

February 2, 2023

BCC Agenda Date/Item: _____

Board of County Commissioners
Clackamas County

Approval of a Public Improvement Contract with Endres Northwest Inc. for the Estacada Head Start Improvements Project. Agreement value is \$547,000 for 5 months. Funding is through Federal Community Development Block Grant Funds. No County General Funds are involved.


Previous Board Action/Review	<ul style="list-style-type: none"> • May 6, 2021 Board approval of FY2021 CDBG Action Plan and Proposed Projects. • July 7, 2022 Board approval of the Cooperation Agreement with ClackCoKids. • January 3, 2023 Board approval of Amendment #1 with ClackCoKids. • January 17, 2023 Issues Meeting 		
Performance Clackamas	Increase self-sufficiency for our clients. Ensure safe, healthy, and secure communities.		
Counsel Review	Yes	Procurement Review	Yes
Contact Person	Mark Sirois	Contact Phone	503-351-7240

EXECUTIVE SUMMARY: The Housing & Community Development Division of the Health, Housing and Human Services Department requests the approval of the Public Improvement Agreement with Endres Northwest, Inc. (ENI), for building improvements to a community preschool that serves residents of the City of Estacada in Clackamas County, OR.

After multiple bid postings, ENI was the low bid and awarded through an RFP the construction contract. This Agreement addresses the construction budget, materials, and responsibilities to ensure that deadlines dictated by the funder complete the project. The County is obligated to spend down the Federal grant award and has funding to ensure the project is completed and in compliance with spending requirements and fiscal deadlines. These building improvements will assure ADA compliance is met regarding accessibility for disabled persons utilizing the property.

Project Funding:
 Community Development Block Grant Funds of
 \$300,000: CDBG Funds as a grant
 \$247,000: Children’s Commission Head Start private funds and grants
 \$547,000 Total construction costs

RECOMMENDATION: Staff recommends BCC approval of the Public Improvement Agreement.

Respectfully submitted,


Rodney A. Cook
Director

For Filing Use Only



**CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT**

H3S #10893

This Public Improvement Contract (the "Contract"), is made by and between the Clackamas County, a political subdivision of the State of Oregon (hereinafter "Owner"), and **Endres Northwest Inc.** (hereinafter called the "Contractor") (both the "Parties"). This Contract shall become effective on the date this Contract has been signed by all the Parties and shall expire upon the completion of all obligations under the terms of this Contract unless terminated earlier by the Parties.

All capitalized terms in this Contract shall have the meanings identified in the Clackamas County General Conditions for Public Improvement Contracts (10/13/2021) ("General Conditions") referenced within the Instructions to Bidders.

Project Name: **Clackamas County Children's Commission – Estacada Head Start Improvements Project (CD# 1796)**

Location: **City of Estacada - 264 N. Broadway Street, Estacada, Oregon**

1. Contract Price, Contract Documents and Work.

The Contractor hereby agrees to perform all Work described in, and reasonably inferred from, the Contract Documents. In consideration for the Contractor performing the Work in accordance with the terms of the Contract, the Owner agrees to pay the Contractor the sum of **five hundred and forty-seven thousand dollars (\$547,000)** (the "Contract Price"). Payment will be made in accordance with the terms and conditions set forth in the Contract Documents. The Contract Price is the amount contemplated by the Base Bid, as indicated in the accepted Bid.

The following documents are incorporated by reference in this Contract and made a part hereof:

- Notice of Contract Opportunity
- Supplemental Instructions to Bidders
- Bid Form
- Performance Bond and Payment Bond
- Supplemental General Conditions
- Payroll and Certified Statement Form
- Instructions to Bidders
- Bid Bond
- Public Improvement Contract Form
- Clackamas County General Conditions
- Prevailing Wage Rates
- Plans, Specifications and Drawings (including Project Manual)

2. Representatives.

Contractor has named Randy Endres as its Authorized Representative to act on its behalf. Owner designates, or shall designate, its Authorized Representative as indicted below (check one):

Unless otherwise specified in the Contract Documents, the Owner designates Amy Council as its Authorized Representative in the administration of this Contract. The above-named individual shall be the initial point of contact for matters related to Contract performance, payment, authorization, and to carry out the responsibilities of the Owner.

Name of Owner's Authorized Representative shall be submitted by Owner in a separate writing.

3. Key Persons.

The Contractor's personnel identified below shall be considered Key Persons and shall not be replaced during the project without the written permission of Owner, which shall not be unreasonably withheld. If the Contractor intends to substitute personnel, a request must be given to Owner at least 30 days prior to the intended time of substitution. When replacements have been approved by Owner, the Contractor shall provide

a transition period of at least 10 working days during which the original and replacement personnel shall be working on the project concurrently. Once a replacement for any of these staff members is authorized, further replacement shall not occur without the written permission of Owner. The Contractor's project staff shall consist of the following personnel:

Project Executive: Robert Endres/503-544-2494 shall be the Contractor's project executive, and will provide oversight and guidance throughout the project term.

Project Manager: Randy Endres/ 503-804-2287 shall be the Contractor's project manager and will participate in all meetings throughout the project term.

Job Superintendent: Randy Endres/ 503-804-2287 shall be the Contractor's on-site job superintendent throughout the project term.

Project Engineer: Randy Endres/ 503-804-2287 shall be the Contractor's project engineer, providing assistance to the project manager, and subcontractor and supplier coordination throughout the project term.

4. Contract Dates.

The Contractor agrees to complete the Work in accordance with the following key dates:

COMMENCEMENT DATE: Upon Issuance of Notice to Proceed (tentative) – January 8, 2023

SUBSTANTIAL COMPLETION DATE: 110 Days from Notice to Proceed (tentative) – March 19, 2023

FINAL COMPLETION DATE: 125 Days from Notice to Proceed (tentative) – April 3, 2023

Time is of the essence for this Contract. It is imperative that the Work in this Contract reach Substantial Completion and Final Completion by the above specified dates.

5. Insurance Certificates.

In accordance with Section G.3.5 of the General Conditions and item SC-2 of the Supplemental General Conditions, Contractor shall furnish proof of the required insurance naming Clackamas County as an additional insured. Insurance certificates may be returned with the signed Contract or may be emailed to acouncil@clackamas.us

6. Tax Compliance.

Contractor represents and warrants that it has complied, and will continue to comply throughout the duration of this Contract and any extensions, with all tax laws of this state or any political subdivision of this state, including but not limited to ORS 305.620 and ORS chapters 316, 317, and 318. Any violation of this section shall constitute a material breach of this Contract and shall entitle County to terminate this Contract, to pursue and recover any and all damages that arise from the breach and the termination of this Contract, and to pursue any or all of the remedies available under this Contract or applicable law.

7. Confidential Information.

Contractor acknowledges that it and its employees or agents may, in the course of performing their responsibilities under this Contract, be exposed to or acquire information that is confidential to Owner. Any and all information of any form obtained by Contractor or its employees or agents in the performance of this Contract shall be deemed confidential information of Owner ("Confidential Information"). Contractor agrees to hold Confidential Information in strict confidence, using at least the same degree of care that Contractor uses in maintaining the confidentiality of its own confidential information, and not to copy, reproduce, sell, assign, license, market, transfer or otherwise dispose of, give, or disclose Confidential Information to third

parties or use Confidential Information for any purpose unless specifically authorized in writing under this Contract.

8. Counterparts.

This Contract may be executed in several counterparts, all of which when taken together shall constitute an agreement binding on all Parties, notwithstanding that all Parties are not signatories to the same counterpart. Each copy of the Contract so executed shall constitute an original.

9. Integration.

All provisions of state law required to be part of this Contract, whether listed in the General or Special Conditions or otherwise, are hereby integrated and adopted herein. Contractor acknowledges the obligations thereunder and that failure to comply with such terms is a material breach of this Contract.

The Contract Documents constitute the entire agreement between the parties. There are no other understandings, agreements or representations, oral or written, not specified herein regarding this Contract. Contractor, by the signature below of its authorized representative, hereby acknowledges that it has read this Contract, understands it, and agrees to be bound by its terms and conditions.

10. Liquidated Damages

The Contractor acknowledges that the Owner will sustain damages as a result of the Contractor's failure to substantially complete the Project in accordance with the Contract Documents. These damages may include, but are not limited to delays in completion, use of the Project, and costs associated with Contract administration and use of temporary facilities. Liquidated Damages shall be \$750.00 per Calendar day if the actual Substantial Completion exceeds the required date of Substantial Completion, and \$750.00 per Calendar day if the actual Final Completion exceeds the required date of Final Completion.

Payment of liquidated damages shall not release Contractor from its obligation with respect to the complete performance of the Work, nor shall the payment of liquidated damages constitute a waiver of Owner's right to collect any additional damages that it may sustain by failure of Contractor to fully perform the Work, as it is the intent of the parties that the liquidated damages are a full and complete payment only for failure of Contractor to complete the Work on time. Owner expressly reserves the right to make claims for any and all other damages that Owner may incur due to contractor's failure to perform in strict accordance with this Contract.

11. Compliance with Applicable Law. Contractor shall comply with all federal, state, county, and local laws, ordinances, and regulations applicable to the Work to be done under this Contract including, but not limited to, compliance with the prohibitions set forth in ORS 652.220, compliance of which is a material element of this Contract and failure to comply is a material breach that entitles County to exercise any rights and remedies available under this Contract including, but not limited to, termination for default.

12. Compliance with Applicable Funding Source Requirements. Contractor shall further comply with any and all terms, conditions, and other obligations as may be required by the applicable State or Federal agencies providing funding for performance under this Contract, whether or not specifically referenced herein. Contractor agrees to take all necessary steps, and execute and deliver any and all necessary written instruments, to perform under this Contract including, but not limited to, executing all additional documentation necessary for County to comply with applicable State or Federal funding requirements.

13. Responsibility for Taxes. Contractor is solely responsible for payment of any federal, state, or local taxes required as a result of the Contract or the Work including, but not limited, to payment of the corporate activity

tax imposed under enrolled HB 3427 (2019 Oregon regular legislative session). Contractor may not include its federal, state, or local tax obligations as part of the cost to perform the Work

In witness whereof, Clackamas County executes this Contract and the Contractor does execute the same as of the day and year first above written.

Contractor DATA:
Endres Northwest Inc.
509 NW 3rd Avenue
Canby, OR 97013

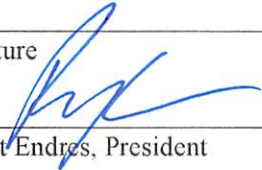
Contractor CCB #162776 Expiration Date: 12/29/23
12/14/2023 Oregon Business Registry #:260158-91 Entity Type: DBC State of Formation: OR
Federal Tax I.D. No. or Last Four SSN: 20-2078851

Signature page to follow.


Payment information will be reported to the IRS under the name and taxpayer ID# provided by the Contractor. Information must be provided prior to contract approval. Information not matching IRS records could subject Contractor to 28 percent backup withholding.

Endres Northwest Inc.
509 NW 3rd Avenue
Canby, OR 97015

Clackamas County

Signature _____ Date _____
 12-19-2022
Robert Endres, President

Signature _____ Date _____
Recording Secretary

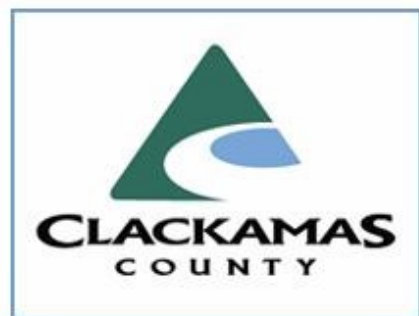
APPROVED AS TO FORM
 01/10/2023
County Counsel _____ Date

CONSTRUCTION PROJECT MANUAL

for

Clackamas County Children's Commission Estacada Head Start Remodel Project (Estacada, Oregon)

August 17, 2022



FEDERALLY FUNDED

by

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

through

**CLACKAMAS COUNTY
DEPARTMENT OF HEALTH, HOUSING and HUMAN SERVICES
COMMUNITY DEVELOPMENT DIVISION
2051 Kaen Road, Suite 245, Oregon City, OR
(503) 655-8591**



**CLACKAMAS COUNTY
NOTICE OF PUBLIC IMPROVEMENT CONTRACT OPPORTUNITY**

**INVITATION TO BID
Clackamas County Children's Commission
Estacada Head Start Improvements Project (CD #1796)
August 17, 2022**

Clackamas County ("County"), on behalf of Community Development Division, through their Board of County Commissioners is accepting sealed bids for the Clackamas County Children's Commission – Estacada Head Start Improvements Project until **September 22, 2022, 3:00 PM**, Pacific Time, ("Bid Closing"). The project site is located at Children's Commission Head Start – 264 N. Broadway Street, Estacada, OR, 97023. The prospective bidders will be required to have attended the previously held walk-through, or attend the scheduled walk-through on site Tuesday, August 23, 2022 @ 11am.

DELIVER BIDS VIA EMAIL:

Bidding Documents can be downloaded from the state of Oregon procurement website ("OregonBuys") at the following address: <https://oregonbuys.gov/bsv/view/login/login.xhtml>, Document No.S-C01010-000004129.

Prospective Bidders will need to sign in to download the information and that information will be accumulated for a Plan Holder's List. Prospective Bidders are responsible for obtaining any Addenda from Website listed above.

Project Estimate: \$240,000.00

Project Schedule: Notice to Proceed, 110 Days to Substantial Completion and 125 Days to Final Completion.

Project Key Note(s):

- 1) The City of Estacada will require Building Permits and other associated Permits.
- 2) Clackamas County Children's Commission is the "owner/operator" of the building.
- 3) Clackamas County is the acting "owner" during the construction of the project.

Contact Information:

All Questions – Amy Council, Project Coordinator: acouncil@clackamas.us

Mandatory Walk-throughs for this Project:

Scheduled walk-through: August 23, 2022 @ 11am on-site

Attendance is required for bid submission. Interested parties in this project should be familiar with the construction plans and specifications. Refer to the Bid Schedule provided by the Project Architect for the detailed quantities.

Bids will be opened and read at the above Delivery Address via Emailed Address after the Bid Closing. Bid results will also be posted to the OregonBuys project site shortly after the opening.

State of Oregon Prevailing Wage:

Prevailing Wage Rates requirements apply to this Project because the maximum compensation for all Owner-contracted Work is more than \$50,000. Contractor and all subcontractors shall comply with the provisions of ORS 279C.800 through 279C.870, relative to Prevailing Wage Rates. The Bureau of Labor and Industries ("BOLI") wage rates and requirements set forth in the following BOLI booklet (and any

listed amendments to that booklet), which are incorporated herein by reference, apply to the Work authorized under this Agreement:

PREVAILING WAGE RATES for Public Works Contracts in Oregon, July 1, 2022, which can be downloaded at the following web address:

<https://www.oregon.gov/boli/employers/Pages/prevailing-wage-rates.aspx>

The Work will take place in Clackamas County, Oregon.

NOTE 1: Contractors are required to pay the higher wage classification between State (“BOLI”) and Federal (Davis-Bacon) for all Community Development Block Grant (“CDBG”) funded projects.

Federal Prevailing Wage Rates:

Prevailing Wage Rates requirements apply to this Project because the maximum compensation for all Owner-contracted Work is more than \$2,000. Contractor and all subcontractors shall comply with the provisions of the David-Bacon Act (40 U.S.C. 3141 et seq).

PREVAILING WAGE RATES for BUILDING shall be used for Clackamas County, June 24, 2022, which can be downloaded at the following web address: <https://sam.gov/wage-determination/OR20220023/6>

If the Davis-Bacon Prevailing Wage Rates change 10 days before the Bid Opening Date, Clackamas County Community Development Division will issue an Addendum providing the new wage rates.

NOTE 2: Contractors are required to pay the higher wage classification between State (“BOLI”) and Federal (Davis-Bacon) for all Community Development Block Grant (“CDBG”) funded projects.

