Owner and to the approval of the Owner's Representative.
- F. Coordinate with other trades affecting or affected by Work of this Section.

#### 1.7 WARRANTY

- A. Warranty work and materials in writing for one year from the date of final acceptance, against defective workmanship and materials. All failures in workmanship or materials will be repaired at no additional cost to the Owner immediately after notification by the Owner's Representative.
- B. Contractor shall be responsible for maintaining system and protecting it from all damage until date of Final Acceptance at no additional cost to Owner. This shall include damage caused by vandalism or adverse weather conditions.

#### 1.8 ONE-YEAR CORRECTION PERIOD

- A. Repair any settling of backfilled trenches occurring during the one-year correction period at no additional cost to Owner. Include complete restoration of all damaged planting, pavement, and or other improvements of any kind.

#### 1.9 SYSTEM COVERAGE

- A. The system is designed to provide full coverage, less plant interference, on all planting areas. It is anticipated that Contractor will exercise professional judgment in location, height, slope of sprinkler heads without measurably changing the system design. No changes shall be made in the system design without the prior approval of Owner's Representative.
  - 1. Refer to Section 3.18 of this specification for additional procedures and requirements specific to irrigation coverage testing.
- B. **SYSTEM FAMILIARIZATION**  
Upon acceptance of the system by Owner's Representative, Contractor shall provide the necessary keys and other tools necessary to operate, drain, and activate the system. Contractor shall train Owner's maintenance personnel and provide written instructions to ensure that the system operation, maintenance, and winterizing can continue after departure of the Contractor. Contractor will be liable for all damages or losses resulting from failure to comply with the provisions of this Article.

**PART 2 - PRODUCTS**

2.1 PIPES, TUBES AND FITTINGS

A. Brass Pipe: ASTM B584 Alloy C84400 Standard Specifications for copper alloy sand casting for general applications.;

1. Brass Pipe Nipples: ASTM B-43, seamless red brass pipe with threaded ends.
2. Brass Pipe Fittings: ANSI B-16.15 cast copper alloy threaded fittings.
3. Brass Unions: ANSI B-16.15, Federal Specification WW-U-516 for Type III, Class A and Class B cast copper alloy threaded unions.

B. PVC Pipe, General:

1. Material used in the manufacture of the pipe shall be domestically produced rigid PVC 1120 compound, Type I Grade I, with Cell Classification of 12454 as defined in ASTM D-1784.
2. Pipe shall continuously bear the National Sanitation Foundation seal of approval for potable water usage and comply with the following requirements for product marking ASTM D-2241, D-1785 and D-2665 as applicable. Markings shall include: manufacturers name; nominal pipe size; outside diameter system; material designation code; applicable Standard thermoplastic pipe Dimension Ratio designation code (SDR number) or pipe schedule, and corresponding pressure rating in psi for water at 73 degrees Fahrenheit.
3. Belled-end pipe shall have tapered sockets to create an interference-type fit, which meet or exceed the dimensional requirements and the minimum socket length for pressure-type sockets as defined in ASTM D-2672.
4. Pipe sizes 1/2 inch and 1-1/4 inch are not allowed.

C. PVC Mainline: Mainline pipe less than 3 inches in diameter shall be solvent welded Schedule 40 PVC ASTM D 2241 and ASTM D-1785 cell classification 12454-A,B.

D. PVC Lateral Line: ASTM D-1785, Schedule 40 for lateral pipe sizes 2 inches and smaller; and Pressure-Rated Pipe: ASTM D-2241, SDR 13.5, 315 psi minimum Class 315 for lateral pipe sizes 2-1/2 inches and larger.

E. PVC Nipples and Fittings:

1. PVC Socket Fittings, Schedule 40: ASTM D-2466; and Schedule 80: ASTM D 2467, NSF approved.
2. PVC Pipe Nipples: ASTM D-1785, PVC 1120 compound, Schedule 80.
3. PVC Threaded Fittings, Schedule 80: ASTM D-2464.

4. Fittings for mainline gate valves, manual drain valves, air relief valve and quick couplers shall be threaded Schedule 80 PVC, ASTM D 2464, with Schedule 80 PVC nipples, ASTM D-1785, PVC 1120 compound.
  5. All socket fittings for PVC Schedule 40 mainline pipe to be Schedule 80 PVC.
  6. All socket fittings for PVC Schedule 40 lateral line pipe to be Schedule 40.
- F. Sleeves: PVC pipe under all paving, sized to accommodate required sizes and numbers of pipes and wires, 6-inch minimum diameter, in no case less than twice the diameter of the pipe being sleeved.
7. Schedule 40 PVC, ASTM D-1785.

## 2.2 JOINING MATERIALS

### A. Copper Pipe Solder:

1. Silver solder, 45 percent silver, 15 percent copper, 16 percent, zinc, 24 percent cadmium and solidus at 1125 degrees Fahrenheit, and liquids at 1145 degrees Fahrenheit; conforming to ASTM B206-52T and Federal Specification QQB 00655.

### B. Pipe Lubricant for Gasketed PVC Pipe: As recommended by the ductile iron fitting manufacturer; 'Duck Butter' or equal.

### C. Pipe Solvent Cement:

1. PVC Solvent Cement ASTM D-2564.
2. 'Weld-On' I.P.S. 705 for pipe sizes up to 2 inch diameter.
3. 'Weld-On' I.P.S. 711 cement with P70 primer for pipe sizes 2-1/2 inches and larger.

### D. PVC Primer:

1. 'Weld-On' I.P.S. P-70, ASTM F-656.

### E. PVC Cleaner:

1. 'Weld-On' I.P.S. C-65, SCAQMD 1168, Low V.O.C.

### F. Pipe Joint Sealant: Tape or silicon-base liquid applied pipe joint sealant; 'Teflon' or equal.

### G. Saddle Taps:

1. Tapping saddles for installing remote control valves, quick-couplers, and combination valve on 3-inch and larger pressure mainlines. Double stainless steel straps with painted steel saddle. Size as required for application. Romac or equal.
2. Bronze tapping saddle with stainless steel straps for insert type flow sensor. Size as required for tapping PVC mainline, 'Romac' 202BS series, or equal.

## 2.3 PRE-FABRICATED SWING JOINT ASSEMBLIES:

1. Class 315 PVC construction with leak-proof "O-ring" seals. Size to match inlet size of pop-up rotor head or quick coupler. Use for flows greater than 4 gpm. Length as required. Lasco triple swing joint or equal.

2. Flexible PE swing pipe flexible riser assembly: Minimum 18-inch length polyethylene piping with black Marlex spiral barb fittings. Use for flows under 4 gpm. Hunter swing assemblies or equal.

#### 2.4 GENERAL-DUTY VALVES

- A. Shut-off Valve (Point-of-Connection): Bronze Gate Valve; MSS SP-80, Type 2; Class 125; 200 psig CWP Rating ; ASTM B 62 bronze body material with integral seat and screw-in bonnet; threaded ends; nonrising bronze stem; solid wedge; bronze disc; asbestos free Packing; malleable iron or bronze handwheel.
  1. Nibco Model T-113; Matco-Norco Model 513T; or equal.
  2. Size same as pipe on which it is installed.
- B. Mainline Isolation Valves (3 inches and larger): Cast-Iron Gate Valves AWWA C-515, resilient-wedge, nonrising-stem, ductile-iron body and bonnet, with stainless steel stem and bronze stem nut, and with restrained ends to mechanically attach to a fitting or PVC pipe.
  1. Minimum Working Pressure: 250 PSI.
  2. End Connections: Mechanical joint or Flanged (as required by condition).
  3. Interior Coating: 14-16 mil fusion bonded epoxy complying with AWWA C550.
  4. American Flow Control; Leemco; or equal.
- C. Mainline Isolation Valves (2-1/2 inches and smaller): Full port ball valve with threaded ends, minimum 400 PSI CWP rating, forged brass and cast bronze bodies and end pieces RPTFE seats and seals, blow-out proof stem design, chrome-plated brass ball, with stainless steel handle, 'Apollo' 70 Series or equal. Size same as pipe on which it is installed.
  1. Valves 2-inches and smaller shall be equipped with stainless steel tee handle and nut; and 2-1/2-inch valves shall be equipped with stainless steel lever and nut.
  - 2.
- D. Isolation Valve For Electric Control Valve Assembly: unionized brass, angle-pattern, globe valve with screw-in bonnet, integral seat, 200 PS CWP rating, conforming to MSS SP-80, size to be same as remote control valve: 'Champion' 300RS Series or equal.
- E. Drain Valves (Mainline Drain Valves): bronze, angle-pattern, globe valve with screw-in bonnet, integral seat, 200 PSI CWP rating, conforming to MSS SP-80: 'Nibco' T-311-Y or equal, 1 inch minimum.

#### 2.5 SPECIALTY VALVES

- A. Quick Coupling Valve: Two-piece brass body 1-inch with locking yellow rubber cover, corresponding key and swivel hose ell. Provide with stabilizing wing. RainBird 44- LRC Buckner QB44RC or equal.
- B. Remote Control Valves: Sizes and type as scheduled on Drawings.
- C. Master Valve: Normally-open brass valve. Size and type as scheduled on Drawings.
- D. Backflow Preventer Assembly with Y-Strainer: Per Civil Engineer's Drawings.

- E. Pipe Supports for Master Valve and Backflow Preventer: Standon Pipe Support, size as required.
- F. Combination Air Release and Air and Vacuum Release Valve: Size and type as scheduled on Drawings.

## 2.6 VALVE BOXES AND VAULTS

- A. Valve Boxes: HDPE plastic boxes. 'Carson Brooks,' 'Pentek,' 'RainBird' or equal, with tee-style locking top and 6-inch extensions to facilitate required depth of installation where applicable. Lids shall be black green unless otherwise noted.
  - 1. Electric valves shall be installed in jumbo boxes.
  - 2. Isolation valves shall be installed in standard boxes.
  - 3. Quick couplers shall be installed in 10-inch round valve boxes.
  - 4. Drain valves shall be installed in 5-1/4 inches round adjustable valve boxes.
  - 5. Grounding rods shall be installed in 7-inch round valve boxes with black covers.
  - 6. Flow meters shall be installed in standard valve boxes.
  - 7. Combination Air Release and Air and Vacuum Release Valves shall be installed in jumbo boxes with black covers.
  - 8. Pull boxes and splice boxes shall be standard boxes with black covers.
- B. Composite Vaults: Fiber-reinforced composite polymer vault with locking top. Lids shall be natural concrete color unless otherwise noted. Vault shall be constructed in single unit without extensions to accommodate full depth of assembly. Provide 6 inches minimum clearance on all sides of equipment housed within or as required by state and local codes.
  - 1. Available Manufacturer: 'Utility Vault Company', 'Synertech', 'Oldcastle Precast' or equal.
  - 2. Backflow Devices shall be installed in a vault with 6-inch minimum clearance on all sides of devices enclosed within].
  - 3. Combination Valve: Shall be installed in a 24-inch x 24-inch x 24-inch deep.
  - 4. Water Hammer Arrestor: Shall be installed in a 24-inch x 24-inch x 24-inch deep.
- C. Concrete Vaults: Precast concrete vault shall accommodate full depth of assembly with minimum clearances as determined by state and local codes. Available Manufacturers: 'Oldcastle Precast', 'Jenson Precast' or equal.
  - 1. Vault for Wye-Strainer/Backflow Device/Master Valve Assembly (4-inch wye-strainer, 4-inch backflow device, and 4-inch master valve): Precast concrete vault consisting of a base and top with dimension L9' x W6' x D4-1/2'(special order depth). Base shall be equipped with knock-outs, sump and lift holes. Top to be precast concrete with spring-assisted galvanized diamond plate double doors with locking latch. Doors shall open fully (180-degrees). Top shall be equipped with 2-ton lift anchors. 'Utility Vault' Model No. 4686-LA (Top: Model No. 4686-T-42C and Base: Model No. 4686-B), or equal. Provide 3 cubic feet drain rock sump under vault.
  - 2. Vault for Isolation Valve and Master Valves: (parallel master valves for high and low flow conditions with resilient wedge gate valve): Precast concrete vault consisting of a base and top with dimension L6' x W4' x D4'. Base shall be equipped with knock-outs, sump and lift holes. Top to be precast concrete with spring-assisted galvanized diamond plate single door with locking latch. Door shall open fully (180-degrees). Top shall be equipped with 2-ton lift anchors. 'Utility Vault' Model No. 644-LA (Top: Model No. 64-325P and Base: Model No. 644-B), or equal. Provide 3 cubic feet drain rock sump under vault.