Other Federal Requirements:

This project is financed through the Community Development Block Grant Program with funds obtained from the U.S. Department of Housing and Urban Development. The Contract will be subject to regulations of the federal Department of Labor (“DOL”) and Department of Housing and Urban Development (“HUD”). The successful Bidder will be required to comply with the provisions of section 3 of the Housing and Urban Development Act of 1968 as amended (herein referred to as section 3 requirements). Such provisions require that economic opportunities generated by HUD financial assistance shall, to the greatest extent feasible, be given to low income residents of the metropolitan area in which the project is located and to businesses that provide economic opportunities for these persons. Bids exceeding \$100,000 must include an indication of whether or not the firm submitting the bid is a “section 3 business concern.” The Contractor shall commence no work on the project until the Contractor and every subcontractor has a public works bond filed with the Construction Board in accordance with ORS 279C.830 and all other bonding and insurance requirements have been met and a Notice to Proceed has been issued.

This project will be above \$100,000 dollars and will qualify as a “HUD Section 3” covered contract. This desired designation means: Contracts exceeding \$100,000 are considered “Section 3 covered contracts.” Bids exceeding \$100,000 must include an indication of whether or not the firm submitting the bid is a “section 3 business concern.”

A Section 3 business concern is defined by HUD regulations as a business concern:

- (1) That is 51 percent or more owned by Section 3 residents; or
- (2) Whose permanent, full-time employees include persons, at least 30 percent of whom are currently section 3 residents or, within three years of the date of first employment with the business concern, were Section 3 residents; or
- (3) That provides evidence of a commitment to subcontract in excess of 25 percent of the dollar

award of all subcontracts to be awarded to business concerns that meet the qualifications set forth in paragraphs (1) or (2) above.

A Section 3 resident means:

(1) A public housing resident, or (2) An individual who resides in the metropolitan area in which the section 3 covered assistance is expended, and who is a low-income person or a very low-income person. For purposes of this project, residents of the Portland-Vancouver-Hillsboro Area who are members of families meeting the following income limits are considered low or very low-income persons.

HUD 2022 Annual Income Limits for the Portland-Vancouver-Hillsboro Area								
	1 Person	2 Person	3 Person	4 Person	5 Person	6 Person	7 Person	8 Person
Low Income	\$37,300	\$42,600	\$47,950	\$53,250	\$57,550	\$61,800	\$66,050	\$70,300
Moderate Income	\$59,650	\$68,200	\$76,700	\$85,200	\$92,050	\$98,850	\$105,650	\$112,500

Clackamas County encourages bids from Minority, Women, and Emerging Small Businesses.



CLACKAMAS COUNTY PUBLIC IMPROVEMENT CONTRACT OPPORTUNITY

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CLACKAMAS COUNTY PUBLIC IMPROVEMENT CONTRACT

INSTRUCTIONS TO BIDDERS

Clackamas County Local Contract Review Board Rules (“LCRB Rules”) govern this procurement process. LCRB Rules may be found at: <http://www.clackamas.us/code/documents/appendixc.pdf>. The Instructions to Bidders is applicable to the procurement process for Clackamas County, or any component unit thereof identified on the Notice of Public Improvement Contract Opportunity, herein after referred to as the “Owner.”

Article 1. Scope of Work

The work contemplated under this contract with the Owner, includes all labor, materials, transportation, equipment and services necessary for, and reasonably incidental to, the completion of all construction work in connection with the project described in the Project Manual which includes, but is not necessarily limited to, the Notice of Public Improvement Contract Opportunity, Instructions to Bidders, Supplemental Instructions to Bidders, Bid Form, Bid Bond, Public Improvement Contract Form, Performance Bond, Payment Bond, Clackamas County General Conditions for Public Improvement Contracts (1/1/2017), Supplemental General Conditions, and Plans, Specifications and Drawings.

Article 2. Examination of Site and Conditions

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

The Owner will not be responsible for any loss or for any unanticipated costs, which may be suffered by the successful Bidder, as a result of such Bidder's failure

to be fully informed in advance with regard to all conditions pertaining to the work and the character of the work required, including site conditions. No statement made by an elected official, officer, agent, or employee of the Owner in relation to the physical or other conditions pertaining to the site of the work will be binding on the Owner, unless covered by the Project Manual or an Addendum.

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

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

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

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

To establish a basis of quality, certain processes, types of machinery and equipment or kinds of materials may be specified in the Project Manual either by description of process or by designating a manufacturer by name and referring to a brand or product designation or by specifying a kind of

material. Whenever a process is designated or a manufacturer's name, brand or item designation is given, or whenever a process or material covered by patent is designated or described, it shall be understood that the words "or approved equal" follow such name, designation or description, whether in fact they do so or not.

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

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

Article 4. Security to Be Furnished by Each Bidder

Each Bid must be accompanied by either 1) a cashier's check or a certified check drawn on a bank authorized to do business in the State of Oregon, or 2) a Bid bond described hereinafter, executed in favor of the Owner, for an amount equal to ten percent (10%) of the total amount Bid as a guarantee that, if awarded the contract, the Bidder will execute the contract and provide a performance bond and payment bond as required. The successful Bidder's check or Bid bond will be retained until the Bidder has entered into a contract satisfactory to Owner and furnished a one hundred percent (100%) performance bond and one hundred percent (100%) payment bond. The Owner reserves the right to hold the Bid security as described in Article 10 hereof. Should the successful Bidder fail to execute and deliver the contract as provided for in Article 12 hereof, including a satisfactory performance bond and payment bond within twenty (20) calendar days after the Bid has been accepted by the Owner, then the contract award made to such Bidder may be considered canceled and the Bid security may be forfeited as liquidated damages at the option of the Owner. The date of the acceptance of the Bid and the award of the contract as contemplated by the Project Manual shall mean the date of acceptance specified in the Notice of Intent to Award.

Article 5. Execution of Bid Bond

Should the Bidder elect to utilize a Bid bond as described in Article 4 in order to satisfy the Bid security requirements, such form must be completed in the following manner:

- A. Bid bonds must be executed on the County forms, which will be provided to all prospective Bidders by the Owner.
- B. The Bid bond shall be executed on behalf of a bonding company licensed to do business in the State of Oregon.
- C. In the case of a sole individual, the bond need only be executed as principal by the sole individual. In the case of a partnership, the bond must be executed by at least one of the partners. In the case of a corporation, the bond must be executed by stating the official name of the corporation under which is placed the signature of an officer authorized to sign on behalf of the corporation followed by such person's official capacity, such as president, etc. The corporation seal should then be affixed to the bond.
- D. The name of the surety must be stated in the execution over the signature of its duly authorized attorney-in-fact and accompanied by the seal of the surety corporation.

Article 6. Execution of the Bid Form

Each Bid shall be made in accordance with: (i) the sample Bid Form accompanying these instructions; (ii) the appropriate signatures for a sole individual, partnership, corporation or limited liability corporation shall be added as noted in Article 5C above; (iii) numbers pertaining to base Bids shall be stated both in writing and in figures; and (iv) the Bidder's address shall be typed or printed.

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

Article 7. Prohibition of Alterations to Bid

Bids that are incomplete, or contain ambiguities or have differing conditions required by the Bidder, including requested changes or exceptions to the Public Improvement Contract form or other portions of the Project Manual, may be rejected in Owner's sole and absolute discretion.

Article 8. Submission of Bid

Each Bid shall be sealed in an envelope, properly addressed to the Owner, showing on the outside of the envelope the name of the Bidder and the name of the project. Bids will be received at the time and place stated in the Notice of Public Improvement Contract Opportunity.

Article 9. Bid Closing and Opening of Bids

All Bids must be received by the Owner at the place and time set for the Bid Closing. Any Bids received after the scheduled Bid Closing time for receipt of Bids will be rejected.

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

Generally, Bid results will be posted to the OregonBuys Website within a couple hours of the opening.

Article 10. Acceptance or Rejection of Bids by Owner

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

The Owner reserves the right to reject all Bids and to waive minor informalities. The procedures for contract awards shall be in compliance with the provisions of the LCRB Rules in effect at that time.

The Owner reserves the right to hold the Bid and Bid security of the three lowest Bidders for a period of thirty (30) calendar days from and after the time of Bid opening pending award of the contract. Following award of the contract the Bid security of the three lowest Bidders may be held twenty (20) calendar days pending execution of the contract. All other Bids will be rejected and Bid security will be returned.

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

If no Bid has been accepted within thirty (30) calendar days after the opening of the Bids, each of the three lowest Bidders may withdraw the Bid submitted and request the return of the Bid security.

Article 11. Withdrawal of Bid

At any time prior to the Bid Closing, a Bidder may withdraw its Bid. This will not preclude the submission of another Bid by such Bidder prior to the time set for the Bid Closing.

After the time set for the Bid Closing, no Bidder will

be permitted to withdraw its Bid within the time frames specified in Article 10 for award and execution, except as provided for in that Article.

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

The Owner will provide the successful Bidder with contract forms within seven (7) calendar days after the completion of the award protest period. The Bidder is required to execute the contract forms as provided, including a performance bond and a payment bond from a surety company licensed to do surety business in the State of Oregon, within seven (7) calendar days after receipt of the contract forms. The contract forms shall be delivered to the Owner in the number called for and to the location as instructed by the Owner.

Article 13. Recyclable Products

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

Article 14. Clarification or Protest of the Solicitation Document or Specifications

Any request for clarification or protest of the solicitation document or specifications must be submitted in the manner provided for in the applicable section of the LCRB Rules to the Procurement Representative referenced in the Notice of Public Improvement Contract Opportunity.

A protest of the Solicitation Document must be received within seven (7) business days of the issuance of the Bid or within three (3) business days of issuance of an addendum.

Requests for clarification may be submitted no less than five (5) business days prior to the Bid Closing Date.

Article 15. Protest of Intent to Award

Owner will name the apparent successful Bidder in a "Notice of Intent to Award" letter. Identification of the apparent successful Bidder is procedural only and creates no right in the named Bidder to the award of the contract. Competing Bidders will be notified by publication of the Notice of Intent to

Award on the OregonBuys Website of the selection of the apparent successful Bidder(s) and Bidders shall be given seven (7) calendar days from the date on the "Notice of Intent to Award" letter to review the file at the Procurement Division office and file a written protest of award, pursuant to C-049-0450. Any award protest must be in writing and must be delivered by hand delivery or mail to the Procurement Division Director at: Procurement Division, 2051 Kaen Road, Oregon City, OR 97045.

Article 16. Disclosure of First-Tier Subcontractors

Within two (2) working hours after the Bid Closing, all Bidders shall submit to the County a disclosure form identifying any first-tier subcontractors (those entities that would be contracting directly with the prime contractor) that will be furnishing labor and materials on the contract, if awarded, whose subcontract value would be equal to or greater than: (a) Five percent (5%) of the total contract price, but at least \$15,000; or (b) \$350,000, regardless of the percentage of the total contract price.

Disclosures may be submitted with the Bid or may be hand delivered to the Bid Closing address or emailed to procurement@clackamas.us.

Article 17. Federal, State and Local Provisions

This project is financed through Federal funds from Clackamas County Health, Housing and Human, Community Development Division. Bidders' attention is particularly directed to the following contract provisions:

17.1 Federal Labor Standards (Davis-Bacon) Prevailing Wage Rates (Is applicable for this project.) The Successful Bidder will be required to comply with Federal Labor Standards Provisions, pay laborers and mechanics not less than the Federal Davis-Bacon prevailing wage rates as determined by the Secretary of Labor, and require his/her subcontractors to comply with these provisions under Davis-Bacon Act, as amended (40 U.S.C. 276a). General Contractor and Subcontractors are required to pay the higher wage classification for workers between BOLI and Davis-Bacon.

17.2 State of Oregon (Bureau of Labor and Industries) Wage Rates (Is applicable for this

project.) The Successful Bidder will be required on various work classifications to comply with State of Oregon Wage Rates. The Successful Bidder will have to compare the Federal (Davis-Bacon) to the State (BOLI) wage rates and pay the higher of the two wage decisions. Public work contracts are subject to ORS 279C.800 to 279C.870 and the Davis-Bacon Act (40 U.S.C. 276a), no bid will be received or considered by the public contracting agency unless the bid contains a statement by the bidder as a part of its bid that the provisions of ORS 279C.800 through ORS 279C.870 or 40 U.S.C. 276a are to be complied with. This is mandated by the Secretary of Labor and the Bureau of Labor and Industries effective as of January 1, 2006. Subcontractors are to comply with these provisions.

17.3 Debarment and Oregon State Licensing Requirements, Local Contract Review Board (LCRB) Rules

The Bidder shall not propose or contract with any subcontractor or other person or organization included in the Debarred, Suspended, and Ineligible Contractors list(s). Furthermore, the Bidder shall not be listed on the State of Oregon Debarred Contractors list, and must be registered on the State of Oregon Construction Contractors Board and possess a current license number.

17.4 Equal Employment Opportunity (General Conditions, Paragraph 15.10)

The Successful Bidder will be required to comply with the provisions as stated in the General Conditions - Abbreviated Construction Contract.

17.5 Federal HUD Section 3 Requirements

The successful Bidder will be required to comply with the provisions of Section 3 of the Housing and Urban Development Act of 1968 as amended (herein referred to as Section 3 requirements). Such provisions require that economic opportunities generated by HUD financial assistance shall, to the greatest extent feasible, be given to low income residents of the metropolitan area in which the project is located and to businesses that provide economic opportunities for these persons.

Contracts exceeding \$100,000 are considered “Section 3 covered contracts.” Bids exceeding \$100,000 must include an indication of whether or not the firm submitting the bid is a “Section 3 business concern.”

A Section 3 business concern is defined by HUD regulations as a business concern:

- (1) That is 51 percent or more owned by Section 3 residents; or
- (2) Whose permanent, full-time employees include persons, at least 30 percent of whom are currently Section 3 residents or, within three years of the date of first employment with the business concern, were Section 3 residents; or
- (3) That provides evidence of a commitment to subcontract in excess of 25 percent of the dollar award of all subcontracts to be awarded to business concerns that meet the qualifications set forth in paragraphs (1) or (2) above.

A Section 3 resident means:

- (1) A public housing resident; or
- (2) An individual who resides in the metropolitan area in which the Section 3 covered assistance is expended, and who is a low-income person or a very low-income person. For purposes of this project residents of the Portland/Vancouver metropolitan area who are members of families meeting the following income limits are considered low or very low income persons.

HUD 2022 Income Limits- Portland-Vancouver-Hillsboro OR-WA Area		
Household Size	Very Low Income	Low Income
1 Person	\$37,300	\$59,650
2 Person	\$42,600	\$68,200
3 Person	\$47,950	\$76,700
4 Person	\$53,250	\$85,200
5 Person	\$57,550	\$92,050
6 Person	\$61,800	\$98,850
7 person	\$66,050	\$105,650

8 Person	\$70,300	\$112,500
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If applicable, the Section 3 Clause required under 24 C.F.R. § 135.38 will be incorporated into this solicitation and any contract executed between Owner and Successful Bidder.

17.6 Notice of Requirement for Affirmative Action to Ensure Equal Employment

Opportunity - Executive Order 11246 (General Conditions, Paragraph 15.16):

17.7 The Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth in the Contract at Paragraphs 15.14 and 15.16 of the General Conditions.

17.8 The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as follows:

MINORITY GOALS AND TIMETABLES

TIMETABLE	TRADE	GOAL (Percent)
Until further notice	All	4.5

FEMALE GOALS AND TIMETABLES

TIMETABLE	GOAL (Percent)
Until further notice	6.9

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the contractor's goals shall be a

violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

As used in this Notice, and in the Contract resulting from this solicitation, the "covered area" is Clackamas County, Oregon.

17.9 Certification of Nonsegregated Facilities*

By signing the Bid Proposal, the Bidder certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The Bidder certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The Bidder agrees that a breach of this certification will be a violation of the Equal Opportunity clause in any contract resulting from acceptance of this Bid. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restroom and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where he has obtained identical certification from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which

are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

17.10 Submission of Compliance Documents

In order to document this compliance with Community Development Division requirements and Federal regulations, the Successful Bidder will be required to submit and to require his subcontractors to submit various forms and reports required by the Contract Documents, including: (a) Contract and Sub-Contract Activity Form; (b) Clackamas County Female Owned Business Form; (c) Contractor/Subcontractor Contract Agreement, whether the contractor or subcontractor is a sole proprietor, an owner performing all work on the project, a contractor with no employees, or otherwise.

17.11 Disclosure of Proposed Subcontractors

For Subcontractors that provide bids to the Contractor (i.e. General) for this project, amounts of \$5,000 dollars and or greater, provide the following information to Clackamas County:

- 1) Company Name
- 2) Oregon CCB Number
- 3) Full Mailing Address
- 4) Federal Tax ID Number
- 5) Type of Trade Work for Project
- 6) Contracted Dollar Amount

Clackamas County will provide a HUD 2516 Form

17.12 Affirmative Action for Handicapped Workers (General Conditions, Paragraph 15.11)

The Successful Bidder will be required to comply with the U.S. Department of Labor Regulations prohibiting employment discrimination against and requiring affirmative action to employ mentally or physically handicapped workers.

17.13 State of Oregon Equal Employment Opportunity

The Successful Bidder will be required to comply with the requirements of ORS Chapter 659 relating to equal employment opportunity, including nondiscrimination on the basis of mental or physical



**CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT**

SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

**Project Name: Clackamas County Children’s Commission –
Estacada Head Start Improvements Project (CD #1796)
(Estacada, OR)**

The following modify the Clackamas County “Instructions to Bidders” for this Project. Where a portion of the Instructions to Bidders has been modified by these Supplemental Instructions to Bidders, the unaltered portions shall remain in effect.

1. Submission of Bids by email: The County is requiring all bids for this project be electronically submitted. Complete Bids (including all attachments) must be received by the closing time and date **3:00 p.m. Pacific Time, September 22, 2022**. The Bid must be emailed to the following address: acouncil@clackamas.us. The email subject line must read **“Bid for ClackCoKids Estacada Head Start Improvements Project”**. Upon receiving of the bid, the County will send bidders an email confirmation acknowledging receipt. Bids delayed or lost by email system filtering or failures may be considered at Clackamas County’s sole and absolute discretion.

Bids will be publicly read aloud via the computer application, Zoom. Bidders will be allowed to video conference or listen by phone to the bid results. The projects Zoom meeting can be accessed via the information below:

Join Zoom Meeting

<https://clackamascounty.zoom.us/j/82107068019>

Meeting ID: 821 0706 8019

One tap mobile

+13462487799,,82107068019# US (Houston)

+14086380968,,82107068019# US (San Jose)

Dial by your location

+1 346 248 7799 US (Houston)

+1 408 638 0968 US (San Jose)

+1 669 444 9171 US

+1 669 900 6833 US (San Jose)

+1 253 215 8782 US (Tacoma)

+1 312 626 6799 US (Chicago)

+1 646 876 9923 US (New York)

+1 646 931 3860 US

+1 301 715 8592 US (Washington DC)
Meeting ID: 821 0706 8019
Find your local number: <https://clackamascounty.zoom.us/j/82107068019>

Join by SIP
[82107068019@zoomcrc.com](https://zoom.us/j/82107068019)

Join by H.323
162.255.37.11 (US West)
162.255.36.11 (US East)
115.114.131.7 (India Mumbai)
115.114.115.7 (India Hyderabad)
213.19.144.110 (Amsterdam Netherlands)
213.244.140.110 (Germany)
103.122.166.55 (Australia Sydney)
103.122.167.55 (Australia Melbourne)
149.137.40.110 (Singapore)
64.211.144.160 (Brazil)
149.137.68.253 (Mexico)
69.174.57.160 (Canada Toronto)
65.39.152.160 (Canada Vancouver)
207.226.132.110 (Japan Tokyo)
149.137.24.110 (Japan Osaka)
Meeting ID: 821 0706 8019

**The Apparent Low bid results will be posted to the projects OregonBuys listing as soon as possible following the bid opening.

2. The General Contractor awarded this construction contract will pay for all permit fees associated with the building. Moreover, this dollar amount is to be included in the General Contractor's Bid Proposal. The Bid Proposal has a list of specific Permit Items. The Permit Amount is by Owner.
3. **Good Faith Effort:** Clackamas County encourages participation in contracts by Historically Underrepresented Businesses. "Historically Underrepresented Businesses" are State of Oregon-certified and self-identified minority, women and emerging small business as well as firms that are certified federally or by another state or entity with substantially similar requirements as the State of Oregon.

Bidders must perform Good Faith Effort (defined below) and submit **Form 1 and Form 2** for the Bidders Bid to be considered responsive. **Form 1 and Form 2** must be submitted within **two (2) hours** after the Closing Date and Time. Form 1 and Form 2 may be submitted by hand delivery to the location the Bid was due or

may email the completed Forms to acouncil@clackamas.us. “Good Faith Effort” is a requirement of a prime contractor to reach out to at least three Historically Underrepresented Business Subcontractors for each division of work that will be subcontracted out and to complete the required forms. If fewer than three Historically Underrepresented Business Subcontractors are reasonably available for a particular division of work, the Bidder must specifically note the reason for there being fewer than three contacts. The outreach should be performed with sufficient time to give the subcontractors at least 5 calendar days to respond to the opportunity. Form 3, which documents the actual amount of subcontractors on the project, must be submitted with the project final pay application. Compliance with the Good Faith Effort and submission of Forms 1, 2 and 3 is a contractual requirement for final payment.

The sufficiency of the documentation or the performance of Good Faith Effort shall be in the sole and absolute determination of Clackamas County. Only those Bidders that Clackamas County has determined have not sufficiently performed Good Faith Effort shall have protest rights of the determination for such Bidder. No Bidder shall have protest rights of the sufficiency of any other Bidder completing Good Faith Effort.

**CLACKAMAS COUNTY
GOOD FAITH EFFORT
SUBCONTRACTOR AND SELF-PERFORMED WORK LIST
(FORM 1)**

Prime Contractor Name:

Total Contract Amount:

Project Name: Clackamas County Children's Commission, Estacada Head Start Improvements Project / Estacada, OR (CD#1796)

PRIME SELF-PERFORMING: Identify below ALL GFE Divisions of Work (DOW) to be self-performed. Good Faith Efforts are otherwise required.

DOW BIDDER WILL SELF-PERFORM (GFE not required)

PRIME CONTRACTOR SHALL DISCLOSE AND LIST ALL SUBCONTRACTORS, including those Minority-owned, Woman-owned, and Emerging Small Businesses ("M/W/ESB") that you intend to use on the project. Email delivery to Amy Council, 2051 Kaen Road, Oregon City, OR 97045 or email to acouncil@clackamas.us within 2 hours of the BID/Quote Closing Date/Time

LIST ALL SUBCONTRACTORS BELOW Use <u>correct legal name</u> of Subcontractor (No Assumed Business Names)	Division of Work (Painting, electrical, landscaping, etc.) List ALL DOW performed by Subcontractors	DOLLAR AMOUNT OF SUBCONTRACT	If Certified or self-reporting MBE/WBE/ESB Subcontractor Check box <input checked="" type="checkbox"/>		
			MBE	WBE	ESB
Name BOLES BROTHERS Address 2830 NE MOUNTAIN TOP City/St/Zip NEW BERG RD Phone# 503-209-6424 OCCB#	PAINTING		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name COY ELECTRIC INC Address PO Box 1046 City/St/Zip MULINO 97042 Phone# 503-600-0111 OCCB# 9386	ELECTRIC		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name S.R. JOHNSON PLUMBING Address PO Box 100 City/St/Zip CANBY OR 97013 Phone# 503-266-7885 OCCB# 59426	PLUMBING		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name ENR CONSTRUCTION Address 2449 MICHAEL DR NE City/St/Zip SALEM OR 9705 Phone# 503-932-2275 OCCB# 171944	FRAMING/ CONCRETE		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

GFE SUBCONTRACTOR AND SELF-PERFORMED WORK LIST (FORM 1) cont'd

Prime Contractor Name:

Total Contract Amount:

Project Name: Clackamas County Children's Commission -
Estacada Head Start Improvements Project
Estacada, OR (CD#1796)

<p align="center"><u>LIST ALL SUBCONTRACTORS BELOW</u> Use <u>correct legal name</u> of Subcontractor (No Assumed Business Names)</p>	<p align="center">Division of Work (Painting, electrical, landscaping, etc.) List ALL DOW performed by Subcontractors</p>	<p align="center">DOLLAR AMOUNT OF SUBCONTRACT</p>	<p align="center">If Certified or self-reporting MBE/WBE/ESB Subcontractor</p>		
			<p align="center">Check box <input checked="" type="checkbox"/></p>		
			MBE	WBE	ESB
<p>Name WILAMETTE HVAC Address 3075 SE CENTURY BLVD City/St/Zip HILLSBORO OR 97123 Phone# 503-259-3200 OCCB# 56951</p>	<p>HVAC</p>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Name NORTHERN ALLIANCE LANDSCAPING Address 12095 S BARBARA WAY City/St/Zip MOCLALLA OR 97038 Phone# 503-829-4625 OCCB# 9139</p>	<p>LANDSCAPING</p>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Name Address City/St/Zip Phone# OCCB#</p>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Name Address City/St/Zip Phone# OCCB#</p>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Name Address City/St/Zip Phone# OCCB#</p>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Name Address City/St/Zip Phone# OCCB#</p>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Name Address City/St/Zip Phone# OCCB#</p>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**CLACKAMAS COUNTY
GOOD FAITH EFFORT
M/W/ESB CONTACT / BIDS RECEIVED LOG
(FORM 2)**

Prime Contractor:

Project: Clackamas County Children's Commission – Estacada Head Start Improvements Project (CD#1796)

Prime Contractor must contact or endeavor to contact at least 3 M/W/ESB Subcontractors for each Division of Work. Prime Contractor shall record its contacts with M/W/ESB Subcontractors through use of this log (or equivalent) entering all required information. All columns shall be completed where applicable. Additional forms may be copied if needed.

NAME OF M/W/ESB SUBCONTRACTOR	Divisions of Work (Painting, electrical, landscaping, etc.)	Date Solicitation Letter / Fax Sent	PHONE CONTACT		BID ACTIVITY Check Yes or No			REJECTED BIDS (if bid received & not used)		Notes
			Date of Call	Person Receiving Call	Will Bid	Bid Received	Bid Used	Bid Amount	Reason Not Used (Price, Scope or Other. If Other, explain in Notes>>)	
SEE ATTACHED CENTER	CONTRACTOR LIST			PLAN	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			
					<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			
					<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			
					<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			
					<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			
					<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			



Contractor Plan Center, Inc. does not guarantee the validity or accuracy of any data, claim that will appear in this information and is not responsible for any error or omission contained in the Plan Checkout Report. The information contained in the Plan Checkout Report is for the exclusive benefit of our members and any member found to distribute, or provide access to our website to a non member to obtain information will be subject to fines, suspension or termination of membership. No refunds on terminated memberships.

(925) Clackamas County Childrens Commission - Estacada Head Start Improvements Project
#1796, #S-C01010-00004129

Sep 22 - 3 pm

Company	Phone	Fax	Discipline	Minority
- Division 1 -				
2KG Contractors Inc Kevin Folker	503-489-2020	503-489-0990	General Contractor	
Banlin Construction LLC Larry Brooks	360-839-4944	360-828-7513	General Contractor	
Bold Elements Co. George Kuznetsov	503-970-4155		General Contractor, Siding, Windows, Finish Carpentry	
Cedar Mill Construction Co. Jesse	503-885-9370	503-885-9360	General Contractor	
DSL Builders JJ Macedo	503-363-0202	503-371-5337	General Contractor, Carpentry, Steel Erection, Plumbing	
GT Landscape Solutions Scott Friedman	503-362-7327	503-364-6391	General Contractor, Sitework, Landscape & Irrigation	
Kirby Nagelhout Construction Co. Chris Prah	503-530-8420		General Contractor	
Lee Contractors Estimating	360-723-5295		General Contractor, Concrete	
Malarkey Roofing Products Pat Reddaway	253-222-5331		Roofing	
MEI Group Amber Hill	503-674-0900	503-674-0909	General Contractor, Sitework, Utilities	
Merit Contractor of Oregon Harold Fox	503-282-0338	503-285-2200	Construction Clean Up	
Pacific Excavation, Inc. Bill Chisholm	503-747-8445	503-822-5572	General Contractor	
Par-Tech Construction Roger Parsons	503-557-8300	503-557-8325	Prime Contractor	
Paul Brothers, Inc. Bill Kitchen	503-663-1220	503-663-7208	General Contractor, Landscaping, Irrigation, Earth Moving, Drainage	
Petra Design-Build LLC Eli Kimmel	503-858-9437		General Contractor, Framing, Exterior Siding, Painting, Flooring, HVAC, Electrical, Plumbing	

Ross Builders NW, LLC Alex Jamieson			General Contractor	
Skyward Construction, Inc. Erica Cheek	360-546-1625	360-546-1630	Prime Contractor	
Specialty Coatings, Inc Margaret Hartmann	503-644-7500		Resilient Flooring, Polishing	
Stotts Construction Company Bill Stotts	503-318-5366	503-318-5366	General Contractor	
Tapani, Inc. Loviisa Wisti		360-687-7968	General Contractor, Sitework, Utilities, Landscape, Irrigation, Demolition	
Triplett Wellman Inc Nick Wellman	503-982-4188	503-982-0390	Prime Contractor	
- Division 2 -				
Anderson Erosion Control, Inc Jim Anderson	541-998-2062	541-998-3261	Landscaping, Irrigation, Erosion Control	Yes
Belfor Environmental Brian Nolte	360-706-7271		Asbestos, Lead, Mold, Demolition	
Brix Paving Northwest Inc. Justin Gunden	503-570-9355	503-570-9365	Asphalt Paving	
Consolidated Supply Alex Evans	503-620-7050	503-968-2920	Civil Underground Utilities Supplier: Pipes, Fittings, Valves, Pumps, Septic Systems, Private & Public Utility Services, Landscape Irrigation	
Eastside Paving Inc. Sean Patrick	503-519-6479	503-492-7564	Asphalt Paving, Storm Sewer, Manholes	
Ewing Irrigation Products Casey McWilliams	503-550-2765		Distributor of Commercial, Industrial Landscape & Irrigation Supplies -	
Fox Erosion Control & Landscape Terry	503-654-8816	503-794-3922	Landscape Construction, Irrigation, and Erosion Control	Yes
GT Landscape Solutions Scott Friedman	503-362-7327	503-364-6391	General Contractor, Sitework, Landscape & Irrigation	
HD Fowler Co. Curtis Spaan	503-783-3490	503-783-3490	Piping, Utility Supplies, Irrigation Supplier, Pump and Septage Supplier.	
Horizon Distributors, Inc. E Rippe		985-801-5138	Irrigation Supplier	
Keywest Retaining Systems Tim Mann		503 682 4408	MSE / SRW Retaining wall	
Knife River Griffin Peal	503-537-8895		Concrete, Rock Supplier, AC Paving	
MEI Group Amber Hill	503-674-0900	503-674-0909	General Contractor, Sitework, Utilities	

Metro Overhead Door Inc. Shawn Burgoyne	503-285-7568	503-285-1793	Automatic Gates, Overhead Doors	
Northwest Hydro-Mulchers, Inc. Barry Cook	503-668-5531	503-668-5532	Hydro-seeding, Straw Mulching, Native Planting	
Pacific Northwest Environmental, LLC Julianne Brostoski	503-658-6606	503-658-6609	Demolition, Asbestos, Lead, Mold.	
Paul Brothers, Inc. Bill Kitchen	503-663-1220	503-663-7208	General Contractor, Landscaping, Irrigation, Earth Moving, Drainage	
Settje Sons Paving LLC James Ernest Settje	971-284-5492		Asphalt paving and grading	
SiteOne Landscape Supply Katherine Heck	248-588-2100	248-581-1373	Irrigation Supplier	
Superior Fence & Construction Greg Heath	503-760-7725	503-762-1127	Fencing	Yes
Tapani, Inc. Loviisa Wisti		360-687-7968	General Contractor, Sitework, Utilities, Landscape, Irrigation, Demolition	
United Sales NW, LLC Ian Johnson	360-524-6040	360-524-6038	Manufacturers Representative - Plumbing	
Willamette Fence Co. Inc. Chris Wade	503-285-2761		Fencing	
Zochert Fence Jason Reid	503-774-4311		Fencing	