3. Vault for Flow Meters Assembly (parallel 3-inch insert flow meter and 2-inch tee style flow meter): Precast concrete vault consisting of a base and top with dimension L4' x W4' x D4'. Base shall be equipped with knock-outs, sump and lift holes. Top to be precast concrete with spring-assisted galvanized diamond plate single door with locking latch. Door shall open fully (180-degrees). Top shall be equipped with 2-ton lift anchors. 'Utility Vault' Model No. 444-LA (Top: Model No. 44-332P and Base: Model No. 444-B), or equal. Provide 3 cubic feet drain rock sump under vault.

D. Valve Box and Vault Accessories

1. Stainless steel 'penta' bolts for bolt-down covers.
2. Drain Rock: 3/4 inch to 1/4 inch clean and washed pea gravel, no fines.
3. Filter Fabric: Woven or non-woven geotextile for use in separating drain rock from subgrade in valve box and vault installations while providing adequate drainage.
4. Brick or Concrete Block Supports: (2)-4-inch by 8-inch by 4-inch bricks or (1) 8-inch by 8-inch by 4-inch concrete paver at each corner of valve box.
5. Pipe Supports for Master Valve and Backflow Preventer: Standon Pipe Support, size as required. Provide flanged pipe supports for valves with flanged ends.

2.7 SPRINKLERS

- A. As scheduled on Drawings.

2.8 AUTOMATIC-CONTROL SYSTEM

- A. Control System: The control system assembly consists of a completely pre-assembled control system that is tested for operation and is housed within a cabinet. The components are pre-wired in the cabinet, which is to be mounted on a vertical surface. The only connections required are primary power, proper grounding, valve station wiring, and flow sensing. All conduits and wire runs are to be provided and installed by the Contractor. Equip controllers for remote radio operation.

1. Controller Stations for Automatic Control Valves:

- a. Each station is variable from approximately 0 to 120 minutes. Include switch for manual or automatic operation of each station.
  - b. Timing Device: Adjustable, 24-hour, 14-day clock, with automatic operations to skip operation any day in timer period, to operate every other day, or to operate 2 or more times daily.
  - c. Manual or Semiautomatic Operation: Allows this mode without disturbing preset automatic operation.
  - d. Nickel-Cadmium Battery and Trickle Charger: Automatically powers timing device during power outages
  - e. Surge Protection: Metal-oxide-varistor type on each station and primary power.
2. Controller Transformer: 24-V secondary, with primary fuse.
  3. Grounding Rods and Clamps: Per manufacturer's recommendations.
  4. Ground testing and verification of electrical continuity of control wires shall be completed and reported after the installation.
  5. Controller: As scheduled on the Drawings.
  6. Controller Components: As scheduled on the Drawings.

B. Sensors:

1. [Flow Sensors: As indicated on Drawings.]-
2. Rain and Freeze Sensors: Hunter WFRS Wireless Rain/Freeze-Clik, RainBird Wireless Rain/Freeze Sensor Combo, or equal.

C. Electrical Control Wire and Accessories:

1. Single-strand copper, UL approved for direct burial, AWG-UF type, sized per manufacturer's recommendations, No. 14 gauge minimum for pilot wires, and No. 12 gauge minimum for common wires. Provide colored PVC jackets as listed below:
  - a. Use red jacket wire for control valves pilot wires.
  - b. Use white jacket wire for common wires.
  - c. Use orange jacket wire for master valve pilot wire.
  - d. Use yellow jacket wire for spare wires.
  - e. Use blue jacket wire for tracer wires.
2. Control Wire Connectors: 3M/ DBY and DBR connectors, or equal.
3. Communication cable (for flow sensor): Paige Electric cable Model No. PE-89.
4. Communication Cable Splice and Cap: Preformed Line Products "Super Serviseal" closure with Poly-Bee sealant. Model No. 8006039.
5. Electrical Conduit and Fittings: High-impact Schedule 40 PVC C-2000 compound, UL approved, gray color, size as required. Solvent-weld fittings.
6. Pull Rope for Empty Conduit: 1/4-inch diameter, 12-strand, 1,200 lb tensile strength braided polypropylene rope.

2.9 OTHER MATERIAL

A. Identification Markers:

1. Detectable Warning Tape: Minimum 3-inch wide, 5 mils thick inert plastic tape with continuous layer of aluminum foil encased in the plastic. Tape identification shall match the utility being marked on all mainline. 'Terra Tape' Detectable, or equal.
2. Valve Identification Tags: Polyurethane tag with integral attachment neck and reinforced attachment hole. Tag shall be hot stamped alphanumeric lettering 1-1/8 inches in height. Christy (T. Christy Enterprises), or equal.
3. Control Wire Numbering Labels: Self-adhesive alpha-numeric labels. 3M or equal.

B. Quick Coupler Stabilizing Wing: Polyester-coated ductile-iron, with stainless steel bolt; Leemco or equal.

C. Concrete for Thrust Blocking: All concrete for thrust blocks shall achieve minimum strength of 3000 psi at 28 days.

D. Drainage Backfill: Cleaned gravel or crushed stone, open graded from 1 inch to 1/2 inch minimum.

E. Bedding Sand: Clean, crushed or naturally occurring river sand with no particle size larger than 1/4 inch, and no more than 6 percent passing the No. 200 sieve.

F. All other materials not specifically described but required for a complete and proper irrigation system installation shall be new, first quality of their respective kinds, and subject to approval.

**PART 3 - EXECUTION**

3.1 GENERAL

- A. Prior to all work of this section, carefully examine the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
- B. Verify that irrigation system may be installed in strict accordance with all pertinent codes and regulations, the original design, the referenced standards, and the manufacturer's recommendations.
- C. In the event of discrepancy, immediately notify the Owner's Representative. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved. Start of work denotes acceptance.
- D. Install materials and equipment in strict accordance with manufacturer's written specifications and recommendations and all applicable codes.
- E. Provide protection at all times to keep rock, dirt, gravel, debris, and all other foreign materials from entering piping, valves, and other irrigation equipment.

3.2 LAYOUT

- A. Make all necessary measurements in the field to ensure precise fit of items in accordance with the original design.
- B. Layout to follow as closely as practicable the design as shown on the Drawings. Stake out locations of all proposed equipment for acceptance by Owner's Representative, prior to trenching.
- C. Full and complete coverage without overthrow onto roadways, sidewalks or buildings is required unless otherwise shown on the Drawings or as accepted by Owner's Representative.
- D. Systems shall meet minimum pressure at last head in each zone as shown on drawings. Notify Owner's Representative immediately if any modification of piping layout will be required to accomplish this. Do not proceed until layout has been verified in the field with the Owner's Representative.
- E. Follow pipe layout plan making modifications as necessary to avoid trenching through roots of existing trees or other obstructions. Take care in protecting all existing tree root zones.
- F. All valve boxes shall be located in shrub or ground cover beds. Mainline shall be run 24 inches from the edge of paving, or in lawn areas 24 inches from the edge of the adjacent shrub or groundcover bed.

3.3 WATER SOURCE

- A. Connect system as indicated on Drawings. Make arrangements with the Owner for water shut-off, if necessary.

3.4 TRENCHING

- A. Refer to Division 31 Section "Earth Moving" for excavating and trenching.
- B. Locate existing utilities. Trench along routes as indicated on Drawings.
- C. Trenches to be straight and true or conform to adjacent curved edges, with bottom uniformly sloped at a minimum 1 percent.
- D. Provide minimum cover over top of underground piping according to the following:
  - 1. Irrigation Mainline Piping: Minimum depth of 18 inches below finished grade.
  - 2. Lateral Line Piping: 12inches.
  - 3. Drain Piping: 12 inches.
  - 4. Sleeves: At depth of pipe being carried.
- E. Keep trenches free of pipe-damaging rocks and debris.
- F. Trench to be 12 inches wide minimum and wide enough to allow all pipes to lie side by side with 4-inch minimum separation between pipes.
- G. Install warning tape directly above pressure piping, 12 inches below finished grades, except 6 inches below subgrade under pavement and slabs.

3.5 PIPE

- A. Do not use solvent cement on threaded joints. Wrap joints with minimum three wraps of Teflon tape.
- B. Ensure that the inside of the pipe remains absolutely clean. Pipe ends shall be protected and not left open. Remove all foreign matter and dirt from inside of pipe before lowering into trench.
- C. Lay pipe in accordance with standard practices, on solid foundation, uniformly sloped, substantially supported at all locations. "Snake" pipe slightly from side to side in trench to allow for expansion and contraction. Keep pipe markings visible.
- D. PVC pipe joints to be solvent welded except as indicated on the Drawings. Cut pipes square, deburr, wipe from surface all saw chips, dust, dirt, moisture and all foreign matter which may contaminate the cemented joint. Clean pipe with pipe cleaner to remove dirt,

oil and grease. Apply primer and solvent cement. Make joints in accordance with manufacturer's recommendations.

- E. For 90-degree turns in mainline pipe, install two 45-degree fittings.
- F. For non-standard angles and bends, install double fittings to avoid stressing the pipe or fittings.
- G. Underground lines shall have a minimum horizontal and vertical clearance of 12 inches from other utility lines. For lines crossing at angles from 45 degrees to 90 degrees with each other, maintain 6-inch vertical clearance. No line shall be installed parallel to and directly over another line.
- H. Provide 4 inches of clearance between pipes. Do not stack pipe unless accepted by Owner's Representative to avoid tree roots.
- I. Do no solvent welding of pipe when raining or when temperature is below 40 degrees Fahrenheit.
- J. No fittings are to be closer than 6 inches apart.
- K. Obtain tight, inseparable joints. Allow 24-hour curing before testing.
- L. Install concrete thrust blocks at all changes of direction for mainline pipe 2-1/2 inch or greater in diameter. Place a minimum of 1 cubic foot of fully mixed concrete against the pipe and firm undisturbed soil in accordance with the pipe manufacturer's recommendations.