- Division 3 -

Accurate Concrete, Inc. Kathy Thompson	503-949-6817		Mono Pour/Footings and Stemwall	Yes
Beltz Restoration & Waterproofing, Inc. Brendon Beltz	503-313-1759		Masonry, Concrete, Waterproofing	
C3S Concrete Services, Inc. Ben Stewart	503-674-3295		Structural Concrete, Foundations, Flat Work	
Knife River Griffin Peal	503-537-8895		Concrete, Rock Supplier, AC Paving	
Larusso Concrete Ben Juhl	503-563-6780	503-563-6786	Concrete	
National Precast Jim Kuroski	360-573-5775	360-573-1326	Precast Products, Retaining Walls, Architectural Precast, Precast Stair Treads	
Pacific Northwest Environmental, LLC Julianne Brostoski	503-658-6606	503-658-6609	Demolition, Asbestos, Lead, Mold.	
SI Contracting Inc. James Cohron	503-969-7665	503-759-3602	Rebar, Post Tension Installation	

- Division 4 -

Beltz Restoration & Waterproofing, Inc. Brendon Beltz	503-313-1759		Masonry, Concrete, Waterproofing	
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Castle Masonry and Restoration LLC Robert Ray	503-828-6846		Commercial & Residential Masonry	Yes
Milne Masonry Ryan Shanley	503-658-6444	503-658-6295	Masonry	
Natural Stone Designs Jeff Nyleen	503-612-8600	503-691-8515	Stone Fabrication and Installation	

- Division 5 -

Genes Construction Company Matt Carlson			Metal Framing, Insulation, Gypboard, Acoustical	
Northwest Framing Systems, Inc. Nick DeWitt	541-640-3333	208-571-8445	Rough Carpentry, Framing, Steel Erection	
The Harver Company Kevin Hula	503-624-1453	503-684-9830	Metal Stud Frame, Drywall, Acoustic, Plaster, Stucco, Fire Proofing	

- Division 6 -

Bain Associates, Inc. Jeff Elkins	503-735-5497	503-452-0792	Manufacturers Representative	
Cascade Casework Corp. Bill Yates	541-258-3255	541-258-4477	Casework	
Engineered Wood Solutions, Inc. David DePiero	503-703-0589	503-715-0526	Engineered Wood, Metal-Web Wood Trusses, Commercial I-Joists, Manufactured Wood, Glulam Beams	
Genothen Holdings, LLC Larry Wright			Casework, Architectural Woodwork, Finish Carpentry	Yes
Jet Industries Estimating Department	503-363-2334	503-363-2622	Fire Protection, HVAC, Plumbing, Electrical, Cabinet	
Natural Stone Designs Jeff Nyleen	503-612-8600	503-691-8515	Stone Fabrication and Installation	
New Horizons Woodworks Bids	541-482-0653	541-482-7578	Countertops, Casework	
Northwest Framing Systems, Inc. Nick DeWitt	541-640-3333	208-571-8445	Rough Carpentry, Framing, Steel Erection	

- Division 7 -

Advanced Fireproofing & Insulation Co. Devin Kienbaum	503-222-2950	503-222-6332	Building Insulation, Fireproofing	
Architectural Specialties Julie Tennyson	503-232-2966	503-850-6947	Skylight, Access Doors Supply & Install	
Bain Associates, Inc. Jeff Elkins	503-735-5497	503-452-0792	Manufacturers Representative	
Beltz Restoration & Waterproofing, Inc. Brendon Beltz	503-313-1759		Masonry, Concrete, Waterproofing	

Bridgetown Sales, LLC Jim Hutchin	503-493-7480	888-449-2418	Expansion joints, wall protection, cubical curtains and track, entrance mats, acrovyn high impact doors	
Cobra BEC of Portland, LLC Ryan Low	253-736-4967	888-899-1389		
Convoy Supply Carter Howland	503-416-4266	503-416-4272	Roofing & Waterproofing Material Distribution	
Frontier Roofing & Construction, LLC Steve Rosenthal	503-522-0243		Roofing	
Genes Construction Company Matt Carlson			Metal Framing, Insulation, Gypboard, Acoustical	
Great Northwest Gutters, LLC Andy Bridge	503-544-0901	503-925-1019	Gutter Downspout Intallation	
Insulation Contractors Inc. Sean Packer		360-823-1297	Building Insulation, Expansion Joint Cover Assemblies, Wall Protection	
JR Swigart Co, Inc. Kathleen			Theromplastic Roofing, PVC Roofing, TPO Roofing	
Malarkey Roofiing Products Pat Reddaway	253-222-5331		Roofing	
Martin Sheet Metal, Inc. Ryan Martin	503-647-2248	503-647-2387	Sheet Metal, Metal Roofing, Metal Siding.	
NW Umpqua Roofing and Waterproofing Inc. Candance Paradis	360-723-5653	360-723-5650	Commercial Roofing and Waterproofing	Yes
Pioneer Sheet Metal Jeromy	503-667-0175	503-492-4645	Built up, Single Ply & Metal Roofing	
Pioneer Sheet Metal John	503-492-1095	503-492-4645	Built up, Single Ply & Metal Roofing	
Portland Sheet Metal Works, Inc. Jon	503-654-8582	503-654-4919	Sheet Metal	
Roof Toppers, Inc. Jerry Homola	360-574-7248	360-574-7905	Single Ply, Shingle & Metal Roofing, Sheet Metal Work	
Soprema David Mansfield	503-758-9920	503-758-9920	Building Envelope Manufacturer	
Sunset Stucco & Exterior, LLC Servando Garcia	503-304-0995	503-304-0780	EIFS, Stucco and Siding	
The Harver Company Kevin Hula	503-624-1453	503-684-9830	Metal Stud Frame, Drywall, Acoustic, Plaster, Stucco, Fire Proofing	
Unlimited Exteriors, LLC	651-528-7272	800-960-3220	Exterior Siding	
WH Cress Company Scott Shaffer	503-620-1664	503-620-5834	Access Hatches, Fire Ext., Toilet Accessories	

Window Tech, Inc. Marina Habashy	425-778-2050	425-778-3476	Windows, Doors and Thermal & Moisture Protection
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- Division 8 -

Bridgetown Sales, LLC Jim Hutchin	503-493-7480	888-449-2418	Expansion joints, wall protection, cubical curtains and track, entrance mats, acrovyn high impact doors
Capitol City Door Dennis Brown	503-585-2501	503-370-7938	Doors
Chosen Wood Window Maintenance Nick Forrest	503-266-3830	503-266-3804	Wood Windows, Steel Windows Yes
Chown Inc. Mark Morton	503-243-6533	503-243-6519	Finish Hardware and Security
DeaMor Associates, Inc.		360-574-3487	Overhead Glazing
Engineered Products A Pape Company Peter Leonard	206-394-3321	360-673-6568	Dock Equipment, Overhead Doors
Gibson Door Company Josiah Poling	503-788-8080	503-788-9090	Doors, Toilet Accessory Supply & Install Yes
Metro Overhead Door Inc. Shawn Burgoyne	503-285-7568	503-285-1793	Automatic Gates, Overhead Doors
The Harver Company Kevin Hula	503-624-1453	503-684-9830	Metal Stud Frame, Drywall, Acoustic, Plaster, Stucco, Fire Proofing
Window Tech, Inc. Marina Habashy	425-778-2050	425-778-3476	Windows, Doors and Thermal & Moisture Protection

- Division 9 -

Bain Associates, Inc. Jeff Elkins	503-735-5497	503-452-0792	Manufacturers Representative
Boles Brothers, Inc. Dustin Boles	503-209-6424	503-213-8881	Painting
Empire Painting Brent Melhus	503-650-3675	503-650-3678	Painting & Wallcovering Yes
Functional Surfacing, LLC David Salenski	360-460-2823	503-468-0076	Fluid-Applied/Resinous Flooring, Traffic Membranes, Concrete Sealer/Densifier
Genes Construction Company Matt Carlson			Metal Framing, Insulation, Gypboard, Acoustical
IUPAT District Council No. 5 Mike James	503-257-6644	503-256-5271	Painting, Drywall, Floor Covering, Glazing
Natural Stone Designs Jeff Nyleen	503-612-8600	503-691-8515	Stone Fabrication and Installation

Precision 1 Coatings, Inc. Scott Conway	971-236-9070	503-699-8985	Painting and Wallcoverings
Quality Affordable Painting LLC Aguiles Aviles	503-887-5158		Painting
Sunset Stucco & Exterior, LLC Servando Garcia	503-304-0995	503-304-0780	EIFS, Stucco and Siding
The Harver Company Kevin Hula	503-624-1453	503-684-9830	Metal Stud Frame, Drywall, Acoustic, Plaster, Stucco, Fire Proofing

- Division 10 -

Architectural Metal Crafters, Inc. Rich Anderson	503-519-4401		Signage / Interior & Exterior / Manufacturing & Installation
Bain Associates, Inc. Jeff Elkins	503-735-5497	503-452-0792	Manufacturers Representative
Bridgetown Sales, LLC Jim Hutchin	503-493-7480	888-449-2418	Expansion joints, wall protection, cubical curtains and track, entrance mats, acrovyn high impact doors
Chown Inc. Mark Morton	503-243-6533	503-243-6519	Finish Hardware and Security
Clean World Maintenance Eric Burris	360-448-1471		Final Cleaning
Delta Connects Matt Axtell	503-670-7200	503-968-0954	DDC Control, Access Controls, HVAC Controls, Lighting Controls, Mechanical Contractor, Security, CCTV, Intrusion Detection, MSI
Engineered Products A Pape Company Peter Leonard	206-394-3321	360-673-6568	Dock Equipment, Overhead Doors
Gibson Door Company Josiah Poling	503-788-8080	503-788-9090	Doors, Toilet Accessory Supply & Install Yes
Keywest Retaining Systems Tim Mann		503 682 4408	MSE / SRW Retaining wall
Pinkham Specialty Co. Dave Pinkham	541-480-6393	541-382-3859	Building Specialties, Toilet, Lockers
Superior Fence & Construction Greg Heath	503-760-7725	503-762-1127	Fencing Yes
United Sales NW, LLC Ian Johnson	360-524-6040	360-524-6038	Manufacturers Representative - Plumbing
Valley Shades, Inc. Zach Garrison	503-489-8321		Window Coverings, Blinds, Roller Shades, Horizontal Blinds, Draperies
WH Cress Company Scott Shaffer	503-620-1664	503-620-5834	Access Hatches, Fire Ext., Toilet Accessories

- Division 11 -

Engineered Products A Pape Company 206-394-3321 360-673-6568 Dock Equipment, Overhead Doors
[Peter Leonard](#)

Pacific Power Products 360-887-5985 360-887-7571 Generators
[PowerGenBids](#)

- Division 12 -

Bridgetown Sales, LLC 503-493-7480 888-449-2418 Expansion joints, wall protection, cubical curtains and track, entrance mats, acrovyn high impact doors
[Jim Hutchin](#)

Cascade Casework Corp. 541-258-3255 541-258-4477 Casework
[Bill Yates](#)

Genothen Holdings, LLC Casework, Architectural Woodwork, Finish [Yes](#)
[Larry Wright](#)
Carpentry

Jet Industries 503-363-2334 503-363-2622 Fire Protection, HVAC, Plumbing, Electrical, Cabinet
[Estimating Department](#)

New Horizons Woodworks 541-482-0653 541-482-7578 Countertops, Casework
[Bids](#)

Valley Shades, Inc. 503-489-8321 Window Coverings, Blinds, Roller Shades, Horizontal Blinds, Draperies
[Zach Garrison](#)

- Division 13 -

Jet Industries 503-363-2334 503-363-2622 Fire Protection, HVAC, Plumbing, Electrical, Cabinet
[Estimating Department](#)

- Division 15 -

360 Sheet Metal, LLC 360-750-8558 360-750-3663 Sheet Metal Fabrication & Air Duct Accessories
[360 Bid Department](#)

A-Absolute Comfort Heating & Cooling 503-513-4795 503-513-0797 Mechanical Contractor
[Andrew Hart](#)

Accurate Balancing Agency, Inc 503-297-6594 503-292-4825 Air & Hydronic, Testing, Adjusting & Balancing [Yes](#)
[Jason Pitzer](#)

Air Balancing Specialty, Inc. 503-230-2332 503-230-2820 HVAC Air Balancing [Yes](#)
[Sandy](#)

Air Commodities - Oregon 503-238-6900 503-238-8764 HVAC Manufacturers Rep
[Jonathan Moss](#)

Air Treatment Corporation 503-729-7413 909-869-7975 HVAC take off of equipment
[Jimmy Moore](#)

Benz Air Engineering Co. Inc. 503-596-2561 503-596-2743 HVAC Manufacturers Rep
[Info](#)

Clima-Tech 503-710-2626 503-850-3044 Controls
[Mike Mason](#)

CoolSys Commercial & Industrial Solutions, Inc. Jim Wisman	503-231-7717	503-230-4888	Sheetmetal and Mechanical Contractor	
Crowwurks Michael A Crow	503-678-2212	503-729-8305	Freelance Plumbing and Mechanical Estimator	
Delta Connects Matt Axtell	503-670-7200	503-968-0954	DDC Control, Access Controls, HVAC Controls, Lighting Controls, Mechanical Contractor, Security, CCTV, Intrusion Detection, MSI	
Ductz of Greater Portland Gary Fields	503-539-7368	503-539-7368	Cleaning & Restoration of HVAC Systems	
Ferguson Enterprises, Inc. Kevin Raffaelli	503-283-3330	503-735-4475	Plumbing Wholesale	
Hollabaugh Bros. Brennan Nelson		503-235-2824	Plumbing, Heating	
HVAC, Inc. Ken Alcock	503-462-4822	503-462-6555	Mechanical Contractor	
Jet Industries Estimating Department	503-363-2334	503-363-2622	Fire Protection, HVAC, Plumbing, Electrical, Cabinet	
Johnson Air Products Douglas Smith	503-234-5071	503-233-0451	HVAC Supplier	
JRT Mechanical Inc. Stefan Erickson	360-666-0330	360-666-0830	Plumbing, Hydronics	
Just Right Heating and Cooling Henry Marion		360-836-8292	HVAC	Yes
Keller Supply Tim Hope	503-232-2800	503-232-5851	Plumbing Supplier	
Mechanical Sales, Inc. Tyler Chin	971-236-9889	206-762-7236	Boilers, Burners, Pumps, Wetside	
Precision Test & Balance Inc. Adam Jakobsen	503-639-2538	503-684-6259	HVAC Testing & Balancing	
Reed Plumbing Julie Reed	503-572-3785	503-656-1374	Plumbing, Natural Gas Lines, Fire Suppression, Residential	
Robert Lloyd Sheet Metal Joshua Cook	503-606-5016	503-838-3964	HVAC	
Trane U.S. Inc. Wanda Slavik	503-620-8031		HVAC Supplier, Fire Suppression, Plumbing	
United Sales NW, LLC Ian Johnson	360-524-6040	360-524-6038	Manufacturers Representative - Plumbing	
West Coast Air Products Neil Watt	503-786-1412	503-786-1413	HVAC Manufacturers Rep	Yes
Willard Power Vac Daniel Busby	503-256-9905	503-256-0662	HVAC Systems Cleaning	
Winsupply of Portland Mark Wager	503-223-2202	503-223-2408	Wholesale Plumbing, Industrial Pipe and valves, Fire supression, Landscape	

Clackamas County Childrens Commission - Estacada Head Start Improvements Project... Continued

Company	Phone	Fax	Discipline	Minority
- Division 16 -				
A C & E Electric Co. LLC Kenny Gates			Electrical Contractor	
A C & E Electric Co. LLC Jeff Haga			Electrical Contractor	
A C & E Electric Co. LLC Tom Vitolo			Electrical Contractor	
Blueridge Lighting and Controls Chip Pettitt	503-644-5618	503-644-5619	Manufacture Representative	
Crescent Electric Supply Company JoDee Kyllo	503-222-4000	503-222-0663	Electrical Distribution	
Graybar Electric Heather Moyer	503-249-1300	503-249-8273	Electrical Supplier	
Harry L Stearns Shawn Golden	503-262-2640	503-262-2651	Lighting Supplier	
Jet Industries Estimating Department	503-363-2334	503-363-2622	Fire Protection, HVAC, Plumbing, Electrical, Cabinet	
La Londe Electric, LLC Bruce La Londe	503-969-8491	503-630-5571	Electrical Contractor, Communication	Yes
MD Electrical Services Michael	503-504-7960	503-504-7960	Electrical	Yes
North Coast Electric Debbie Brokaw	503-281-8888	503-335-9580	Electrical Supplier	
Northern Illumination Company, Inc. David Myrick		503-893-1159	Lighting supplier	
Northern Illumination Company, Inc. Bryce Herman		503-893-1159	Lighting supplier	
Northern Illumination Company, Inc. David Wray	503-893-1157	503-893-1159	Lighting supplier	
Northern Illumination Company, Inc. Tana Bishop		503-893-1159	Lighting supplier	
Pacific Power Products PowerGenBids	360-887-5985	360-887-7571	Generators	
Portland Electrical Construction Inc. Greg Boen	503-655-2281	503-655-5033	Electrical Contractor	
Portland Electrical Construction Inc. Aaron Lloyd		503-655-5033	Electrical Contractor	
Rexel Sid Thiel	503-612-5248	503-691-8082	Electrical Supplier	
The Lighting Project Kristin McGill	503-720-2222		Electrical, Lighting	
- Division 17 -				

MD Electrical Services Michael	503-504-7960	503-504-7960	Electrical	Yes
Willy Make It? Tom Richmond	503-261-1234	503-261-1234	Portable Toilets, Portable Sinks, Holding Tanks	

- Division 21 -

ADT Commercial Kevin Miller	971-400-1833	971-400-1833		
Jet Industries Estimating Department	503-363-2334	503-363-2622	Fire Protection, HVAC, Plumbing, Electrical, Cabinet	
WH Cress Company Scott Shaffer	503-620-1664	503-620-5834	Access Hatches, Fire Ext., Toilet Accessories	

- Division 22 -

A-Absolute Comfort Heating & Cooling Andrew Hart	503-513-4795	503-513-0797	Mechanical Contractor	
Caliber Plumbing & Mechanical Matthew Dorn	971-246-1071		Plumbing and Mechanical	
Crowwurks Michael A Crow	503-678-2212	503-729-8305	Freelance Plumbing and Mechanical Estimator	
Ferguson Enterprises, Inc. Kevin Raffaelli	503-283-3330	503-735-4475	Plumbing Wholesale	
Hollabaugh Bros. Brennan Nelson		503-235-2824	Plumbing, Heating	
JB Oregon Johnson-Barrow Inc. Matt Donovan			Mechanical	
Jet Industries Estimating Department	503-363-2334	503-363-2622	Fire Protection, HVAC, Plumbing, Electrical, Cabinet	
JRT Mechanical Inc. Stefan Erickson	360-666-0330	360-666-0830	Plumbing, Hydronics	
Keller Supply Tim Hope	503-232-2800	503-232-5851	Plumbing Supplier	
Mechanical Sales, Inc. Tyler Chin	971-236-9889	206-762-7236	Boilers, Burners, Pumps, Wetside	
Synergy Sales NW, LLC Brenda Cashdollar			Manufacturer	
United Sales NW, LLC Ian Johnson	360-524-6040	360-524-6038	Manufacturers Representative - Plumbing	
Winsupply of Portland Mark Wager	503-223-2202	503-223-2408	Wholesale Plumbing, Industrial Pipe and valves, Fire supression, Landscape	

- Division 23 -

360 Sheet Metal, LLC 360 Bid Department	360-750-8558	360-750-3663	Sheet Metal Fabrication & Air Duct Accessories	
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A-Absolute Comfort Heating & Cooling Andrew Hart	503-513-4795	503-513-0797	Mechanical Contractor	
Accurate Balancing Agency, Inc Jason Pitzer	503-297-6594	503-292-4825	Air & Hydronic, Testing, Adjusting & Balancing	Yes
Air Balancing Specialty, Inc. Sandy	503-230-2332	503-230-2820	HVAC Air Balancing	Yes
Air Commodities - Oregon Jonathan Moss	503-238-6900	503-238-8764	HVAC Manufacturers Rep	
Air Treatment Corporation Jimmy Moore	503-729-7413	909-869-7975	HVAC take off of equipment	
Benz Air Engineering Co. Inc. Info	503-596-2561	503-596-2743	HVAC Manufacturers Rep	
Caliber Plumbing & Mechanical Matthew Dorn	971-246-1071		Plumbing and Mechanical	
Clima-Tech Mike Mason	503-710-2626	503-850-3044	Controls	
Commercial Insulation Services, LLC Tamara Carbaugh	971-235-1054		Mechanical Insulation	Yes
CoolSys Commercial & Industrial Solutions, Inc. Jim Wisman	503-231-7717	503-230-4888	Sheetmetal and Mechanical Contractor	
Crowwurks Michael A Crow	503-678-2212	503-729-8305	Freelance Plumbing and Mechanical Estimator	
Dans Top Notch Heating & Cooling Inc. Daniel Reude	360-607-2815		HVAC	
Delta Connects Matt Axtell	503-670-7200	503-968-0954	DDC Control, Access Controls, HVAC Controls, Lighting Controls, Mechanical Contractor, Security, CCTV, Intrusion Detection, MSI	
Ductz of Greater Portland Gary Fields	503-539-7368	503-539-7368	Cleaning & Restoration of HVAC Systems	
Environmental Controls & Oregon Air Reps Jeff Stephens			HVAC Controls	
Environmental Controls & Oregon Air Reps Kurt Schultheis			HVAC Controls	
Hollabaugh Bros. Brennan Nelson		503-235-2824	Plumbing, Heating	
HVAC, Inc. Ken Alcock	503-462-4822	503-462-6555	Mechanical Contractor	
JB Oregon Johnson-Barrow Inc. Matt Donovan			Mechanical	
Jet Industries Estimating Department	503-363-2334	503-363-2622	Fire Protection, HVAC, Plumbing, Electrical, Cabinet	

Johnson Air Products Douglas Smith	503-234-5071	503-233-0451	HVAC Supplier	
Just Right Heating and Cooling Henry Marion		360-836-8292	HVAC	Yes
Keller Supply Tim Hope	503-232-2800	503-232-5851	Plumbing Supplier	
Mechanical Sales, Inc. Tyler Chin	971-236-9889	206-762-7236	Boilers, Burners, Pumps, Wetside	
Neudorfer Engineers, Inc William Neudorfer	206-621-1810	206-343-9820	Test and Balance	
ONEC USA Matthew Kramer	503-545-1368		Building Automation Controls Systems	
Precision Test & Balance Inc. Adam Jakobsen	503-639-2538	503-684-6259	HVAC Testing & Balancing	
Robert Lloyd Sheet Metal Joshua Cook	503-606-5016	503-838-3964	HVAC	
Sustainable Mechanical Systems David Havelick	503-703-2042		HVAC Equipment Supplier	Yes
Trane U.S. Inc. Wanda Slavik	503-620-8031		HVAC Supplier, Fire Suppression, Plumbing	
West Coast Air Products Neil Watt	503-786-1412	503-786-1413	HVAC Manufacturers Rep	Yes
Willard Power Vac Daniel Busby	503-256-9905	503-256-0662	HVAC Systems Cleaning	

- Division 25 -

Delta Connects Matt Axtell	503-670-7200	503-968-0954	DDC Control, Access Controls, HVAC Controls, Lighting Controls, Mechanical Contractor, Security, CCTV, Intrusion Detection, MSI	
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- Division 26 -

A C & E Electric Co. LLC Kenny Gates			Electrical Contractor	
A C & E Electric Co. LLC Jeff Haga			Electrical Contractor	
A C & E Electric Co. LLC Tom Vitolo			Electrical Contractor	
Graybar Electric Heather Moyer	503-249-1300	503-249-8273	Electrical Supplier	
Harry L Stearns Shawn Golden	503-262-2640	503-262-2651	Lighting Supplier	
Jet Industries Estimating Department	503-363-2334	503-363-2622	Fire Protection, HVAC, Plumbing, Electrical, Cabinet	

La Londe Electric, LLC Bruce La Londe	503-969-8491	503-630-5571	Electrical Contractor, Communication	Yes
MD Electrical Services Michael	503-504-7960	503-504-7960	Electrical	Yes
North Coast Electric Debbie Brokaw	503-281-8888	503-335-9580	Electrical Supplier	
Northwest Lighting & Controls Douglas Carpenter	503-208-3993		Lighting, Lighting Controls, Energy Management	
Pacific Power Products PowerGenBids	360-887-5985	360-887-7571	Generators	
Platt Electric Supply Brandon Dieni	503-641-6121		Electrical	
Portland Electrical Construction Inc. Aaron Lloyd		503-655-5033	Electrical Contractor	
Portland Electrical Construction Inc. Greg Boen	503-655-2281	503-655-5033	Electrical Contractor	
Rexel Sid Thiel	503-612-5248	503-691-8082	Electrical Supplier	
The Lighting Project Kristin McGill	503-720-2222		Electrical, Lighting	

- Division 27 -

A C & E Electric Co. LLC Kenny Gates			Electrical Contractor	
A C & E Electric Co. LLC Jeff Haga			Electrical Contractor	
A C & E Electric Co. LLC Tom Vitolo			Electrical Contractor	
Delta Connects Matt Axtell	503-670-7200	503-968-0954	DDC Control, Access Controls, HVAC Controls, Lighting Controls, Mechanical Contractor, Security, CCTV, Intrusion Detection, MSI	
Huser Integrated Technologies Billy Nichols	503-227-6688	503-227-6688	Access Control, Video, Security, Fire Alarm, Low Voltage Systems	Yes
MD Electrical Services Michael	503-504-7960	503-504-7960	Electrical	Yes
Portland Electrical Construction Inc. Aaron Lloyd		503-655-5033	Electrical Contractor	
Portland Electrical Construction Inc. Greg Boen	503-655-2281	503-655-5033	Electrical Contractor	

- Division 28 -

A C & E Electric Co. LLC Jeff Haga			Electrical Contractor	
A C & E Electric Co. LLC Kenny Gates			Electrical Contractor	

A C & E Electric Co. LLC Tom Vitolo			Electrical Contractor	
Absco Solutions Sales Support	425-771-1166	503-893-3288	Systems Integration and Service for Fire, Access Control, Video Surveillance, and Security Systems	
Chown Inc. Mark Morton	503-243-6533	503-243-6519	Finish Hardware and Security	
Delta Connects Matt Axtell	503-670-7200	503-968-0954	DDC Control, Access Controls, HVAC Controls, Lighting Controls, Mechanical Contractor, Security, CCTV, Intrusion Detection, MSI	
Global Security & Communication, Inc. AJ Gomez	360-772-2566			
Huser Integrated Technologies Billy Nichols	503-227-6688	503-227-6688	Access Control, Video, Security, Fire Alarm, Low Voltage Systems	Yes
MD Electrical Services Michael	503-504-7960	503-504-7960	Electrical	Yes
Portland Electrical Construction Inc. Aaron Lloyd		503-655-5033	Electrical Contractor	
Portland Electrical Construction Inc. Greg Boen	503-655-2281	503-655-5033	Electrical Contractor	

- Division 31 -

Cascade Geosynthetics Melissa Hurley	503-891-6927		Geosynthetic & Erosion Control BMP Supply	
GT Landscape Solutions Scott Friedman	503-362-7327	503-364-6391	General Contractor, Sitework, Landscape & Irrigation	
MEI Group Amber Hill	503-674-0900	503-674-0909	General Contractor, Sitework, Utilities	
Tapani, Inc. Loviisa Wisti		360-687-7968	General Contractor, Sitework, Utilities, Landscape, Irrigation, Demolition	

- Division 32 -

Anderson Erosion Control, Inc Jim Anderson	541-998-2062	541-998-3261	Landscaping, Irrigation, Erosion Control	Yes
Andres Landscape Noah Abel	503-632-3366	503-632-3367		
Brix Paving Northwest Inc. Justin Gunden	503-570-9355	503-570-9365	Asphalt Paving	
Colors NW, Inc. Bretton Weinstein			Landscape and Irrigation, Hardscaping, Pavers, Retaining Walls	Yes

Colors NW, Inc. Steven Hersha			Landscape and Irrigation, Hardscaping, Pavers, Retaining Walls	Yes
Consolidated Supply Alex Evans	503-620-7050	503-968-2920	Civil Underground Utilities Supplier: Pipes, Fittings, Valves, Pumps, Septic Systems, Private & Public Utility Services, Landscape Irrigation	
Eastside Paving Inc. Sean Patrick	503-519-6479	503-492-7564	Asphalt Paving, Storm Sewer, Manholes	
Ewing Irrigation Products Casey McWilliams	503-550-2765		Distributor of Commercial, Industrial Landscape & Irrigation Supplies -	
Fox Erosion Control & Landscape Terry	503-654-8816	503-794-3922	Landscape Construction, Irrigation, and Erosion Control	Yes
GlenCo Creations Glen McKinney	503-915-6250		Landscape	
GT Landscape Solutions Scott Friedman	503-362-7327	503-364-6391	General Contractor, Sitework, Landscape & Irrigation	
HD Fowler Co. Curtis Spaan	503-783-3490	503-783-3490	Piping, Utility Supplies, Irrigation Supplier, Pump and Septage Supplier,	
Horizon Distributors, Inc. E Rippe		985-801-5138	Irrigation Supplier	
Knife River Griffin Peal	503-537-8895		Concrete, Rock Supplier, AC Paving	
Larusso Concrete Ben Juhl	503-563-6780	503-563-6786	Concrete	
Northern Alliance Landscaping Kellie Merten	503-868-9133		Landscape and Irrigation	Yes
Northwest Hydro-Mulchers, Inc. Barry Cook	503-668-5531	503-668-5532	Hydro-seeding, Straw Mulching, Native Planting	
Pac Green Landscape, LLC Roseanna Bryan			Landscape and Irrigation	Yes
Paul Brothers, Inc. Bill Kitchen	503-663-1220	503-663-7208	General Contractor, Landscaping, Irrigation, Earth Moving, Drainage	
Reliable Fence & Construction, Inc.	503-669-8148		Chain link fence and gate	Yes
SiteOne Landscape Supply Katherine Heck	248-588-2100	248-581-1373	Irrigation Supplier	
Superior Fence & Construction Greg Heath	503-760-7725	503-762-1127	Fencing	Yes
ValleyScapes Adam Lowery	503-789-8229		Landscape Construction	

Willamette Fence Co. Inc. Chris Wade	503-285-2761		Fencing
Winsupply of Portland Mark Wager	503-223-2202	503-223-2408	Wholesale Plumbing, Industrial Pipe and valves, Fire suppression, Landscape
Zochert Fence Jason Reid	503-774-4311		Fencing

- Division 33 -

Consolidated Supply Alex Evans	503-620-7050	503-968-2920	Civil Underground Utilities Supplier: Pipes, Fittings, Valves, Pumps, Septic Systems, Private & Public Utility Services, Landscape Irrigation
Eastside Paving Inc. Sean Patrick	503-519-6479	503-492-7564	Asphalt Paving, Storm Sewer, Manholes
GT Landscape Solutions Scott Friedman	503-362-7327	503-364-6391	General Contractor, Sitework, Landscape & Irrigation
HD Fowler Co. Curtis Spaan	503-783-3490	503-783-3490	Piping, Utility Supplies, Irrigation Supplier, Pump and Septage Supplier,
Keywest Retaining Systems Tim Mann		503 682 4408	MSE / SRW Retaining wall
MEI Group Amber Hill	503-674-0900	503-674-0909	General Contractor, Sitework, Utilities
Tapani, Inc. Loviisa Wisti		360-687-7968	General Contractor, Sitework, Utilities, Landscape, Irrigation, Demolition
Winsupply of Portland Mark Wager	503-223-2202	503-223-2408	Wholesale Plumbing, Industrial Pipe and valves, Fire suppression, Landscape

- Division 34 -

Cantel Barricades Mark Shanders	503-234-0800	503-234-1797	Traffic Barricades, Traffic Control, Traffic Safety
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- Division 48 -

MD Electrical Services Michael	503-504-7960	503-504-7960	Electrical	Yes
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**CLACKAMAS COUNTY
GOOD FAITH EFFORT
PROJECT COMPLETION REPORT
(FORM 3)**

Prime Contractor Name:

Total Contract Amount:

Project Name: Clackamas County Children’s Commission – Estacada Head Start Improvements Project (CD#1796)

Complete this form and submit with your request for final payment upon the project completion. Please list all subcontractors used for the project. Use additional sheets as necessary.