### 3.6 IRRIGATION SLEEVES

- A. Install piping and wiring in sleeves under sidewalks, roadways, and parking lots.
  - 1. Install piping sleeves prior to placing sidewalks, roadways, and parking lots including any portion of the paving assemblies.
  - 2. Install piping sleeves by boring or jacking under existing paving if possible.
- B. Install separate sleeves for irrigation lines and control wires under pavement prior to placing pavement materials wherever possible.
- C. Extend sleeves beyond pavement edge a minimum of 18 inches. Install sleeves with minimum 24 inches depth of cover to the top of the pipe.
- D. If length of required sleeve is greater than the length of the unit of pipe, solvent weld joints. Otherwise all sleeves shall be of one continuous length of pipe.
- E. Tape ends of sleeve closed to keep soil out of the sleeve until irrigation lines and control wire are installed.
- F. Permanently attach a single length of 14 gauge trace wire above the entire length of the sleeve.

- G. Stake both ends of sleeves with a readily visible stake extending 12 inches above-grade and below-grade to the bottom of the sleeve. Mark the above-grade portion of the stake with the words "Irrig. Sleeve". Remove stakes after sleeves are recorded on As-Built Drawings and after irrigation lines and control wires are installed and accepted by Owner's Representative.
- H. Drive an 18-inch rebar stake above sleeve end locations and wrap trace wire around stake.

### 3.7 CONTROL WIRING

- A. Install per manufacturer's instructions with minimum 24 inch expansion loop at each controller.
- B. All wire splicing to be made waterproof by using U.L. approved wire connectors and sealant. Follow manufacturer's instructions for installation.
- C. All wire splicing shall occur only at the valve or at the controller.
- D. Provide 2 spare wires, yellow in color, making a circuit to all valves and to controller. Coil 36 inches length neatly in each box.
- E. Lay wire in trenches adjacent to mainline or lateral lines for maximum protection. Place wires 18 inches below grade in electrical conduit where there are no pipes in the trench.
- F. Control wires to each solenoid from controller shall have a colored jacket, and common neutral wires shall have a white jacket.
- G. All valve wiring back to controller to be identified and labeled with self-adhesive labels manufactured for this purpose prior to installation of the controller and remote control valves.
- H. Control wires sharing the same controller shall all be the same color.
- I. Provide different color pilot wires for each controller installed on the Project. Colors may repeat if separated by sufficient distance as approved by the Owner's Representative.
- J. Where there is more than one controller, common wires shall be white with a colored stripe to match the pilot wire color with which it is circuited.
- K. Bundle and tape wires together at 10-foot intervals.
- L. Provide 24 inches expansion loops at least every 100 feet in runs of more than 100 feet in length, at changes in direction along the mainline, and at entrance and exits to all sleeves under paving. Provide 24-inch expansion coils at connection to control valves. Provide expansion loops in neat 1-inch diameter coils.
- M. Master Valve Control Wires shall be orange and white dedicated common wire for the master valve only, and with a yellow wire as a spare.

- N. Flow Sensor Cable: Install communication cable from flow sensor to the irrigation controller inside electrical conduit and as recommended by manufacturer. Provide a minimum of 36 inches of slack communication wiring in the flow sensor valve box and in the base of the controller pedestals and cabinets. Splices between flow sensor and controller pedestal are not allowed. Provide pull boxes at 200 foot intervals and at roadway crossings.

### 3.8 CONTROLLERS

- A. Install per manufacturer's directions where shown on Drawings.
- B. Provide conduits for all wiring entering cabinet and enclosure.
- C. Follow manufacturer's instructions for wire hook-ups.
- D. Verify organization of zones with the Owner's Representative. Otherwise, follow the zone numbering as shown on Drawings.
- E. Provide electrical storm protection as specified by the manufacturer to protect each controller.
- F. Mount wall-mounted controller enclosures to exterior walls using top and bottom 'Uni- strut' tubes to provide a 1-inch air gap between the enclosure and the wall surface. Provide appropriate mounting hardware as recommended by manufacturer.

### 3.9 VALVES

- A. General:
  - 1. Install valve boxes plumb to grade in a neat and uniform pattern per manufacturer's directions, and as shown on the Drawings.
  - 2. Coordinate valve box locations to avoid conflicts with plant locations.
  - 3. Install valve with 3 inch of clearance between top of valve and underside of valve box cover, and with 3 inches minimum clearance between the valve assembly and all sides of the box.
  - 4. Valve boxes shall not rest directly on pipe.
  - 5. Install 1 cubic foot of drain rock in the bottom of all valve boxes.
  - 6. Provide 1-inch clearance between bottom of valve assembly and top of drain rock.
  - 7. Provide brass shut-off globe valve with integral union on upstream side of remote control valve. Provide schedule 80 PVC threaded nipples on both sides of the each remote control valve and one schedule 80 PVC union downstream of the valve.
  - 8. Provide schedule 80 PVC threaded nipples and fittings at quick coupler and ball valves.
  - 9. Thoroughly flush supply lines before installing valves.

B. Master Valves:

1. Thoroughly flush the mainline prior to installation of master valves. Install per manufacturer's directions and as shown on the Drawings. Place in specified vault with adequate clearance for servicing.
2. Provide a dedicated common and pilot wires plus one spare wire from each master valve to the irrigation controller.
3. Provide pipe, companion flanges, flanged-end ductile iron pipe, ductile iron fittings and mechanical joint restraints as required to install master valve.
4. Provide ductile iron fittings, joint restraints, PVC mainline and PVC fittings as required to install 2-inch by-pass master valve.

C. Flow Meters:

1. Install on mainline at depth specified for mainline and as per manufacturer's printed instructions and as shown on the Drawings. Place in specified vault with adequate clearance for servicing.

D. Remote Control Valves:

1. Install only one remote control valve per box.
2. Provide schedule 80 PVC threaded nipples and unions at on both sides of each control valve.
3. Follow manufacturer's instructions and adjust pressure regulating module to achieve optimum operating pressure for each zone.

E. Drain Valves:

1. Install manual drain valves at low points along mainline to ensure complete gravity drainage of all mainlines. More drain valves may be required than are shown on approved Shop Drawings. Provide required number of drain valves at no additional cost to the Owner.
2. Install one drain valve in point of connection vault immediately downstream of backflow preventer.
3. Pipe drain valves into approved drainage structures. Install drain piping with minimum of 18 inches of cover to top of pipe.
4. Drain Pockets: Where no drainage structures exist, excavate [1] cubic yard of soil material at discharge to drain valves. Backfill with drainage backfill to 12 inches below grade. Wrap drainage backfill with drainage fabric and backfill remainder with amended topsoil.

F. Quick Coupling Valves:

1. Provide schedule 80 PVC threaded nipples and fittings at quick coupler and ball valves.
2. Install quick coupler valves at 100-feet on center along all mainline and one at the point-of-connection and at each trash enclosure.
3. Stabilize quick coupler nipple with one 24-inch number 4 rebar stake or quick coupler stabilizing wing. Attach stake to nipple with two 1/2-inch stainless steel worm drive hose clamps.

- G. Isolation Valves: Install isolation valves along mainline at all points-of-connection and upstream of all road and drive aisle crossings. Install plumb to grade in a neat and uniform pattern as per manufacturer's directions, and as shown on Drawings.
- H. Combination Air Release and Air and Vacuum Release Valves: Install at high points along the mainline as indicated in the Drawings. Install below grade in vault.

### 3.10 BACKFLOW PREVENTER

- A. Install per state and local codes, and as detailed. Install pipe supports as recommended by the manufacturer. Provide di-electric unions to insulate dissimilar metals in backflow assembly.

### 3.11 FLUSHING

- A. Flush lines with water for a minimum of 5 minutes each zone prior to installation of irrigation heads.
- B. Cap risers immediately after flushing.

### 3.12 LABELING AND IDENTIFYING

- A. Equipment Nameplates and Signs: Where there is more than one controller on the Project, install engraved plastic-laminate equipment nameplates and signs on each automatic controller.
- B. Install valve identification tags on each automatic control valve per manufacturer's recommendations.
- C. Install control wire numbering labels on each control wire to correspond with the valve station number at both ends of the control wires. Label spare and trace wires.
- D. Warning Tapes: Arrange for installation of continuous, underground, detectable warning tape over underground piping, during backfilling of trenches.

### 3.13 TRACE WIRE

- A. Place one strand of trace wire for all mainlines, and leave end at point of connection location. Tape wire to top of mainline at no less than 36-inch intervals. All trace wire shall be spliced together with water-tight splice connectors.
- B. Run a 12-inch loop of trace wire into each valve box for ease of detection.

### 3.14 PRESSURE TESTING

- A. Notify the Owner's Representative five days before pressure testing.

- B. Backfill trenches sufficiently to ensure the stability of pipe, leaving joints exposed.
- C. Mainline and lateral lines may be tested at different times to allow isolation of either
- D. Supply certified pressure gauge and force pump during tests.
- E. Mainline Testing:
  - 1. Thoroughly flush piping before testing. Cap all fittings on mainline fill with water. Do not install remote control valves prior to mainline pressure testing.
  - 2. Test mainlines to control valves at 100 psi for 1 hour. If pressure loss occurs, inspect the entire system, make water-tight, and retest until no pressure loss occurs for the testing period.
  - 3. Pressure test must show no pressure loss for the specified period and be accepted by the Owner's Representative before backfill of trenches will be allowed.

### 3.15 BACKFILLING

- A. Refer to Division 31 Section "Earth Moving" for backfilling.
- B. Delay backfilling until piping is pressure tested and accepted.
- C. Place clean sand or approved backfill 3 inches below and 6 inches above all pipe. Fill the rest of the trench with approved material, free of rocks and debris capable of damaging pipe. Compact to adjacent soil density in 6 inches lifts.
- D. Stones larger than 1-inch diameter are not allowed in backfill material.
- E. Place metallic locating tape in all mainline trenches in accordance with manufacturer's instructions.
- F. Fill mainline with water at approximately 25 psi during backfilling operations.

### 3.16 IRRIGATION HEADS

- A. Install irrigation heads after pressure test approval.
- B. Install sprinkler heads of types, sizes, and coverage at locations shown on Drawings.
- C. Minor changes in head location may be necessary to achieve head to head coverage at no additional cost to Owner. Notify Owner's Representative for approval prior to making any changes. Document all changes on Project Site As-built Drawings as they occur.
- D. Provide freedom of movement at all swing and swivel joints.
- E. Adjust and set for optimum performance as shown on Drawings.
- F. Locate heads adjacent to planters, mowstrips, walks, pavement, and curbs with a 2-inch minimum and 3-inch maximum clearance between head and hard surface.

- G. Locate no head closer than 6 inches from building foundation.
- H. Install protective concrete sprinkler blocks on sprinkler heads adjacent to vehicular paving where heads are not protected by curbs as approved by the Owner's Representative.