<u>LIST ALL</u> SUBCONTRACTORS BELOW Use correct legal name of Subcontractor (No Assumed Business Names)	Division of Work (Painting, electrical, landscaping, etc.) List ALL DOW performed by Subcontractors	FINAL DOLLAR AMOUNT OF SUBCONTRACT	If Certified or self-reported MBE/WBE/ESB Subcontractor Check box <input checked="" type="checkbox"/>		
			MBE	WBE	ESB
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Name Address City/St/Zip Phone# OCCB#			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

BY SIGNING BELOW, I HEREBY CERTIFY THAT THE ABOVE LISTED FIRMS HAVE BEEN UTILIZED BY OUR COMPANY IN THE AMOUNTS REPRESENTED ABOVE AND THAT THE INFORMATION CONTAINED HEREIN IS COMPLETE AND ACCURATE. .

Authorized Signature of Contractor Representative

Date



CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT

BID BOND

Project Name: Clackamas County Children's Commission –
Estacada Head Start Improvements Project
(CD #1796)

We, Endres Northwest Inc., as "Principal,"
(Name of Principal)

and Old Republic Surety Company, an Wisconsin Corporation,
(Name of Surety)

authorized to transact Surety business in Oregon, as "Surety," hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns to pay unto Clackamas County ("Obligee") the sum of (\$ 10% of Bid Amount)

Ten Percent (10%) of Bid Amount dollars.

WHEREAS, the condition of the obligation of this bond is that Principal has submitted its proposal or bid to an agency of the Obligee in response to Obligee's procurement document (No. CD #1795) for the project identified above which proposal or bid is made a part of this bond by reference, and Principal is required to furnish bid security in an amount equal to ten (10%) percent of the total amount of the bid pursuant to the procurement document.

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

IN WITNESS WHEREOF, we have caused this instrument to be executed and sealed by our duly authorized legal representatives this 22nd day of September, 2022.

Principal: Endres Northwest Inc.

Surety: Old Republic Surety Company

By: Robert J. Endre
Signature

By: Attorney-In-Fact, Amber Lynn Reese

PRESIDENT / CEO
Official Capacity

Amber Lynn Reese
Name

Attest: _____
Corporation Secretary

10260 SW Greenburg Road, Suite 1060
Address

Portland, OR 97223-5509
City State Zip

(503) 245-6242 (503) 245-7986
Phone Fax



OLD REPUBLIC SURETY COMPANY

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That OLD REPUBLIC SURETY COMPANY, a Wisconsin stock insurance corporation, does make, constitute and appoint:

Sara Sophie Sellin, Kari Michelle Motley, Misti Marie Brill, Michael S. Mansfield,
Tamara A. Ringeisen, Donald Percell Shanklin, Brian R. Ludwick, Amber Lynn Reese of Portland, OR

its true and lawful Attorney(s)-in-Fact, with full power and authority for and on behalf of the company as surety, to execute and deliver and affix the seal of the company thereto (if a seal is required), bonds, undertakings, recognizances or other written obligations in the nature thereof, (other than bail bonds, bank depository bonds, mortgage deficiency bonds, mortgage guaranty bonds, guarantees of installment paper and note guaranty bonds, self-insurance workers compensation bonds guaranteeing payment of benefits, asbestos abatement contract bonds, waste management bonds, hazardous waste remediation bonds or black lung bonds), as follows:

ALL WRITTEN INSTRUMENTS

and to bind OLD REPUBLIC SURETY COMPANY thereby, and all of the acts of said Attorneys-in-Fact, pursuant to these presents, are ratified and confirmed. This appointment is made under and by authority of the board of directors at a special meeting held on February 18, 1982.

This Power of Attorney is signed and sealed by facsimile under and by the authority of the following resolutions adopted by the board of directors of the OLD REPUBLIC SURETY COMPANY on February 18, 1982.

RESOLVED that, the president, any vice-president or assistant vice president, in conjunction with the secretary or any assistant secretary, may appoint attorneys-in-fact or agents with authority as defined or limited in the instrument evidencing the appointment in each case, for and on behalf of the company to execute and deliver and affix the seal of the company to bonds, undertakings, recognizances, and suretyship obligations of all kinds; and said officers may remove any such attorney-in-fact or agent and revoke any Power of Attorney previously granted to such person.

RESOLVED FURTHER, that any bond, undertaking, recognizance, or suretyship obligation shall be valid and binding upon the Company

- (i) when signed by the president, any vice president or assistant vice president, and attested and sealed (if a seal be required) by any secretary or assistant secretary; or
- (ii) when signed by the president, any vice president or assistant vice president, secretary or assistant secretary, and countersigned and sealed (if a seal be required) by a duly authorized attorney-in-fact or agent; or
- (iii) when duly executed and sealed (if a seal be required) by one or more attorneys-in-fact or agents pursuant to and within the limits of the authority evidenced by the Power of Attorney issued by the company to such person or persons.

RESOLVED FURTHER that the signature of any authorized officer and the seal of the company may be affixed by facsimile to any Power of Attorney or certification thereof authorizing the execution and delivery of any bond, undertaking, recognizance, or other suretyship obligations of the company; and such signature and seal when so used shall have the same force and effect as though manually affixed.

IN WITNESS WHEREOF, OLD REPUBLIC SURETY COMPANY has caused these presents to be signed by its proper officer, and its corporate seal to be affixed this 28th day of April, 2020.

Karen J. Haffner
Assistant Secretary



OLD REPUBLIC SURETY COMPANY

Alan Pavlic
President

STATE OF WISCONSIN, COUNTY OF WAUKESHA - SS

On this 28th day of April, 2020, personally came before me, Alan Pavlic and Karen J Haffner, to me known to be the individuals and officers of the OLD REPUBLIC SURETY COMPANY who executed the above instrument, and they each acknowledged the execution of the same, and being by me duly sworn, did severally depose and say: that they are the said officers of the corporation aforesaid, and that the seal affixed to the above instrument is the seal of the corporation, and that said corporate seal and their signatures as such officers were duly affixed and subscribed to the said instrument by the authority of the board of directors of said corporation.



Kathryn R. Pearson
Notary Public

My Commission Expires: September 28, 2022

(Expiration of notary's commission does not invalidate this instrument)

CERTIFICATE

I, the undersigned, assistant secretary of the OLD REPUBLIC SURETY COMPANY, a Wisconsin corporation, CERTIFY that the foregoing and attached Power of Attorney remains in full force and has not been revoked; and furthermore, that the Resolutions of the board of directors set forth in the Power of Attorney, are now in force.



77 5520

Signed and sealed at the City of Brookfield, WI this 22nd day of September, 2022.

Karen J. Haffner
Assistant Secretary



CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT

BID FORM

PROJECT: Clackamas County Children's Commission – Estacada Head Start Improvements Project (CD #1796)

BID CLOSING: September 22, 2022, 3:00 PM, Pacific Time

BID OPENING: September 22, 2022, 3:05 PM, Pacific Time

FROM: ENDRES NORTHWEST INC.
Bidder's Name (must be full legal name, not ABN/DBA)

EMAIL: Amy Council, Project Manager, acouncil@clackamas.us

1. Bidder is (check one of the following and insert information requested):

a. An individual; or

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

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

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

and authorized to do business in the State of Oregon hereby proposes to furnish all material and labor and perform all work hereinafter indicated for the above project in strict accordance with the Contract Documents for the Project Basic Bid Schedule, see Page 2:

FIVE HUNDRED FORTY SEVEN THOUSAND & NO /100 DOLLARS Dollars (\$ 547,000)

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

- Notice of Public Improvement Contract Opportunity
 - Instructions to Bidders
 - Bid Bond
 - Public Improvement Contract Form
 - Clackamas County General Conditions
 - Prevailing Wage Rates
 - Plans, Specifications and Drawings
 - Supplemental Instructions to Bidders
 - Bid Form
 - Performance Bond and Payment Bond
 - Supplemental General Conditions
 - Payroll and Certified Statement Form
- ADDENDA numbered 1 through 1, inclusive (fill in blanks)

**Clackamas County Children's Commission & Clackamas County
Estacada Head Start Improvements Project**

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

3. The Undersigned proposes to add to or deduct from the Base Bid indicated above the items or work relating to the following Unit Price(s) as designated in the Specifications, for which any adjustments in the Contract amount will be made in accordance with Section D of the Clackamas County General Conditions: **Provide attached Bid Schedule with Bid.**

Bid Schedule

Item No.	Description	Quantity	Unit	Unit Price	Total
Div 000-001	General Requirements - Mobilization/Procurement/Contracting	All	LS		15,000 ⁻
Div 002	Existing Conditions/Demolition	All	LS		60,000 ⁻
Div 005	Metals	All	LS		10,000 ⁻
Div 006	Woods, Plastics, and Composites	All	LS		250,000 ⁻
Div 007	Thermal And Moisture Protection	All	LS		15,000 ⁻
Div 008	Openings	All	LS		10,000 ⁻
Div 009	Finishes	All	LS		90,000 ⁻
Div 010	Specialties	All	LS		10,000 ⁻
Div 012	Furnishings	All	LS		Ø
Div 013	Special Construction	All	LS		87,000 ⁻
					Base Bid: 547,000 ⁻
Alternatives Provide a "Net Add" Cost Estimate for Each Alternative Below					
Div 31/32/33	Alternate S1 – Sitework: Driveway replacement and sidewalk repair				25000 ⁻

Div ALL	Alternate B1: Building Addition: Building addition for office, mechanical room, and laundry room	\$98,000
Div 023	Alternative M1: Mechanical System: Locate mechanical system in attic	\$15,000

4. The work shall be completed within the time stipulated and specified in the Clackamas County Public Works Improvements, Contract Form B-6 item 4. Contract Dates, page 2.

5. Accompanying herewith is Bid Security which is equal to ten percent (10%) of the total amount of the Basic Bid, plus the total sum of all Alternatives (if any).

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

OLD REPUBLIC SURETY COMPANY
(name of surety company - not insurance agency)

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

7. The Undersigned further agrees that the Bid Security accompanying the Bid is left in escrow with Clackamas County; that the amount thereof 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 Form, Performance Bond and Payment Bond, each as published, and that if the Undersigned defaults in either executing the Contract Form or providing the Performance Bond and Payment Bond within twenty (20) calendar days after receiving the Contract forms, then the Bid Security shall become the property of the Owner at the Owner's option; but if the Bid is not accepted within thirty (30) calendar days of the time set for the opening of the Bids, or if the Undersigned executes and timely delivers said Contract Form, Performance Bond and Payment Bond, the Bid Security shall be returned.

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

9. The undersigned HAS, HAS NOT (*check one*) paid unemployment or income taxes in Oregon within the past 12 months and DOES, DOES NOT (*check one*) a business address in Oregon. The undersigned acknowledges that, if the selected bidder, that the undersigned will have to pay all applicable taxes and register to do business in the State of Oregon before executing the Contract Form.

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

11. Contractor's CCB registration number is 162776. As a condition to submitting a bid, a Contractor must be registered with the Oregon Construction Contractors Board in accordance with ORS 701.035 to 701.055, and disclose the registration number. Failure to register and disclose the number will make the bid unresponsive and it will be rejected, unless contrary to federal law.

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

13. The successful Bidder hereby certifies that, in compliance with the Worker's Compensation Law of the State of Oregon, its Worker's Compensation Insurance provider is S.A.I.F., Policy No. 770772, and that Contractor shall submit Certificates of Insurance as required.

14. Contractor's Key Individuals for this project (supply information as applicable):

Project Executive:	<u>ROBERT ENDRES</u>	Cell Phone:	<u>503 544 2494</u>
Project Manager:	<u>RANDY ENDRES</u>	Cell Phone:	<u>503 804 2287</u>
Job Superintendent:	<u>RANDY ENDRES</u>	Cell Phone:	<u>"</u>
Project Engineer:	<u>RANDY ENDRES</u>	Cell Phone:	<u>"</u>

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

16. The Undersigned certifies that it has a drug testing program in accordance with ORS 279C.505.

REMINDER: Bidder must submit the below First-Tier Subcontractor Disclosure Form.

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

NAME OF FIRM	<u>ENDRES NORTHWEST INC</u>
ADDRESS	<u>509 NW 3RD AVENUE</u> <u>CANBY OR 97013</u>
TELEPHONE NO	<u>503-557-1700</u>

EMAIL Robert endres @ endres NW.com

SIGNATURE 1) _____
Sole Individual

or 2) _____
Partner

or 3) Robert J. Endres _____
Authorized Officer or Employee of Corporation

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

**FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM
PROJECT: CLACKAMAS COUNTY CHILDREN'S COMMISSION –
ESTACADA HEAD START IMPROVMENTS PROJECT (CD #1796)**

BID OPENING: September 22, 2022, Thursday, 3:00 PM (Pacific Time)

Failure to submit this Form by the disclosure deadline will result in a nonresponsive bid.

INSTRUCTIONS:

This First-Tier Subcontractor Disclosure Form ("Form") must be submitted and received at the location specified in the Notice of Public Improvement Contract Opportunity on the advertised Bid Closing, and within two working hours after the advertised Bid Closing Time.

The Form may be mailed, hand-delivered or emailed to: acouncil@clackamas.us It is the responsibility of Bidders to submit this Form and any additional sheets with the Project name clearly marked on the envelope or the subject line of the email.

Subcontractor lists may be submitted with the bid in the same envelope or email at the Bid Closing date and time. Subcontractor lists **MUST** be submitted within **two (2) hours** of the Bid Closing date and time.


List below the name of each subcontractor that will be furnishing labor, or labor and materials, for which disclosure is required, the category of work that the subcontractor will be performing, and the dollar value of the subcontract. Enter "**NONE**" if the value of the project bid is less than \$100,000 or there are no subcontractors that need to be disclosed. ATTACH ADDITIONAL SHEETS IF NECESSARY.

	SUBCONTRACTOR NAME	DOLLAR VALUE	CATEGORY OF WORK
1.	COY ELECTRIC	N/A	ELECTRIC
2.	SJ JOHNSON	N/A	PLUMBING
3.	J'S FLOORING	N/A	FLOORING
4.	ENR	N/A	FRAMING/ CONCRETE/SEIDENS
5.	BOLES BROTHERS	N/A	PAINTING
6.	N.A.		LANDSCAPING

The above listed first-tier subcontractor(s) are providing labor, or labor and material, with a Dollar Value equal to or greater than:

- a) 5% of the total Contract Price, but at least \$15,000. If the Dollar Value is less than \$15,000 do not list the subcontractor above; or
- b) \$350,000 regardless of the percentage of the total Contract Price.

Firm Name: ENDRES NORTHWEST INC

Bidder Signature:  Phone # 503-557-1700



**CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT
SUPPLEMENTAL GENERAL CONDITIONS**

**PROJECT: Clackamas County Children’s Commission –
Estacada Head Start Improvements Project (CD #1796)
(Estacada, OR)**

The following modifies the October 13, 2021 Clackamas County General Conditions for Public Improvement Contracts (“County General Conditions”) for this Contract. Except as modified below, all other terms and conditions of the County General Conditions shall remain in effect.