### 3.17 FIELD QUALITY CONTROL

- A. **Manufacturer's Field Service:** Engage a factory-authorized Hunter service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing. Representative to verify that all controller-related components are properly assembled and ready for use.
- B. **Backflow Preventer Testing:** All backflow preventers shall be tested and certified for proper operation prior to being placed in operation.
  - 1. Original copies of the certification shall be submitted to the Owner.
  - 2. Backflow preventers shall be labeled with plastic laminated field history tag showing date and tester information.
- C. **Irrigation Coverage Test:**
  - 1. The irrigation controller shall be installed and fully functional at the time of the irrigation coverage test.
  - 2. Valves shall be operated from the controller during coverage testing; manual valve operation will not be acceptable.
  - 3. The coverage test procedure will be conducted by the Owner's Representative only if the entire irrigation system is completely automated to include permanent electrical power.
  - 4. Prior to commencement of any planting, the coverage test shall be performed and all required corrections completed.
  - 5. The test procedures assume the entire irrigation system is operational at the time of coverage testing. Should project sequencing require installation of the system be parceled into segments, the following shall apply:
    - a. As new segments of the system become operational, prior to testing; the system shall be flushed and recharged to eliminate any debris which may have entered the system.
    - b. The contractor shall bear all financial responsibility to reimburse the Owner for all costs incurred by the Owner's Representative due to parceling of the system installation.
  - 6. Prior to the coverage test, make all required adjustments to the irrigation systems. Test the system to assure that all areas are irrigated completely and uniformly. Change or adjust heads and nozzles as required to provide full coverage, matching precipitation rates and meeting final grades. Do not spray onto pavement or structures.
  - 7. When the sprinkler irrigation system is completed, and prior to beginning plant installation, perform a coverage test in the presence of the Owner's Representative to determine if the irrigation coverage for all planting areas is complete and adequate. Notify the Owner's Representative 48 hours in advance for the irrigation coverage test.

8. Furnish all materials and perform all work required to correct any inadequacies, to the complete satisfaction of the Owner's Representative. This shall include any changes affecting coverage due to any deviation from plans.
  9. Operating sequence for all control valves must match the sequence as shown on the Drawings.
  10. Provide a minimum of two working individuals for the duration of each coverage test. Each individual provided by the contractor must have a two-way communication device for proper manipulation of the control valve sequencing of the irrigation system during the coverage test procedure. The lead individual must be a representative from the installing contractor's company. During the irrigation coverage test, bring keys to unlock cabinets and valve boxes. Open all controller cabinets, enclosures, valve boxes which are part of the irrigation system.
  11. At the end of the coverage test for any specified area, a Field Observation Report shall be generated by the Owner's Representative. This report shall serve as an Item/Action notification which may require the contractor to make changes and repairs as noted therein.
  12. One return site observation shall be provided by the Owner's Representative to determine whether the items listed in the first site observation report have been corrected. After making the corrections noted in the Field Observation Report, notify the Owner's Representative at least 48 hours in advance, and perform another coverage test in the presence of the Owner's Representative for approval.
  13. If the items have not been fully corrected or repaired to the complete satisfaction of the Owner's Representative, and as noted in the first Field Observation Report, the contractor must reschedule another field observation and shall bear all financial responsibility to reimburse the Owner for all costs incurred by the Owner's Representative for the failed field observation performed.
  14. Any item listed in the Field Observation Report requiring action that is not considered to be a part of the original contract, must immediately be brought to the attention of the Owner. This shall be the responsibility of the contractor and must be done in a manner as to enable the contractor to correct the item prior to the next field observation.
  15. Upon completion of each phase of work, the entire system shall be tested and adjusted to meet site specifications.
- D. Irrigation Water Audit: Engage a Certified Landscape Irrigation Auditor or equivalent, to conduct a landscape irrigation water audit in accordance with The Irrigation Association's Landscape Irrigation Auditors Manual, latest edition.
1. Water audit will include data collection, spread sheets, and calculations for each irrigation station or zone showing:
    - a. Catch can results.
    - b. Precipitation rate calculations.
    - c. Percent efficiency.
    - d. Soil type infiltrations rates.
    - e. Plant type.
    - f. Percent slope of planting beds and lawn areas.
    - g. Solar aspect relative to building (i.e., north-facing, south-facing, east-facing, or west-facing.).
    - h. Solar gain (i.e., full sun, part sun/part shade, full shade.)

- i. Proximity to reflected light and heat from building and wall, (i.e., close, medium, far.)
- j. Water requirements based on evapotranspiration rates by season and adjusted by micro-climates.

2. Provide seasonal irrigation schedules based water audit data collection and results.

### 3.18 STARTUP SERVICE

- A. Verify that controllers and all associated components are installed and connected according to the Contract Documents and are functioning properly.
- B. Verify that electrical wiring installation complies with manufacturer's submittal and installation requirements in Division 26 Sections.
- C. Complete startup checks according to manufacturer's written instructions.

### 3.19 CLEANUP

- A. Remove debris from project site upon completion or sooner, if directed.

### 3.20 FINAL INSPECTION

- A. Thoroughly flush, clean, adjust, and balance the entire irrigation system for complete coverage and efficient operation. Set heads to avoid over-spray on walks. Set up control wires to operate in an organized clockwise pattern. Upon 5 days written notice, demonstrate the entire system to the Owner's Representative, proving that all valves and controls are properly operating and that the installed system is workable, clean, and efficient.
- B. Contractor to deliver to the Owner the items scheduled for submittal at the time of the final inspection for irrigation.

### 3.21 WARRANTY

- A. Full and complete head to head irrigation coverage without overthrow onto roadways, sidewalks, or buildings is required.
- B. The warranty period relating to all products, materials, and workmanship will begin on the date of final acceptance of the work and extend for the period of one year.
- C. The Contractor must repair or replace all defective materials and workmanship during the warranty period. The conditions of the warranty applies to all replacement material and repair work from the date such materials are installed or repair work done.

### 3.22 ADDITIONAL REQUIREMENTS

- A. Provide Owner's Maintenance Personnel with system familiarization and 8 hours minimum of instruction in maintenance and operation of each piece of equipment installed.
- B. Repair settling trenches. Include complete restoration of plantings, mulch, grades, pavements or other improvements.
- C. Fall Winterizing Visit: Return to the job site at the beginning of the first winter season to perform a general inspection of the system, test all valves, lines, sprinkler heads, vacuum breakers, repair all leaks and faulty work, check operation of the system, adjust spray patterns for full coverage, drain system, show maintenance staff location of all drain valves and blow out points and restore all areas where trenches have settled.
- D. Spring Start-Up Visit: Return in spring after the first winter season for system check and if necessary, restore system for spring and summer operation. Explain system and operation methods to maintenance staff. Restore all areas where trenches have settled.

END OF SECTION

## **1 - GENERAL**

### 1.1 SUMMARY

- A. Furnish labor, material and equipment required for weed removal, placement and amendment of soil for areas to be planted, and the establishment of finish grades as shown on the Drawings and as specified herein.
- B. Coordinate work with installation of other site work including earthwork, irrigation, seeding, and planting.
- C. Related sections include the following:
  - 1. Division 01 Section "Temporary Tree and Plant Protection," for protecting trees remaining on-site that are affected by site operations.
  - 2. Division 31 Section "Earth Moving" for preparation of subgrades prior to placement of topsoil and planting soils specified in this section.
  - 3. Division 32 Section "Plants" for planting placement of amended topsoil backfill.

### 1.2 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of amended topsoil soil.
- B. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil
- C. Amended Topsoil: Native or imported topsoil or surface soil modified with soil amendments and fertilizers.
- D. Noxious Weed or Noxious Weed Seed: Any weed listed in the current edition of the King County Noxious Weed list as a class A, B, or C noxious weed, whether or not control is required
- E. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.
- F. Topsoil: See Part 2 – Products.
- G. Soil Ripping: Loosening the soil by dragging a ripping shank or chisel thru the soil to the depths and spacing specified, and further defined in this specification.
- H. Soil Tilling: Loosening the surface of the soil to the depths specified with a rotary tine tilling machine, roto tiller, (or spade tiller), and further defined in this specification.

1.3 SUBMITTALS

- A. Product Data: For the following:
1. Fertilizers, including application rates.
  2. Soil Amendments.
  3. Herbicides.
- B. Samples for Verification: For the following:
1. 1/2 cubic foot compost.
  2. 1/2 cubic foot of each imported topsoil. Furnish one sample from each site from which soil is to be furnished.
  3. Retain soil and compost submittals on site in sealed, accessible container for comparison to delivered soils.
- C. Product Certificates: For each type of manufactured product, signed by product manufacturer, and complying with the following:
1. Manufacturer's certified analysis for standard products.
  2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.
- D. Qualification Data: For testing agencies.
- E. Material Test Reports: Date of testing on all reports shall be a maximum of 90 days prior to the date of submittal for review.
1. Soil Fertility and Agricultural Suitability Analyses and Recommendations Reports for the following:
    - a. Existing on-site topsoil: From three typical locations as selected by Owner's Representative, minimum 30 days prior to beginning soil preparation work.
    - b. Imported topsoil: Minimum 30 days prior to beginning soil preparation work.
    - c. Amended topsoil: Provide soil analyses and results for soil samples taken from 3 typical locations as selected by Owner's Representative, minimum 7 days after soil preparation work has been completed and prior to installing plants.
  2. Compost Analysis: Provide analysis for one representative sample of compost minimum 30 days prior to compost being delivered to Project Site.
  3. Compost Maturity: Provide results of Compost Maturity Test when submitting Compost Analysis Report and sample.
  4. Soil Compaction Test: Provide results of soil compaction tests minimum of 7 days prior to planting and seeding.
- F. Delivery Slips: Provide delivery slips for each load of delivered material as proof of shipment of specified materials.
- G. Soil Placement Map: Contractor shall provide a plan showing placed location of each load of delivered soil, referenced to delivery slips.

1.4 QUALITY ASSURANCE

- A. Soil Fertility and Agricultural Suitability-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.
1. Acceptable Soil Testing Laboratories are:
    - a. Western Laboratories, Inc, (800) 658-3858.
- B. Soil Analyses: Furnish soil analyses by a qualified soil-testing laboratory stating:
1. Soil Composition: USDA particle size analysis indicating percentages of sand, silt and clay, and percent organic matter.
  2. Macro and micro nutrient fertility tests as determined by pH, salinity, nitrate nitrogen, ammonium nitrogen, phosphate phosphorous potassium, calcium, magnesium, soluble copper, zinc, manganese, iron, saturation extract boron and sodium analyses.
  3. Sodium Absorption Ratio (SAR).
  4. A Cover Letter shall be provided summarizing existing soil conditions and the Laboratory's recommendations.
  5. Recommendations by the soil testing lab for fertilizer and soil amendments in pounds per 1,000 square foot or tons per acre, as necessary to correct soil deficiencies.
  6. Noxious Weed Germination Test: a minimum of one 36 inch square by 3 inch deep soil sample for each topsoil source considered for use on the project. Place soil in tray with adequate drainage layer beneath, keep soil moist (not saturated) for 7 days in a temperature controlled greenhouse environment, provide photos and written report summarizing germination results.
- C. Compost Testing Laboratory Qualifications: An independent laboratory, with the experience and capability to conduct the testing indicated following U.S. Composting Council Seal of Testing Assurance (STA) procedures, or equivalent.
- D. Compost Analysis: Provide documentation from supplier that compost has reached a monitored temperature of 140 degrees Fahrenheit for at least one week. Engage an independent soil testing laboratory to test representative sample(s) of compost and furnish compost analysis report for the following parameters:
1. Percent organic matter, percent moisture, percent inerts (foreign matter), pH, soluble salts, and particle size.
  2. Nutrient content, including: Nitrogen (N), Phosphorus (P), Potassium (K), Calcium (Ca), and Magnesium (Mg) and Sulfur (S).

3. Trace Metals, including: Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Lead (Pb), Mercury (Hg), Nickel (Ni), and Zinc (Zn).
4. Maturity Indicator. Provide bio-assay results. Provide Carbon-Nitrogen ratio.
5. Stability Indicator: Provide respiration test results.

- E. Request inspection and allow observation by Owner's Representative of prepared soils before planting.
- F. Soil Compaction Testing: Furnish soil compaction standard tests per ASTM 698. Request inspection and allow observation by Owner's Representative of prepared soils before planting.

#### 1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver packaged materials in manufacturer's unopened containers fully identified by name, brand, type, weight and analysis.
- B. Store and handle packaged materials to prevent damage and intrusion of foreign matter.
- C. Store stockpiled topsoil in area designated by Owner's Representative. Provide erosion control measures for stockpiled topsoil on site to prevent contamination of the soil. Refer to Division 31 Section "Earth Moving" for control of dust and erosion.

#### 1.6 SOIL AMENDMENT BID QUANTITIES

- A. Bid quantities and types of soil amendments shall be based upon those listed in this Section. Types of amendments required and quantities shall be adjusted as necessary based upon actual results of soil fertility and agricultural suitability analyses and recommendations for on-site topsoils.
- B. Amount per 6-inch lift of topsoil over 1000 square-feet of landscape area:
1. 25 lbs. Gypsum (Calcium sulfate)
  2. 35 lbs. Calcium carbonate limestone 'Calpril'
  3. 35 lbs. Dolomite limestone 'Dolpril'
  4. 8 lbs. Treble superphosphate (0-45-0)
  5. 3 lbs. Ammonium nitrate
  6. 4 ozs. Zinc sulfate
  7. 8 ozs. Manganese sulfate
  8. 1 oz. Laundry Borax
  9. 6 cu-yds Compost

#### 1.7 SITE CONDITIONS

- A. Topsoil placement and soil preparation shall not take place during periods where saturated soil or surface water is present in work areas.

- B. Work shall not take place when temperature is less than 32 degrees Fahrenheit, or when frozen soil exists on site.

## 1.8 COORDINATION

- A. Coordinate soil preparation with Division 31 Section "Earth Moving" such that topsoil, soil amendments and fertilizers are incorporated into ground fill areas in specified lifts and to specified depths below finish grade for planting and lawn areas. Topsoils shall be amended per recommendations of the Soils Testing Laboratory.
- B. Coordinate soil preparation with timing and procedures for installation of related site work including irrigation, seeding, and planting.

## **PART 2 - PRODUCTS**

### 2.1 TOPSOIL

- A. Topsoil Definition: ASTM D 5268; natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles, conforming to USDA classification for Loam or Sandy Loam; 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 1 inches in any dimension; and free of weeds, roots, and other deleterious materials, with the following physical properties:
  - 1. Organic Matter: 6 percent minimum to 10 percent maximum.
  - 2. Sodium Adsorption Ratio (SAR): less than 6.0.
  - 3. Saturation Extract concentration for Boron: less than 1.0
  - 4. pH range of from 6.5 to 7.5 (Saturation Extract Conductivity: less than 4.0 dS/m @ 25 degrees Celsius as determined in a saturation extract.
  - 5. Non-soil components: less than 1 percent by volume.
  - 6. Heavy metal concentrations: below the USDA per year load limit.
  - 7. Minimal weed seed.
    - a. If regenerative noxious weeds are present in the soil, all resultant growth including roots shall be removed throughout one-year period after acceptance of work at no additional cost to Owner.
- B. Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth. Ensure no contamination of the soils occurs during earthwork and grading, and that the soil remains friable and free of debris.
  - 1. Import Topsoil: Supplement on-site topsoil with imported or manufactured topsoil from off-site sources when quantities are insufficient. Import topsoil is subject to approval and shall conform to USDA soil texture class "Loam" certification by Soil Testing Analysis, no more than 12 months prior to delivery to the site. Obtain

topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.

- a. Provide one of the following as Import Topsoil:
  - 1) Cedar Grove, 3-Way Topsoil, (877) 764-5748
  - 2) Pacific Topsoils, Inc., 3-Way Topsoil, (425) 337-2700

## 2.2 INORGANIC SOIL AMENDMENTS

- A. Dolomitic Lime: Natural, agricultural limestone (calcium and magnesium carbonate) containing a minimum of 20 percent calcium and 11 percent magnesium and as follows:
  1. Screen Analysis: 100 percent passing through No.30 sieve; 70 percent passing through No. 100 sieve; and minimum 30 percent passing through No.325 sieve.
  2. Provide lime in form of granulated, prilled, dolomitic limestone, 'DoloPril' by Pacific Calcium, Inc., (877) 571-3555, or equal.
- B. Calcitic Lime: Natural, agricultural limestone (calcium carbonate) containing a minimum of 36 percent calcium and as follows:
  1. Screen Analysis: minimum of 100 percent passing through No. 10 sieve and a minimum of 80 percent passing through No. 100 sieve.
  2. Provide lime in form of granulated, prilled, limestone, 'CalPril' by Pacific Calcium, Inc., (877) 571-3555, or equal.
- C. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, with a minimum of 99 percent passing through No. 6 sieve and a maximum of 10 percent passing through No. 40 sieve.
- D. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- E. Aluminum Sulfate: Commercial grade, unadulterated.
- F. Gypsum: Agricultural gypsum; minimum 90 percent calcium sulfate, finely ground with 90 percent passing through No. 50 sieve.
- G. Sand: Clean washed river sand, free of calcium, chlorides and other deleterious substances.

## 2.3 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-decomposed, commercially manufactured, stable, and weed-free organic matter, no food waste shall be a part of the compost. pH range of 5.5 to 7.5; 100 percent passing through 1/2-inch sieve; soluble salt content of 2.5 to 7.5 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and shall conform as follows:
  1. Tested, at minimum, every six months for noxious weeds.

2. Organic matter source (feedstock): Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.
3. Organic Matter Content: 50 to 70 percent of dry weight as determined by ash method.
4. Moisture Content: 40 to 55 percent by weight
5. Free of refuse (less than 1 percent by dry weight), plastics, contaminants or any material toxic to plant growth.
6. Processed to meet U.S. Composting Council's Seal of Testing Assurance (STA) Program, or equivalent.
7. Carbon to Nitrogen Ratio: 30 to 1 or lower.
8. Composted for a minimum of 120 days and reach a monitored temperature of 140 degrees Fahrenheit for at least one week.
9. Available Products and Suppliers:
  - a. Cedar Grove Composting., Compost , phone (877) 764-5748.
  - b. Pacific Topsoils, Inc., Compost, phone (425) 337-2700
  - c. Or approved equal.

#### 2.4 FERTILIZER

- A. Fertilizer composition and rate to be determined based upon soil analysis. For bidding purposes, assume: 10 Nitrogen (N), 10 Phosphorus (P), 10 Potassium (K), 5 Sulfur (S) applied at a rate of 10 pounds per 1000 square feet in all planting beds and seeded areas.
- B. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 4 percent nitrogen and [10] [20 percent phosphoric acid.
- C. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.
- D. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent of urea formaldehyde, phosphorous, and potassium in the following composition:
  1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.
- E. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium derived from natural organic and inorganic sources in the following composition:
  1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

2.5 MISCELLANEOUS PRODUCTS

- A. Post-Emergent Herbicide: Select one of the following: "Glyphogan Plus" by Mana, "Envoy Plus" by Valent, "Crossbow" by Dow AgroSciences, "Landmaster BW" by Agri Star or approved equal.
- B. Pre-Emergent Herbicide: "Ronstar-G" by Bayer, "Dimension EC," by Dow AgroSciences or equal. Products containing either pendimethalin or DCPA are prohibited.
- C. Contact Herbicide for controlling nutsedges: "SedgeHammer" by Gowan.

**PART 3 - EXECUTION**

3.1 EXAMINATION OF SITE CONDITIONS

- A. Examine for site conditions that will adversely affect execution, permanence, quality of work, and survival of plant material and grasses.
- B. Identify areas to receive planting and lawn on site.
- C. Verify that subgrades and slopes of lawn and planting areas are acceptable to Owner's Representative prior to commencing work of this Section.
- D. Should the Contractor find any discrepancies between the Drawings and the physical conditions, inform the Owner's Representative immediately for clarification.
- E. Begin Work required under this Section only after conditions are satisfactory.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, and existing lawns and exterior plants from damage caused by soil preparation operations.
- B. Prepare soils at a time when moisture conditions will permit proper cultivation.
- C. Remove stones over 1-inch diameter, sticks, roots, mortar, concrete, rubbish, debris, and all materials harmful to plant life, and legally dispose of them off Owner's property.
- D. Remove or spray as required to eradicate noxious weed growth and roots.
  - 1. Achieve complete removal or kill of all weeds within all areas receiving new plantings and lawn areas.
  - 2. In planting beds, kill achieved by working soil is permissible for annual non-noxious broad-leaf type weeds.
  - 3. Apply post-emergent herbicide over all areas of weed or grass growth within landscaped area to eradicate weed growth and roots. Apply in two applications at manufacturer's maximum recommended rate, as follows:
    - a. First application: Apply 7 days prior to performing soil preparation.

- b. Second application (to kill new vegetation): Apply after soil preparation has been completed and minimum of 48 hours prior to planting.
  - c. Observe manufacturer's recommended period prior to working in treated areas.
- 4. Apply contact herbicide directly onto foliage of nutsedges. In areas of established lawn grasses infested with nutsedge, apply herbicide by wicking. Do not spray.
- E. Locate and securely mark or flag irrigation sprinkler heads, area drains, catch basins, clean outs, manholes, valve boxes, and other site improvements not extending above finish grade.
- F. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, in accordance with Division 31

### 3.3 SOIL PREPARATION FOR PLANTING AREAS

- A. This article pertains to planting areas as shown on the Drawings where mass plantings of trees, shrubs and ground cover plants are scheduled.
- B. Excavate 24 inch deep by 12 inch wide pits for percolation testing where planting areas occur in soils compacted due to construction traffic, materials staging, stockpiles exceeding 72 inch height and areas of soil surcharging. Prepare a minimum of ten (10) test pits in locations selected by the Owner's Representative representing the full range of planting areas on site.
  - 1. Fill holes to the top with water and let stand for 1 hour minimum.
  - 2. Refill hole to top with water and measure total depth.
  - 3. Allow hole to drain for 2 to 3 hours and measure total depth of water.
  - 4. If soil drains at a rate of less than 2 inches per hour prepare subgrades in accordance with procedures for poor draining soils.
- C. Planting area subgrade preparation:
  - 1. Prepare subgrades by excavating and removing soil, rock and other construction material to 15 inches below finish grade. Cross-rip subgrades to depth of 6 inches prior to placing topsoil.
  - 2. In areas of poor draining soils prepare subgrades by excavating and removing soil, rock and other construction material to 24 inches minimum below finish grade. Cross-rip subgrades to depth of 6 inches prior to placing topsoil. Retest percolation and modify subgrade until 2 inches per hour percolation is obtained.
  - 3. See Division 31 Section "Earth Moving" for excavation and preparation of subgrades.
- D. Planting beds and seeded areas: Place 8 inches of topsoil, compost, soil amendments, and fertilizers as recommended in Agricultural Soil Suitability Report per 1,000 square feet and rototill thoroughly to a depth of 4 inches. Compost shall constitute 5% of the amended soil. Place remainder of topsoil, compost, soil amendments, and/or fertilizers as recommended in Agricultural Soil Suitability Report per 1,000 square feet and rototill thoroughly to a depth of 8 inches, allowing for compaction, natural settlement, and depth of specified mulch.
- E. Concrete Planters: Place 8 inches of topsoil, compost, soil amendments, and fertilizers as recommended in Agricultural Soil Suitability Report per 1,000 square feet and rototill thoroughly to a depth of 4 inches. Compost shall constitute 5% of the amended soil. Place the remainder 4 inches of topsoil, compost, soil amendments, and fertilizers as

recommended in Agricultural Soil Suitability Report per 1,000 square feet and rototill thoroughly to a depth of 4 inches, allowing for compaction, natural settlement, and depth of specified mulch.