SC – 1: Permits

Section B.4-Permits of the County General Conditions is hereby deleted in its entirety and replaced with the following:

B.4 PERMITS

The Owner will pay for basic building permits. General Contractor awarded this construction contract will pay for all other permit fees associated with the building. Moreover, this dollar amount is to be included in the General Contractor’s Bid Proposal. The Bid Schedule has a line item for permits costs.

SC – 2: Liquidated Damages

The following sections are added to Section D.2 - Delays:

D.2.3 DAMAGES FOR DELAY – LIQUIDATED DAMAGES

- (a) It is imperative that the Work in this Contract reach Substantial Completion, **110 days from issuance from Notice to Proceed, Estimated to be November 21, 2022**, and as further required in the Plans and Specifications and Section 13 of the Contract to be completed by March 19, 2023. Time will be of the essence to open the new building for operation of a preschool, therefore the Owner requires the firm deadline. The Contractor represents and agrees that the Substantial Completion date is reasonable, that it can meet the Substantial Completion date, and it has taken into account in its Offer the requirements of the Contract Documents, the location, the time allowed for the Work, local conditions, weather, availability of materials, equipment, and labor, and any other factor which may affect performance of the Work.

Below is a matrix for Project Contract Amounts regarding Liquidated Damages provide to the Contractor by the Owner, please review carefully:

Levels:	Project Contract Amounts:	Liquidated Damages Amounts:
One	\$100,000+ to \$999,999 dollars	\$750 dollars per day
Two	\$1 Million to \$2.5 Million dollars	\$1,000 dollars per day
Three	\$2.5+ to \$4.5 Million dollars	1,250 dollars per day

Five	\$4.5+ to \$7.5 Million dollars	\$1,500 dollars per day
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- (b) If the Contactor fails to achieve Substantial Completion as specified above, then the Contractor and Owner agree that it would be extremely difficult to ascertain the damages incurred by Owner for the Contractor’s failure. Therefore, Owner and the Contractor agree that in lieu of actual damages for delay, the Contractor shall reimburse Owner a stipulated sum of \$750.00 per calendar day beyond the Substantial Completion Date. The Contractor further agrees the stipulated sum is not a penalty.

Likewise, if the Work does not reach Final Completion defined in Section 4 of the Contract, then the Contractor shall owe to the Owner, not as a penalty but as liquidated damages, the sum of seven hundred and fifty dollars (\$750.00) per day for each and every calendar day of delay until Final Completion.

SC – 3: Good Faith Effort

As a condition of Contractor being awarded a Contract for this Project, Contractor must complete Good Faith Effort outreach and documentation as described in the Supplemental Instructions to Bidders of the Solicitation Document.

The Contractor may not change who is performing each Division of Work identified in Form 1 of the Good Faith Effort without the express written advance approval of Owner. This includes substituting identified subcontractors, self-performance of a Division of Work that was identified to be performed by a subcontractor, or the Contractor subcontracting a Division of Work that was identified to be self-performed by the Contractor.

Contractor shall be required to submit the completed Form 3 with its final pay application as a condition of final payment.



CLACKAMAS COUNTY GENERAL CONDITIONS FOR PUBLIC IMPROVEMENT CONTRACTS October 13, 2021

INSTRUCTIONS: The attached Clackamas County General Conditions for Public Improvement Contracts ("County General Conditions") apply to all designated Public Improvement contracts. Changes to the County General Conditions (including any additions, deletions or substitutions) should only be made by attaching Public Improvement Supplemental General Conditions. The text of these County General Conditions should not otherwise be altered.

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**CLACKAMAS COUNTY GENERAL CONDITIONS
FOR PUBLIC IMPROVEMENT CONTRACTS
("County General Conditions")**

**SECTION A
GENERAL PROVISIONS**

A.1 DEFINITION OF TERMS

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

APPLICABLE LAWS, means all federal, state and local laws, codes, rules, regulations and ordinances, as amended applicable to the Work, to the Contract, or to the parties individually.

APPROVED BY CONTRACTING AGENCY, for purposes of ORS 279C.570(2), means the date a progress payment is approved by the Clackamas County Treasurer's office.

ARCHITECT/ENGINEER, means the Person appointed by the Owner to make drawings and specifications and, to provide contract administration of the Work contemplated by the Contract to the extent provided herein or by supplemental instruction of Owner (under which Owner may delegate responsibilities to the Architect/Engineer), in accordance with ORS Chapter 671 (Architects) or ORS Chapter 672 (Engineers) and administrative rules adopted thereunder.

AVOIDABLE DELAYS, mean any delays other than Unavoidable Delays, and include delays that otherwise would be considered Unavoidable Delays but that: (a) Could have been avoided by the exercise of care, prudence, foresight, and diligence on the part of the Contractor or its Subcontractors; (b) Affect only a portion of the Work and do not necessarily prevent or delay the prosecution of other parts of the Work nor the completion of the whole Work within the Contract Time; (c) Do not impact activities on the accepted critical path schedule; and (d) Are associated with the reasonable interference of other contractors employed by the Owner that do not necessarily prevent the completion of the whole Work within the Contract Time.

BIDDER, means a bidder in connection with Instructions to Bidders or a proposer in connection with a Request for Proposals, or Solicitation Document. May also be referenced as "Offeror," "Quoter" or "Proposer" based on the type of Solicitation Document.

CHANGE ORDER, means a written order which, when fully executed by the Parties to the Contract, constitutes a change to the Contract Documents. Change Orders shall be issued in accordance with the changes provisions in Section D and, if applicable, establish a Contract Price or Contract Time adjustment. A Change Order shall not be effective until executed by both parties.

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

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

CONTRACT DOCUMENTS, means the Contract, County General Conditions, Supplemental General Conditions if any, Plans, Specifications, the accepted Offer, Solicitation Document and addenda thereto, Instructions to Offerors, and Supplemental Instructions to Offerors.

CONTRACT PERIOD, as set forth in the Contract Documents, means the total period of time beginning with the full execution of a Contract

and, if applicable, the issuance of a Notice to Proceed and concluding upon Final Completion.

CONTRACT PRICE, means the total price reflected in the Contract.

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

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

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

DEFECTIVE WORK, means Work that is not completed in accordance with the Specifications or the requirements of the Contract.

DIRECT COSTS, means, unless otherwise provided in the Contract Documents: the cost of materials, including sales tax and the cost of delivery; cost of labor which shall only include the applicable prevailing wage and fringe benefit (if applicable, and if paid to or on behalf of the employee) rate plus a maximum of a twelve percent (12%) markup on the prevailing wage (but not the fringe benefit) to cover Contractor's labor burden including but not limited to social security, Medicare, unemployment insurance, workers' compensation insurance, sick leave pay; substantiated Project cost increases for specific insurance (including, without limitation, Builder's Risk Insurance and Builder's Risk Installation Floater) or bond premiums; rental cost of equipment, and machinery required for execution of the Work; and the additional costs of field personnel directly attributable to the Work; travel expense reimbursement only if specifically authorized and only to the extent allowable under the County Contractor Travel Reimbursement Policy, hereby incorporated by reference.

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

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

NOTICE TO PROCEED, means the official written notice from the Owner stating that the Contractor is to proceed with the Work defined in the Contract Documents.

OFFER, means a bid in connection with Instructions to Bidders or a proposal in connection with a Request for Proposals, or Solicitation Document to do the work stated in the Solicitation Document at the price quoted. May also be referenced as "Bid," "Quote," or "Proposal" based on the type of Solicitation Document.

OVERHEAD, means those items which may be included in the Contractor's markup (general and administrative expense and profit) and that shall not be charged as Direct Cost of the Work, including without limitation such Overhead expenses as wages or salary of personnel above the level of foreman (i.e., superintendents and project managers), labor rates and fringe benefits above the applicable prevailing wage and fringe benefit (if applicable, and if paid to or on behalf of the employee), Contractor's labor burden for fringe benefit if paid to the employee, expenses of Contractor's offices and supplies at the Project Site (e.g. job trailer) and at Contractor's principal place of business and including expenses of personnel staffing the Project Site office and Contractor's principal place of business, and Commercial General Liability Insurance and Automobile Liability Insurance.

OWNER, means, Clackamas County or any component unit thereof including Clackamas County Development Agency, Clackamas County Service District No. 1, Surface Water Management Agency of Clackamas County, Tri-City Service District, Water Environment Services, North Clackamas Parks and Recreation District, Clackamas County Extension & 4-H Service District, Library Service District of Clackamas County, Enhanced Law Enforcement District, and Clackamas County Service District No. 5. Owner may elect, by written notice to Contractor, to delegate certain duties to more than one agent, including without limitation, to an Architect/Engineer. However, nothing in these County General Conditions is intended to abrogate the separate design professional responsibilities of Architects under ORS Chapter 671 or of Engineers under ORS Chapter 672.

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

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

PRODUCT DATA, means illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

PROJECT, means the total undertaking to be accomplished for Owner by architects/engineers, contractors, and other others, including planning, study, design, construction, testing, commissioning, start-up, of which the Work to be performed under the Contract Documents is a part.

PROJECT SITE, means the specific real property on which the Work is to be performed, including designated contiguous staging areas, that is identified in the Plans, Specifications and Drawings.

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

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

SAMPLES, means physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

SHOP DRAWINGS, means drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor (including any subsubcontractor), manufacturer, supplier, or distributor to illustrate some portion of the Work.

SOLICITATION DOCUMENT, means an Invitation to Bid, Request for Proposals, Request for Quotes, or other written document issued by Owner that outlines the required Specifications necessary to submit an Offer.

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

Work to be performed. Specifications may be incorporated by reference and/or may be attached to the Contract.

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

SUBSTANTIAL COMPLETION, means the date when the Owner accepts in writing the construction, alteration or repair constituting the Work or any designated portion thereof as having reached that state of completion when it may be used or occupied for its intended purpose. Substantial Completion of facilities with operating systems occurs only after thirty (30) continuous Days of successful, trouble-free operation of the operating systems as provided in Section K.3.2.

SUBSTITUTIONS, means items that in function, performance, reliability, quality, and general configuration are the same or better than the product(s) specified. Substitutions also means the performance of the Work by a labor force other than what is submitted in the Offer.

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

UNAVOIDABLE DELAYS, mean delays other than Avoidable Delays that are: (a) to the extent caused by any actions of the Owner, or any other employee or agent of the Owner, or by a separate contractor employed by the Owner; (b) to the extent caused by any Project Site conditions which differ materially from the conditions that would normally be expected to exist and inherent to the construction activities defined in the Contract Documents; or (c) to the extent caused by Force Majeure acts, or events or occurrences.

WORK, means the furnishing of all materials, equipment, labor, transportation, services, incidentals, those permits and regulatory approvals not provided by the owner necessary to successfully complete any individual item or the entire Contract and the carrying out of duties and obligations imposed by the Contract Documents for the Project.

A.2 SCOPE OF WORK

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

A.3 INTERPRETATION OF CONTRACT DOCUMENTS

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

- (a) The Contract and any amendments thereto, including Change Orders, with those of later date having precedence over those of an earlier date;
- (b) The Supplemental General Conditions;
- (c) County General Conditions;
- (d) Plans and Specifications;
- (e) The Solicitation Document, and any addenda thereto.

A.3.2 In the case of an inconsistency between Plans and Specifications or within either document not clarified by addendum, the better quality or greater quantity of Work shall be provided in accordance with the Owner's interpretation in writing as determined in Owners sole discretion.

A.3.3 If the Contractor finds discrepancies in, or omissions from the Contract Documents, or if the Contractor is in doubt as to their meaning, the Contractor shall at once notify the Owner. Matters concerning and interpretation of requirements of the Contract Documents will be decided by the Owner in the Owner's sole discretion, who may delegate that duty in some instances to the Architect/Engineer. Responses to Contractor's requests for interpretation of Contract Documents will be made in writing by Owner (or the Architect/Engineer) within any time limits agreed upon or otherwise with reasonable promptness. Contractor shall not proceed without direction in writing from the Owner (or Architect/Engineer).

A.3.4 References to standard specifications, manuals, codes of any technical society, organization or association, to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code, laws or regulations in effect in the jurisdiction where the Project Site is located on the first published date of the Solicitation Document, except as may be otherwise specifically stated.

A.4 EXAMINATION OF PLANS, SPECIFICATIONS, AND PROJECT SITE

A.4.1 It is understood that the Contractor, before submitting an Offer, has made a careful examination of the Contract Documents; has become fully informed as to the quality and quantity of materials and the character of the Work required; and has made a careful examination of the location and conditions of the Work and the sources of supply for materials. The Owner will in no case be responsible for any loss or for any unanticipated costs that may be suffered by the Contractor as a result of the Contractor's failure to acquire full information in advance in regard to all conditions pertaining to the Work. No oral agreement or conversation with any officer, agent, or personnel of the Owner, or with the Architect/Engineer either before or after the execution of the Contract, shall affect or modify any of the terms or obligations herein contained. Contractor shall at all times be responsible for all utility locates regardless of the ownership of such utility infrastructure or service.

A.4.2 Should the Plans or Specifications fail to particularly describe the materials, kind of goods, or details of construction of any aspect of the Work, Contractor shall have the duty to make inquiry of the Owner and Architect/Engineer as to what is required prior to performance of the Work. Absent Specifications to the contrary, the materials or processes that would normally be used to produce first quality finished Work shall be considered a part of the Contract requirements.

A.4.3 Any design errors or omissions noted by the Contractor shall be reported promptly to the Owner, including without limitation, any nonconformity with Applicable Laws.

A.4.4 If the Contractor believes that adjustments to cost or Contract Time are involved because of clarifications or instructions issued by the Owner (or Architect/Engineer) in response to the Contractor's notices or requests for information, the Contractor must submit a written request to the Owner, setting forth the nature and specific extent of the request, including all time and cost impacts against the Contract as soon as possible, but no later than thirty (30) Days after receipt by Contractor of the clarifications or instructions issued. If the Owner denies Contractor's request for additional compensation, additional Contract Time, or other relief

that Contractor believes results from the clarifications or instructions, the Contractor may proceed to file a Claim under Section D.3, Claims Review Process. If the Contractor fails to perform the obligations of Sections A.4.1 to A.4.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations.

A.4.5 If the Contractor believes that adjustments to cost or Contract Time are involved because of an Unavoidable Delay caused by differing Project Site conditions, the Contractor shall notify the Owner immediately of differing Project Site conditions before the area has been disturbed. The Owner will investigate the area and make a determination as to whether or not the conditions differ materially from either the conditions stated in the Contract Documents or those which could reasonably be expected in execution of this particular Contract. If Contractor and the Owner agrees that a differing Project Site condition exists, any adjustment to compensation or Contract Time will be determined based on the process set forth in Section D.2.2 for adjustments to or deletions from Work. If the Owner disagrees that a differing Project Site condition exists and denies Contractor's request for additional compensation or Contract Time, Contractor may proceed to file a Claim under Section D.3, Claims Review Process.

A.5 INDEPENDENT CONTRACTOR STATUS

The service or services to be performed under the Contract are those of an independent contractor as defined in ORS 670.600. Contractor represents and warrants that it is not an officer, employee or agent of the Owner as those terms are used in ORS 30.265.

A.6 RETIREMENT SYSTEM STATUS AND TAXES

Contractor represents and warrants that it is not a contributing member of the Public Employees' Retirement System and will be responsible for any federal or state taxes applicable to payment received under the Contract. Contractor will not be eligible for any benefits from these Contract payments of federal Social Security, employment insurance, workers' compensation or the Public Employees' Retirement System, except as a self-employed individual. Unless the Contractor is subject to backup withholding, Owner will not withhold from such payments any amount(s) to cover Contractor's federal or state tax obligations.