1. It is the Contractor's option to set up a facility on-site for the preparation and amendment of topsoils, instead of preparing and amending the topsoils in place as indicated in the paragraph above.
2. Set up facility in location as directed by Owner's Representative.

F. Water lightly and allow planting mix to settle. Add additional material at mixture indicated in paragraph above to bring soil level to grades shown on the Drawings with allowance at pavement edges for mulch placement. Provide compaction to 80 percent maximum relative density or as indicated in Division 31 Section "Earth Moving."

G. Meet lines, grades and elevations shown, after light rolling and natural settlement. Fine grade shrub and ground cover areas to smooth even surface with loose, uniformly fine texture. Rake and drag shrub and ground cover areas to remove ridges and fill depressions to obtain firmness and finish grades preparatory to receiving planting.

H. Remove stones over 1/2-inch in any dimension and sticks, roots, rubbish and other extraneous matter.

#### 3.4 SOIL PREPARATION FOR PLANTING PITS OF TREES

A. This article pertains to tree planting when occurring on an individual basis.

1. Backfill Mix: Prepare backfill mix and place in planting pits as specified in Division 32 Section "Plants."
2. Grade smooth to elevations shown.

#### 3.5 SOIL PREPARATION UNDER EXISTING TREES

A. Remove vegetation not indicated to remain beneath canopy of existing trees. Take care not to disturb roots of existing trees.

B. Lightly rake areas and add amended topsoil to meet proposed grades.

#### 3.6 FINE GRADING

A. Finish grade after full settlement including mulch, shall be 1 inch below tops of curbs, walks, or existing grades in shrub areas and 3/4 inch lower in lawn areas.

B. Slope all areas to prevent puddling and drain surface water toward catch basins, drains, curbs, or off-site as shown on Drawings.

C. Soil in all areas shall be thoroughly settled, with a smooth surface free of humps and hollows, and shall be firm enough to resist undesirable impressions when stepped upon.

D. Use levels, screens, drags, or any other equipment necessary to establish and verify grades and surfaces.

E. Finish grade lawn, grass and planting areas to smooth, even surface with loose, uniformly fine texture.

- F. Notify Owner's Representative 36 hours in advance to review fine grading of lawn, grass and planting areas. Finish grades shall be prepared to the satisfaction of the Owner's Representative prior to planting.
- G. See Division 32 Section "Plants," for mulch placement.

3.7 CLEAN-UP

- A. Clean up excess materials and debris from project site upon completion of work or sooner if directed by the Owner's Representative.
- B. Leave in neat and tidy condition daily.

3.8 DISPOSAL

- A. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION

**PART 1 - GENERAL**

1.1 SUMMARY

A. Section Includes:

1. Trees.
2. Shrubs.
3. Ground Cover.
4. Plants.
5. Herbicide.
6. Planting Fertilizers.
7. Erosion Control Matting.
8. Mulches.
9. Root Barriers.
10. Tree Stabilization.
11. Edgings.
12. Planting Accessories.

B. Related Sections:

1. Division 01 Section "Temporary Tree and Plant Protection" for protection of existing trees and plants.
2. Division 31 Section "Earth Moving" for excavation, filling, and rough grading and for subsurface aggregate drainage and drainage backfill materials.
3. Division 32 Section "Soil Preparation" for preparation of planting soils.
4. Division 32 Section "Planting Irrigation" for irrigation system requirements.
5. Division 32 Section "Establishment Maintenance" for maintenance of plants during the maintenance period.

1.2 REFERENCES

A. Standards: Comply with botanical names, sizes, and conditions provided in:

1. Botanical Names: American Joint Committee on Horticultural Nomenclature, "Standardized Plant Names."
2. Sizes and Conditions: ANSI Z60.1 "American Standards for Nursery Stock", (latest edition).
3. Perennials: "Perennial Plant Association Standards."
4. Native Species: Hitchcock, C.L. and A. Cronquist, "Flora of the Pacific Northwest," 1973.

1.3 QUALITY ASSURANCE

- A. Contractor: Provide one person who shall: Be present at all times during execution of work in this section; be familiar with the materials and best methods for installation; direct work performed under this section.
- B. Government Inspection: All plants and planting material shall meet or exceed the specifications of Federal, State, and County laws requiring inspection for plant disease and control.
- C. Secure plant material and maintain in a climate similar to that of the project site.
- D. All plant material to be grown from cuttings or seed. Collected plants are not acceptable.
- E. Prior to commencement of any plant installation, an irrigation coverage and pressure test shall have been performed and all required corrections completed. The irrigation system shall be fully operational.

1.4 SUBMITTALS

- A. Within 30 days after Contract award, submit:
  - 1. A list of local/regional suppliers for each plant species to be installed. List to include plant quantities, sizes and root conditions. Certify in writing, confirmed orders for plants by submitting a Bill of Sale for each plant to be installed. Each plant species shall be supplied by a single grower only, unless otherwise approved by Owner's Representative. The Contractor shall warrant all plant material to be true to botanical name and specified size.
    - a. Submit a separate list of tree suppliers having ample quantities of each species in their specified sizes, with accompanying photos for review by Landscape Architect. Photos shall meet requirements indicated in Section 1.4 - D 2.
      - 1) Landscape Architect may elect to tag trees in the field following review of this tree submittal. Contractor shall coordinate tree tagging with Landscape Architect prior to purchase of any trees.
    - b. Requests for substitutions of plants not available in size, quantity or type specified must be made within 30 days after Contract award. Submit a written summary of specified plants which cannot be obtained.
  - 2. Plant Material Inspection Certificates for all plant material shipped from out of state.
  - 3. 1/2 cubic foot sample of bark mulch for approval prior to delivery.
- B. Provide all Product Data submittals simultaneously in a single package for review.
  - 1. Submit product data for the following:
    - a. Mulch.
    - b. Anti-desiccant.
    - c. Post-emergent herbicide.
    - d. Pre-emergent herbicide.

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- e. Mycorrhizal inoculum.
  - f. Root barriers.
- C. Submit copy of herbicide applicator's Commercial Applicator's License to Owner's Representative before application of herbicides (includes pesticides). Submit a copy of the application record to the Owner's Representative immediately after each herbicide or pesticide application.
- D. Shrub and Tree Samples:
- 1. Typical samples, three each of all varieties and sizes (#5 and under for shrubs, #15 and under for trees) of all plant materials shall be submitted for inspection & approval at the site a minimum of fifteen (15) days prior to planting operations. Approved samples shall remain on site and shall be maintained by the Contractor as standards of comparison for plant materials to be furnished. Approved samples shall be incorporated into the work.
  - 2. Tree Photographs: For all trees over #15, submit photographs of each specific tree to be purchased (minimum 2 photos per plant showing differing sides), a minimum of sixty (60) days prior to planting.
    - a. Format: Digital, high resolution, color jpeg
    - b. Scale: Include a yardstick in each photograph to provide scale.
    - c. Background: Ensure form and condition of plant is clearly distinguishable from background.
    - d. Identification: On the back of each print and/or as an email attachment, provide the following information:
      - 1) Name of Project & Owner.
      - 2) Name & address of Grower.
      - 3) Date photograph was taken
- E. Upon completion of the Work, submit:
- 1. Written notification to Owner's Representative requesting review for Substantial Completion.
  - 2. Written notification to Owner's Representative of Punch List Completion.
- F. With application for final payment, submit:
- 1. Duplicate copies of delivery invoices, labels, or other acceptable proof of quantities of materials used.
  - 2. Copies of delivery invoices, labels, or other proof of quantities of plant materials and fertilizers.

#### 1.5 SITE OBSERVATION

- A. Site observations herein specified shall be made by the Owner's Representative. The Contractor shall provide a minimum of three (3) days notice before Observation is required.

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1. Pre-Construction Meeting: Explain Owner Representative's role to Contractor, review construction sequence.
2. Incorporation of soil conditioning and fertilizers into the soil.
3. Application of pre-emergent herbicide.
4. Soil testing after soil preparation for approval to plant.
5. Upon the completion of grading prior to planting.
6. Approval of samples of plant materials delivered to site.
7. When trees and shrubs are spotted in place for planting, but before planting holes are excavated.
8. Plant installation: Check size of planting holes and backfill mix.
9. Verification of finish grades.
10. After planting and all other specified work has been completed.
11. Substantial Completion Inspection and preparation of a Punch List.
12. Maintenance observation after thirty (30) days to coincide with fertilizer application.
13. Final Acceptance Inspection at completion of the Maintenance Period.

- B. No site observation visits shall occur until all soil submittals have been made and approved. Construction Observation visits shall be made in proper sequence with the installation of work. The Landscape Contractor shall be responsible for reimbursement of time and travel expenses at current billing rates, incurred by the Landscape Architect due to out of sequence site visits.
- C. Contractor shall be on site during each site observation visit. Contractor shall speak English.
- D. No site visits shall occur until all items in previous Observation Reports have been completed or remedied unless the Owner has waived such compliance in writing.
- E. Upon completion of planting and ancillary landscape work, the Contractor shall notify the Owner's Representative in accordance with the procedures outlined in the Substantial Completion Section of this specification.

#### 1.6 QUALITY CONTROL

- A. Inspection: Plants shall be subject to inspection by the Owner's Representative at the job site upon delivery to the site. Plants not conforming to specifications shall be rejected and removed immediately from the site.
- B. The presence of noxious weeds in plant balls or plant containers shall be cause for rejection of any or all plants from that source.

#### 1.7 DELIVERY

- A. Deliver packaged materials to site in original unopened containers bearing manufacturer's guarantee chemical analysis, name, trade name, and trademark.
- B. Remove unacceptable plant material immediately from project site.
- C. Plant Materials:

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1. Deliver trees and shrubs after preparations for planting have been completed, and plant immediately.
2. Do not prune prior to delivery unless otherwise approved by Owner's Representative.
3. Do not bend or bind-tie trees or shrubs in such a manner as to damage bark, break branches, or disfigure natural shape.
4. Provide protective covering during delivery.
5. Protect plants during delivery to prevent damage to root ball or desiccation of leaves.
6. Apply anti-desiccant using a pump sprayer to provide adequate film over trunks, branches, stems, twigs and foliage of plants.
7. If deciduous trees or shrubs are moved in full-leaf, spray with anti-desiccant at nursery before moving, and sprayed again 2 weeks after planting.
8. Label one of each tree and shrub species with securely attached waterproof tag bearing botanical name and supplier's name.

#### 1.8 STORAGE

- A. Contractors shall schedule and conduct planting operations to minimize storage of plant materials on the project site. The location and conditions of storage shall be reviewed for approval by the Contractor, Owner, and Owner's Representative.
- B. Plants that cannot be planted within 24 hours after arrival shall be "heeled-in" in accordance with accepted horticultural practices and the following requirements:
  1. Protect root ball of balled and burlapped plants with moist earth, sawdust or other acceptable material.
  2. Protect plants at all times from injury, extreme weather conditions, and keep moist.
  3. Store plants in shade at all times and protected from wind until planted.
  4. Store plants in upright position and allow sufficient ventilation between plants.
- C. All plants that are to be stored longer than one month shall be planted in nursery rows and irrigated using a temporary irrigation system, plants shall be maintained at the Contractor's expense.

#### 1.9 HANDLING

- A. Do not drop plants. Do not free-fall, drag, roll or abuse the tree or put a strain on the crown (bud area) at any time.
- B. Do not pick up container or balled plants by stems, trunk, or foliage. Handle balled & burlapped plants by the ball of earth.

#### 1.10 NOTIFICATIONS

- A. Notify Owner's Representative a minimum of 48 hours in advance of plant material delivery so that plants may be inspected upon site delivery. Unapproved materials are to be immediately removed from the job site.

- B. Notify Owner's Representative a minimum of one week in advance for request of Substantial Completion and Final Acceptance inspections.

#### 1.11 SITE CONDITIONS

- A. Existing Improvements to Remain: Locate underground utilities prior to start of work.
- B. Protect existing improvements from damage, soiling or discoloration. Repair or replace damaged, soiled or discolored improvements as directed by Owner's Representative.
- C. Planting Conditions: Planting is not permitted during the following conditions, unless otherwise approved:
  - 1. Cold weather: less than 32 degrees Fahrenheit.
  - 2. Hot weather: greater than 90 degrees Fahrenheit.
  - 3. Wet weather: saturated soil or standing water.
  - 4. Windy weather: wind velocity greater than 20 m.p.h.

### **PART 2 - PRODUCTS**

#### 2.1 PLANT MATERIALS

- A. Provide plant materials as scheduled on Drawings.
- B. Quantities indicated are for Contractor's convenience only. Contractor to verify and provide number of plants required to complete work graphically shown on Drawings.
- C. Sizes and grade quality are maximums as listed. Larger sizes are not acceptable.
- D. Plants shall be full foliated when in-leaf, showing no signs of prolonged moisture stress or over watering as indicated by wilted, shriveled, or dead leaves.
- E. Christmas tree stock shall not be used for conifer, evergreen material.
- F. Conform to ANSI Z60.1, with additions and exceptions noted:
  - 1. Groundcover Plants: Well-established root systems and grown in flats or removable containers.
  - 2. Containerized Plants: Grown in container in which delivered for at least 3 months, but not root-bound.
  - 3. Greenhouse Grown Plants: Acclimated outdoors for 360 days prior to delivery.
  - 4. Bare-root Stock: Well-branched, fibrous root system.
  - 5. Balled and Burlapped Plants and Containerized Trees: All evergreen trees and deciduous trees over 1-1/2 inch caliper to be balled and burlapped with hemp burlap and twine only or grown in container in which delivered for 9 months minimum. Soil balls to be a minimum of 10 inches in diameter per caliper inch of tree.

G. Trees shall meet the following requirements:

1. Trunks:
  - a. Straight-trunked not varying from plumb more than 6 inches over 6 feet; No fresh cuts over 1 inch diameter, and not "topped" or sheared.
  - b. Trees shall have a single, dominant central leader unless a different form is specified in the plant list or drawings. Leader shall have an intact tip and terminal bud at highest part of tree. Main branches shall be 2/3 or less than diameter of the central leader, measured 1" above the branch union.
  - c. No flush cuts, sunscald or branch stubs
  - d. No open trunk wounds
  - e. Trees with visible suckers or lower shoots or, evidence of suckers and lower shoots removed are not acceptable.
2. Branches:
  - a. Well-branched, with no cross branches, vertical branches, large branches directly above another, or co-dominant leaders.
  - b. Trees shall not have dead, diseased, broken, distorted, or otherwise injured branches.
  - c. Main branches shall be radially and vertically distributed along the central leader and not clustered together. They shall form a balanced crown appropriate for the cultivar/species.
  - d. Shoot growth (length and diameter) throughout the crown shall be appropriate for the age and size of the species or cultivar.
3. Canopy and Leaves:
  - a. Tree canopy shall be full with healthy foliage evenly distributed around the tree.
  - b. Tree leaves free of spotting, blotching, chlorosis and die back inconsistent with seasonal change.
4. Roots:
  - a. Root collar (flare) within 2" above soil surface for B&B trees.
  - b. Root collar within 1" of soil mass for containerized trees.
  - c. Structural roots (roots over 1/10 diameter of trunk) shall radiate in all directions and reach the side of the rootball. No circling, kinked, or bottom-matted structural roots.
  - d. At time of delivery and inspection, rootball shall be moist throughout.
5. Grafted Trees: Base grafted or budded only.
6. Trees in formal arrangements and rows:
  - a. Provide trees matched in height and spread with less than 1' of variation.
  - b. Trees shall have less than 6" in variation in clear branching height.
  - c. Coordinate tagging of trees in the fall to confirm coordinated fall color.
  - d. Confirm desired characteristics of formal tree arrangements with Landscape Architect.

2.2 HERBICIDES

- A. Post-Emergent Herbicides: EPA registered and approved, of type recommended by manufacturer for selective herbicide application. "Round-Up," or approved equal.

- B. Pre-Emergent Herbicides: EPA registered and approved, of type recommended by manufacturer for selective weed prevention. "Ronstar-G" by Bayer, "Dimension EC" by Dow AgroScience, or equal. Products containing either pendimethalin or DCPA are prohibited.

### 2.3 PRE-PLANT FERTILIZER

- A. (1-10-10) shall be a combination of natural organic and inorganic granular fertilizers, free-flowing, and shall contain the following minimum available percentage by weight of plant food:

Nitrogen	1.0% minimum
Phosphoric Acid	10.0% minimum
Potash	10.0% minimum

### 2.4 POST-PLANT FERTILIZER

- A. (7-9-4) shall be a long-lasting, organic and controlled release plastic-coated, uniform in composition, free-flowing and shall contain the following minimum available percentages by weight of plant food.

Nitrogen	7.0% minimum
Phosphoric Acid	9.0% minimum
Potash	4.0% minimum

### 2.5 MULCH

- A. Provide standard, commercially produced, medium-course, dark brown, bark mulch. Bark shall be ground Fir or Hemlock bark of uniform color, free from weeds, seed, sawdust, and splinters and shall not contain resin, tannin, or other compounds detrimental to plant life. All material shall pass a 1 inch mesh screen.

### 2.6 ANTI-DESSICANT

- A. Emulsion type, film-forming agent designed to permit plant transpiration but retard excessive loss of moisture from plants. "Wilt-Pruf" or equal.

### 2.7 PLANTING SOIL MIXES

- A. Refer to Division 32 Section "Soil Preparation."

### 2.8 EROSION CONTROL MATTING

- A. Erosion Control Blanket shall be 100 percent coir twines with no seams. Matting shall be sisal jute mesh of uniform open weave, single jute yard. The blanket shall be Ludlow 'Soil Saver'; Belton Industries; 'Geojute' Geocoir/DeKoWe 700 or equal with the following minimum average roll properties:

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1. Thickness 0.35 inches (ASTM D1777).
2. Average Tensile Strength 1450 lbs/ft (ASTM D4595).
3. Weight 14.7 oz/sy (ASTM D3776).
4. Open Area 60percent (measured).
5. Warp 78 per width, minimum. Weft 42 per linear yard, minimum.
6. Roll Width 6.5 and 9.8 feet (measured).
7. Roll Length 165 feet minimum (measured).
8. Color natural earth tone .

- B. Wooden Stakes: Untreated Douglas fir 3/4 x 1/2 x 18 inch wood stakes.
- C. Staples: Manufacturer's recommended steel wire staples, 6 inches long, 11 gage galvanized steel.

## 2.9 TREE STAKING AND GUYING

- A. Deciduous Tree Tie: Black plastic chain-type, minimum 1 inch wide by 1/8 inch thick.
- B. Evergreen Tree Guy Wire: 12 gauge galvanized wire with 1/2 inch rubber hose collar, black color, to protect tree trunk.
- C. Stakes: 2 inch x 2 inch x 8 feet Douglas fir for staking of deciduous trees; and 2 inch x 2 inch x 36 inch Douglas fir for guying of coniferous trees. Stain brown with water-based commercial wood stain prior to installation.
- D. Provide miscellaneous hardware, wire, and accessories as shown on the Drawings.
- E. PVC Flags: 1/2 inch or 3/4 inch diameter x 36 inches long PVC pipe.

## 2.10 MYCORRHIZAL INNOCULUM

- A. Available Products:
1. 'MycApply All Purpose Granular' granular mycorrhizal inoculum. Available from: Mycorrhizal Applications, Inc., Grants Pass, OR (541) 476-3985.
  2. 'PHC Plant Saver' blend of ecto and endomycorrhizal fungal spores, beneficial rhizospere bacteria, 4-7-4 fertilizer, organic amendments, and micronutrients. Available from Plant Health Care, Inc. (800) 421-9051.
  3. Or equal.

## 2.11 ROOT BARRIERS

- A. Rigid interlocking polypropylene panels: Deep Root, Inc; or equal.
1. Root control barriers: 24 inches deep by 0.08 inch thick polyethylene panel with integral root directing ribs and self locking joiner strips. Model No. UB 24-2.

## 2.12 EDGINGS

- A. Shovel Cut: As shown on Drawings.

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2.13 DRAINAGE ROCK BACKFILL

- A. 1-1/2 to 1/2 inches round washed river rock; no fines for non-percolating soil.

2.14 FILTER FABRIC

- A. Non-woven filter fabric to cover drain rock: Mirafi 140N as available from TenCate, (360) 699-1426; Propex 451 as available from A.C.F. West Inc., (503) 771-5115; or equal.

**PART 3 - EXECUTION**

3.1 PREPARATION

- A. Verify finish grades are properly achieved and soil preparation has been completed in accordance with the specifications; start of Work denotes acceptance by the Contractor and Contractor assumes responsibility for final results.

3.2 SOIL PREPARATION

- A. As specified in Division 32 Section "Soil Preparation".

3.3 HERBICIDE APPLICATION

- A. Spray pre-emergent herbicide as required to eradicate and prevent emergence of noxious weed growth.
  - 1. Apply a mixture of pre-emergent and post-emergent herbicides over all areas of weed or grass growth within landscaped area to eradicate weed growth. Apply in single application at manufacturer's maximum recommended rate, as follows:
    - a. Apply after soil preparation has been completed and approved by Owner's Representative.
    - b. Do not till pre-emergent herbicide into soil.
    - c. Observe manufacturer's recommended period prior to working and planting in treated areas.

3.4 EROSION CONTROL MATTING

- A. Provide erosion control blanket on slopes of gradient 3 horizontal to 1 vertical and greater. Install blanket after soil preparation and prior to planting.
- B. Install erosion control matting after preparing soil and finish grading. Matting shall lie loosely in full contact with the soil without any tension.
- C. Install from top of slope, working downward, and as recommended by material manufacturer for site conditions.
- D. Fasten as recommended by material manufacturer if more stringent than these specifications. Provide temporary wood stakes as required. Remove wood stakes after planting and blanket has been securely stapled to the slope.
- E. Secure the blanket with 6 inch minimum long staples on a 4 foot square grid. Tops, bottoms, and joints of matting shall have staples driven in at 12-inch centers.

- F. Top of each length of erosion control matting shall be anchored in a 6 inch deep trench and shall terminate at the slope bottom with a 6 inch fold turned under. Adjoining lengths of matting shall have 6 inch minimum overlap.
- G. Cut "X" slits into matting to plant trees and shrubs. Fold matting back around plants and staple to hold in place.

### 3.5 LAYOUT

- A. Mark locations of lines between the planting areas and the lawn areas on the finish with paint, chalk or equal material for approval by the Owner's Representative. The method of marking shall be approved by the Owner's Representative.
- B. Mark locations of trees and shrubs for approval by the Owner's Representative prior to digging. The method of marking shall be approved by the Owner's Representative. After approval of layout, field place trees and shrubs in locations shown on Drawings. Owner's Representative may request rotation or slight movement of tree to give a better appearance with respect to adjacent plants and structures. Placement must meet approval of Owner's Representative prior to excavating planting pits.

### 3.6 EXCAVATION FOR TREES AND SHRUBS

- A. Excavate planting holes, with vertical sides and with bottom of excavation slightly raised at center to provide proper drainage. Loosen hard subsoil in bottom of excavation.
- B. For trees and shrubs, make excavations at least 2 times wider than root spread; equal to the rootball height directly beneath the rootball; and 1-1/2 times deeper than rootball height around the perimeter of the planting pit, as indicated in the Drawings.
- C. If non-percolating soils are encountered, fill excavations for trees and shrubs with water and allow to percolate out before planting. If plant holes do not drain: Auger drill holes 36 inches deep by 8 inches wide and fill with drainage backfill. Cover top with filter fabric. Notify Owner's Representative to observe prior to planting.
- D. If conditions detrimental to plant growth are encountered, such as rubble fill, or obstructions, notify Owner's Representative and resolve before planting.
- E. Scarify bottom and sides of hole with shovel to eliminate "glazed" surfaces.
- F. Set plants on native soil where possible.

### 3.7 PLACING

- A. Set top of root ball 1 inch higher than finish grade. If hole for trees is too deep, fill hole with native soil only where applicable or prepared soil to correct levels.
- B. Set plants plumb and faced for best appearance.
- C. Remove wire baskets, burlap or fasteners from rootball completely if rootball will not be damaged. If damage is suspected, notify Owner's Representative for concurrence and remove tops and sides of baskets minimum. Use bolt cutters on wire if necessary to remove wire baskets. Bending back not acceptable. Remove all burlap and twine from

- D. Remove metal cans or plastic containers completely from rootball.
- E. Neatly cut off broken, girdling, or frayed roots and any root growth growing in a circular manner conforming to its container.

### 3.8 BACKFILLING - General

- A. Before mixing, clean topsoil of extraneous materials and other materials harmful or toxic to plant growth.
- B. Prepare planting backfill soil mix prior to backfilling. Stockpile on site.
- C. Planting backfill soil mix shall be as follows: [1/4] compost material, [1/4] amended topsoil and [1/2] soil excavated from planting pit.
- D.
- E. Backfill half of plant pit around rootball with backfill soil mix, carefully tamp soil around rootballs.
- F.
- G. Add 3 ounces mycorrhizal inoculum per caliper-inch to backfill around trees. Add 3 tablespoons mycorrhizal inoculum per gallon planting size. Add 1 teaspoon mycorrhizal inoculum per ground cover plant.
- H.
- I. Complete backfilling, firming to surface grade.
- J.
- K. Thoroughly hand water each plant and entire bed immediately after planting. Adjust rootball and soil as required if settlement of soil occurs.
- L.
- M. Remove plant tags and ribbons.

### 3.9 PLANTING TREES AND SHRUBS

- A. Set roots or rootball on layer of compacted planting soil backfill mix or native suitable topsoil from planting pit, plumb and in center of pit or trench with top of rootball at 1 inch above elevation of adjacent finished grade.
- B. Place additional planting soil backfill mix around base and sides of ball and eliminate voids and air pockets. When backfill is approximately 2/3 complete, water thoroughly before placing remainder of backfill. Repeat watering until no more is absorbed. Water again after placing final layer of backfill. Cut burlap from top of rootball and roll back to sides of planting hole; form watering basin; stake and guy immediately after planting.
- C. After planting, apply fertilizer at the following rates:
  - 0-1 foot tall shrub = 0.4 oz.
  - 1-2 foot tall shrub = 0.8 oz.
  - 2-4 foot tall shrub or tree = 1.75 oz.
  - 4-8 foot tall shrub or tree = 4 oz.
  - 8+ feet = 4 oz. plus proportional amount per foot.

### 3.10 PLANTING GROUNDCOVER

- A. Space plants as shown or scheduled on Drawings. Dig holes 3 times the width and 1-1/2 times the depth of the rootball. Plant with planting soil backfill mix. Work soil around roots to eliminate air pockets. Water thoroughly after planting.

- B. After planting, apply fertilizer at the rate of 50 pounds per 1,000 square-feet, or apply 1 slow-release fertilizer tablet per plant during backfill.

### 3.11 ROOT CONTROL BARRIERS AT NEW PLANTINGS

- A. Provide linear and surround root barrier applications at trees within 5 feet of paving, curbs, walls, utility ducts or other appurtenances.
  - 1. For linear applications provide sufficient lengths of panels to equal mature width of tree canopy plus 2 feet, 10 feet minimum length. Provide on both sides of the tree trunk adjacent to curb and paving per manufacturer's recommendations.
  - 2. For surround applications provide a minimum of five 24-inch long panels where trees are planted on an individual basis. Shape connected panels to form an oval around the tree rootball.
- B. Excavate planting hole as specified for tree planting.
- C. Begin backfilling with soil mix and install tree as specified. Backfill up to depth equal to depth of root control barrier panel. Install interlocking root control panels around rootball, with minimum 8 inches clearance to rootball and with top 1/2 inch above finish grade.
- D. Backfill around rootball with planting soil backfill mix as specified for tree planting. Backfill outside of root control barriers with 3/4 to 1-1/2-inch crushed gravel, no fines (not pea gravel), to full depth of panels and minimum 4 inch wide area.

### 3.12 LINEAR ROOT CONTROL BARRIERS AT EXISTING TREES

- A. Provide at locations shown on the Drawings and as approved by the Owner's Representative. Excavate 24 inches deep trench along edge of proposed pavement. Install trench and barrier prior to pouring concrete or laying of pavers. Re-compact pavement subgrades and bases encountered during installation of root barriers. Cut any existing roots squarely according to standard horticultural practices and root barrier manufacturer's recommendations.
- B. Install panels vertically, with ribs on tree side of barrier, to be flush against proposed paving, maximum 2 inches below top of paving, and 1/2 above finish grade. If panels cannot be installed immediately against paving formwork, backfill paving side of panel with 1-inch minus crushed rock to keep panel vertical and stabilized.

### 3.13 Provide minimum 10-foot length of connected panels, centered on tree trunk or existing root, as directed by Owner's Representative. Backfill tree side of barrier with planting backfill soil mix. (See "Planting Trees and Shrubs" article above.) STAKING

- A. Deciduous Trees 1-inch caliper and larger: Provide 2 stakes per tree 180 degrees from each other in the direction of prevailing winds. Drive plumb outside of rootball as shown on Drawings. Place tree ties around tree trunk, approximately 4 feet from ground level, one from each side.
- B. Coniferous Trees 4 feet tall and larger: Provide 3 guys evenly spaced around trunk of tree. Set guys at a 60 degree angle to the trunk at 1/2 the height of the tree. Drive 2 by 2 inch wood stakes perpendicular to angle of cable. Secure guys taunt at trees passing each guy wire through a collar and setting the collar at the tree trunk where contact is made. Secure a warning flag on each cable as shown on Drawings.

3.14 MULCH

- A. Place mulch by hand, blown-in mulch is not acceptable unless approved by the Owner's Representative. Place mulch 3 inches deep in all planting beds. Rake smooth. Mulch shall be pulled away from crowns of shrubs, perennials and groundcover plants. Mulch shall be flush with adjacent curbs and paving. Taper mulch thickness from full 3-inches depth to 2- inch depth over a 12-inch horizontal run at paving edges so mulch will be flush with adjacent curbs and paving.
- B. Ground Cover Plantings:
  - 1. After fertilizing, mulch areas between groundcover plants; place minimum 3-inch depth of specified mulch.

3.15 PRUNING

- A. Prune plant material if necessary and as directed by Owner's Representative to balance root and top growth. Prune, thin, and shape trees and shrubs in accordance with standard horticultural practices.
- B. Prune all dead and broken limbs.
- C. Prune without distorting basic form of the plant and only to the extent necessary for each plant except where directed by Owner's Representative. Do not prune plants into boxes or balls.

3.16 CLEAN-UP AND PROTECTION

- A. During landscape work, keep pavements clean and work area in an orderly condition.
- B. Sweep and wash paved surfaces to remove soil and soil stains.
- C. Clean all mud and debris from catch basins, which is caused by Work of this Section.
- D. Remove plant containers, trimmings, clippings, and all extraneous debris unearthed or resulting from any operations specified herein, from Project Site and dispose in a lawful manner.
- E. Protect landscape work and materials from damage.
- F. Maintain protection during installation and Maintenance Period.
- G. Treat, repair or replace damaged Work as directed by Owner's Representative, at no additional cost to the Owner.

3.17 SUBSTANTIAL COMPLETION

- A. Notify the Owner's Representative in writing of the completion of planting and ancillary landscape work.
- B. Within 10 days of notification, the Owner's Representative will inspect the work and prepare a Notice of Substantial Completion with a Punch List identifying items which require completion or correction.

- C. Notice of Substantial Completion constitutes the commencement of the Maintenance Period and the Warranty of all plants for a period of One Year.
- D. The Contractor is responsible for maintaining all plants prior to receiving Notice of Substantial Completion.

3.18 FINAL ACCEPTANCE

- A. Final inspection of all planting will be made by the Owner, Owner's Representative and the Contractor.
- B. Prior to executing a final inspection, the Contractor must furnish the Owner's Representative with written documentation identifying how each Punch List item has been corrected. If such written documentation is not provided to the Owner's Representative, all requirements of the Maintenance Period shall remain in force indefinitely until the written documentation is provided. Any extension of the Maintenance Period will be considered incidental to the Work, and performed by the Contractor at no additional cost to the Owner.
- C. Before Final Acceptance is granted, the following must be completed by the Contractor and receive approval from the Owner's Representative:
  - 1. Written documentation identifying how each item on the Punch List has been corrected.
  - 2. Replacement planting and correction of all items identified on the Punch List prior to expiration of the specified Maintenance Period.
- D. The project site must meet all conditions stipulated within the "Maintenance" and "Clean Up and Protection" sections of the specifications.
- E. If Final Acceptance is not granted at the end of the specified Maintenance Period, the Contractor shall continue maintaining plantings until Final Acceptance is granted, at no additional cost to the Owner.
- F. Necessary Observations Beyond Final Acceptance:
  - 1. If any of the items identified on the Notice of Substantial Completion and Punch List have not been fully corrected or repaired to the complete satisfaction of the Owner's Representative, the Contractor must schedule a field observation to substantiate claim of correction. The Contractor shall bear financial responsibility to reimburse the Owner for all time and travel costs incurred by the Owner's Representative to confirm Punch List compliance.

END OF SECTION