A.7 GOVERNMENT EMPLOYMENT STATUS

A.7.1 If this payment is to be charged against federal funds, Contractor represents and warrants that it is not currently employed by the Federal Government. This does not preclude the Contractor from holding another contract with the Federal Government.

SECTION B ADMINISTRATION OF THE CONTRACT

B.1 OWNER'S ADMINISTRATION OF THE CONTRACT

B.1.1 The Owner shall administer the Contract as described in the Contract Documents throughout the term of the Contract, including the one-year period for correction of Work. The Owner will act as provided in the Contract Documents, unless modified in writing in accordance with other provisions of the Contract. In performing these tasks, the Owner may rely on the Architect/Engineer or other agents to perform some or all of these tasks.

B.1.2 The Owner may visit the Project Site at intervals appropriate to the stage of the Contractor's operations (1) to become generally familiar with and to keep the Owner informed about the progress and quality of the portion of the Work completed, (2) to endeavor to guard the Owner against defects and deficiencies in the Work, and (3) to determine in general if Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. The Owner will not

make exhaustive or continuous on-Project Site inspections to check the quality or quantity of the Work. Unless otherwise required in a Change Order, the Owner will neither have control over or charge of, nor be responsible for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work.

B.1.3 Except as otherwise provided in the Contract Documents or when direct communications have been specifically authorized, the Owner and Contractor shall communicate with each other within a reasonable time frame about matters arising out of or relating to the Contract. Communications by and with the Architect/Engineer's consultants shall be through the Architect/Engineer. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

B.1.4 Based upon the Architect/Engineer's evaluations of the Contractor's Application for Payment, or unless otherwise stipulated by the Owner, the Architect/Engineer will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

B.2 CONTRACTOR'S MEANS AND METHODS; MITIGATION OF IMPACTS

B.2.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the Project Site safety thereof and, except as stated below, shall be fully and solely responsible for the Project Site safety of such means, methods, techniques, sequences or procedures.

B.2.2 The Contractor is responsible to protect and maintain the Work during the course of construction and to mitigate any adverse impacts to the Project, including those caused by authorized changes, which may affect cost, schedule, or quality.

B.2.3 The Contractor is responsible for the actions of all its personnel, laborers, suppliers, agents, and Subcontractors on the Project. The Contractor shall enforce strict discipline and good order among Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of persons who are unfit or unskilled for the tasks assigned to them.

B.3 MATERIALS AND WORKMANSHIP

B.3.1 The intent of the Contract Documents is to provide for the construction and completion of every detail of the Work described. All Work shall be performed in a professional manner and, unless the means or methods of performing a task are specified elsewhere in the Contract Documents, Contractor shall employ methods that are generally accepted and used by the industry, in accordance with industry standards.

B.3.2 The Contractor is responsible to perform the Work as required by the Contract Documents. Defective Work shall be corrected at the Contractor's sole expense and within a reasonable time frame.

B.3.3 Work done and materials furnished may be subject to inspection and/or observation and testing by the Owner to determine if they conform to the Contract Documents. Inspection of the Work by the Owner does not relieve the Contractor of responsibility for the Work in accordance with the Contract Documents.

B.3.4 Contractor shall furnish adequate facilities, as required, for the Owner to have safe access to the Work including without limitation walkways, railings, ladders, tunnels, and platforms. Producers, suppliers, and fabricators shall also provide proper facilities and access to their facilities.

B.3.5 The Contractor shall furnish Samples of materials for testing by the Owner and include the cost of the Samples in the Contract Price.

B.4 PERMITS

Contractor shall obtain and pay for all necessary permits, licenses and fees, except for those specifically excluded in the Supplemental General Conditions, as required for the project. Contractor shall be responsible for all violations of the law. Contractor shall give all requisite notices to public authorities.

B.5 COMPLIANCE WITH GOVERNMENT REGULATIONS

B.5.1 Contractor shall comply with Applicable Laws, as amended pertaining to the Work and the Contract. Failure to comply with such requirements shall constitute a breach of Contract and shall be grounds for Contract termination. Without limiting the generality of the foregoing, Contractor expressly agrees to comply with the following, as applicable and as may be amended from time to time: (i) Title VI and VII of Civil Rights Act of 1964, as amended; (ii) Section 503 and 504 of the Rehabilitation Act of 1973, as amended; (iii) the Health Insurance Portability and Accountability Act of 1996; (iv) the Americans with Disabilities Act of 1990, as amended; (v) ORS Chapter 659A; as amended; (vi) all regulations and administrative rules established pursuant to any applicable laws; and (vii) all other applicable requirements of federal, state, county or other local government entity statutes, rules and regulations.

B.5.2 Contractor shall comply with all applicable requirements of federal and state civil rights and rehabilitation statutes, rules and regulations, and

(a) Contractor shall not discriminate against Disadvantaged, Minority, Women or Emerging Small Business enterprises, as those terms are defined in ORS 200.005, or a business enterprise that is owned or controlled by or that employs a disabled veteran, as that term is defined in ORS 408.225, in the awarding of subcontracts.

(b) Contractor shall maintain, in current and valid form, all licenses and certificates required by Applicable Laws or the Contract when performing the Work.

B.5.3 Contractor shall certify that it shall not accept a bid from Subcontractors to perform Work unless such Subcontractors are registered with the Construction Contractors Board in accordance with ORS 701.021 at the time they submit their bids to the Contractor.

B.5.4 Contractor shall certify that each landscape contracting business, as defined in ORS 671.520(2), performing Work under the Contract holds a valid landscape construction professional license issued pursuant to ORS 671.560.

B.5.5 The following notice is applicable to Contractors who perform excavation Work. ATTENTION: Oregon law requires you to follow rules adopted by the Oregon Utility Notification Center. Those rules are set forth in OAR 952-001-0010 through OAR 952-001-0090. You may obtain copies of the rules by calling the center at (877) 668-4001.

B.5.6 Failure to comply with any or all of the requirements of B.5.1 through B.5.5 shall be a material breach of Contract and constitute

grounds for Contract termination. Damages or costs resulting from such noncompliance shall be the responsibility of Contractor.

B.5.7 The Contractor shall include in each subcontract those provisions required under ORS 279C.580.

B.5.8 Contractor shall comply with ORS 652.220, compliance of which is a material element of this Contract and failure to comply is a material breach that entitles County to exercise any rights and remedies available under this Contract including, but not limited to, termination for default.

B.6 SUPERINTENDENCE

Contractor shall keep on the Project Site, during the progress of the Work, a competent superintendent and any necessary assistants who shall be satisfactory to the Owner and who shall represent the Contractor on the Project Site. Directions given to the superintendent by the Owner shall be confirmed in writing to the Contractor.

B.7 INSPECTION

B.7.1 Owner shall have access to the Work at all times.

B.7.2 Inspection of the Work will be made by the Owner at its discretion. The Owner will have authority to reject Work that does not conform to the Contract Documents in the Owner's sole discretion. Any Work found to be not in conformance with the Contract Documents, in the discretion of the Owner, shall be removed and replaced at the Contractor's expense.

B.7.3 Contractor shall make or obtain at the appropriate time all tests, inspections and approvals of portions of the Work required by the Contract Documents or by Applicable Laws or orders of public authorities having jurisdiction. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work. The Contractor shall give the Owner timely notice of when and where tests and inspections are to be made so that the Owner may be present for such procedures. Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Owner.

B.7.4 As required by the Contract Documents, Work done or material used without required inspection or testing and/or without providing timely notice to the Owner may be ordered removed at the Contractor's expense.

B.7.5 If directed to do so by Owner or other permitting authority any time before the Work is accepted, the Contractor shall uncover portions of the completed Work for inspection. After inspection, the Contractor shall restore such portions of Work to the standard required by the Contract. If the Work uncovered is unacceptable or was done without required testing or inspection or sufficient notice to the Owner, the uncovering and restoration shall be done at the Contractor's expense. If the Work uncovered is acceptable and was done with sufficient notice to the Owner, the uncovering and restoration will be paid for pursuant to a Change Order.

B.7.6 If any testing or inspection reveals failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Owner's and Architect/Engineer's services and expenses, shall be at the Contractor's expense.

B.7.7 In Owner's sole discretion, it may authorize other interested parties to inspect the Work affecting their interests or property. Their right to inspect shall not make them a party to the Contract and shall not interfere with the rights of the parties of the Contract. Instructions or orders of such parties shall be transmitted to the Contractor, through the Owner.

B.8 SUBCONTRACTS AND ASSIGNMENT

B.8.1 Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound by the terms and conditions of these General Conditions and Supplemental General Conditions, and to assume toward the Contractor all of the obligations and responsibilities which the Contractor assumes toward the Owner thereunder, unless (1) the same are clearly inapplicable to the subcontract at issue because of legal requirements or industry practices, or (2) specific exceptions are requested by Contractor and approved in writing by Owner. Where appropriate, Contractor shall require each Subcontractor to enter into similar agreements with sub-subcontractors at any level.

B.8.2 At Owner's request, Contractor shall submit to Owner prior to their execution either Contractor's form of subcontract, or the subcontract to be executed with any particular Subcontractor. If Owner disapproves such form, Contractor shall not execute the form until the matters disapproved are resolved to Owner's satisfaction. Owner's review, comment upon or approval of any such form shall not relieve Contractor of its obligations under this Agreement or be deemed a waiver of such obligations of Contractor.

B.8.3 Contractor shall not assign, sell, or transfer its rights, or delegate its responsibilities under the Contract, in whole or in part, without the prior written approval of the Owner. No such written approval shall relieve Contractor of any obligations of the Contract, and any transferee shall be considered the agent of the Contractor and bound to perform in accordance with the Contract Documents. Contractor shall remain liable as between the original parties to the Contract as if no assignment had occurred.

B.9 OWNER'S RIGHT TO DO WORK

Owner reserves the right to perform other or additional work at or near the Project Site with other agents than those of the Contractor. If such work takes place within or next to the Project Site, Contractor shall coordinate work with the other contractors or agents, cooperate with all other contractors or forces, carry out the Work in a way that will minimize interference and delay for all agents involved, place and dispose of materials being used so as not to interfere with the operations of another, and join the Work with the work of the others in an acceptable manner and perform it in proper sequence to that of the others. The Owner will resolve any disagreements that may arise between or among Contractor and the other contractors over the method or order of doing all work (including the Work). In case of unavoidable interference, the Owner will establish work priority (including the Work) in the Owner's sole discretion.

B.10 OTHER CONTRACTS

In all cases and at any time, the Owner has the right to execute other contracts related to or unrelated to the Work of the Contract. The Contractor of the Contract shall fully cooperate with any and all other contractors without additional cost to the Owner in the manner described in Section B.13.

B.11 ALLOWANCES

B.11.1 The Contractor shall include in the Contract Price all allowances stated in the Contract Documents. Items covered by allowances

shall be supplied for such amounts and by such persons or entities as the Owner may direct.

- B.11.2 Unless otherwise provided in the Contract Documents:
- (a) when finally reconciled, allowances shall cover the cost of the Contractor's materials and equipment delivered at the Project Site and all required taxes, less applicable trade discounts;
 - (b) Contractor's costs for unloading and handling at the Project Site, labor, installation costs, Overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Price but not in the allowances;
 - (c) whenever costs are more than or less than allowances, the Contract Price shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (i) the difference between actual costs and the allowances under Section B.17.2(a) and (ii) changes in Contractor's costs under Section B.17.2(b);
 - (d) Unless Owner requests otherwise, Contractor shall provide to Owner a proposed fixed price for any allowance work prior to its performance.

B.12 SUBMITTALS, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

- B.12.1 The Contractor shall prepare and keep current, for the Architect's/Engineer's approval (or for the approval of Owner if approval authority has not been delegated to the Architect/Engineer), a schedule and list of submittals which is coordinated with the Contractor's construction schedule and allows the Architect/Engineer reasonable time to review submittals. Owner reserves the right to finally approve the schedule and list of submittals. Submittals include, without limitation, Shop Drawings, Product Data, and Samples.
- B.12.2 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required by the Contract Documents the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review of submittals by the Architect/Engineer is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, or for approval of safety precautions or, unless otherwise specifically stated by the Architect/Engineer, of any construction means, methods, techniques, sequences or procedures, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect/Engineer's review of the Contractor's submittals shall not relieve the Contractor of its obligations under the Contract Documents. The Architect/Engineer's approval of a specific item shall not indicate approval of an assembly of which the item is a component. Informational submittals upon which the Architect/Engineer is not expected to take responsive action may be so identified in the Contract Documents. Submittals which are not required by the Contract Documents may be returned by the Architect/Engineer without action.
- B.12.3 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect/Engineer Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals which are not marked as reviewed for compliance with the Contract Documents

and approved by the Contractor may be returned by the Architect/Engineer without action.

- B.12.4 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.
- B.12.5 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect/Engineer.
- B.12.6 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect/Engineer's review or approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect/Engineer in writing of such deviation at the time of submittal and (i) the Architect/Engineer has given written approval to the specific deviation as a minor change in the Work, or (ii) a Change Order has been executed by Owner authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect/Engineer's review or approval thereof.
- B.12.7 In the event that Owner elects not to have the obligations and duties described under this Section B.18 performed by the Architect/Engineer, or in the event no Architect/Engineer is employed by Owner on the Project, all obligations and duties assigned to the Architect/Engineer hereunder shall be performed by the Owner.

B.13 SUBSTITUTIONS

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

B.14 USE OF PLANS AND SPECIFICATIONS

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

SECTION C
WAGES AND LABOR

C.1 PREVAILING WAGE RATES ON PUBLIC WORKS

Contractor shall comply fully with the provisions of ORS 279C.800 through 279C.870. Pursuant to ORS 279C.830(1)(d), Contractor shall pay workers at not less than the specified minimum hourly rate of wage, and shall include that requirement in all subcontracts. If the Work is subject to both the state prevailing wage rate law and the federal Davis-Bacon Act, Contractor shall pay the higher of the applicable state or federal prevailing rate of wage. Contractor shall provide written notice to all workers of the number of hours per day and days per week such workers may be required to work.

C.2 PAYROLL CERTIFICATION AND FEE REQUIREMENTS

- C.2.1 In accordance with ORS 279C.845, the Contractor and every Subcontractor shall submit written certified statements to the Owner on the form prescribed by the Commissioner of the Bureau of Labor and Industries ("BOLI"), certifying the hourly rate of wage paid each worker which the Contractor or the Subcontractor has employed on the Project and further certifying that no worker employed on the Project has been paid less than the prevailing rate of wage or less than the minimum hourly rate of wage specified in the Contract, which certificate and statement shall be verified by the oath of the Contractor or the Subcontractor that the Contractor or Subcontractor has read the certified statement, that the Contractor or Subcontractor knows the contents of the certified statement, and, that to the Contractor's or Subcontractor's best knowledge and belief, the certified statement is true. The certified statements shall set out accurately and completely the payroll records for the prior week, including the name and address of each worker, the worker's correct classification, rate of pay, daily and weekly number of hours worked, deductions made, and actual wages paid. Certified statements for each week during which the Contractor or Subcontractor has employed a worker on the Project shall be submitted once a month, by the fifth (5th) business day of the following month. The Contractor and Subcontractors shall preserve the certified statements for a period of ten (10) years from the date of completion of the Contract.
- C.2.2 Pursuant to ORS 279C.845(7), the Owner shall retain 25 percent of any amount earned by the Contractor on the Project until the Contractor has filed the certified statements required by section C.2.1. The Owner shall pay to the Contractor the amount retained under this subsection within 14 days after the Contractor files the required certified statements, regardless of whether a Subcontractor has failed to file certified statements.
- C.2.3 Pursuant to ORS 279C.845(8), the Contractor shall retain 25 percent of any amount earned by a first-tier Subcontractor on this Project until the first-tier Subcontractor has filed with the Owner the certified statements required by C.2.1. Before paying any amount retained under this subsection, the Contractor shall verify that the first-tier Subcontractor has filed the certified statement. Within 14 days after the first-tier Subcontractor files the required certified statement the Contractor shall pay the first-tier Subcontractor any amount retained under this subsection.
- C.2.4 In accordance with statutory requirements and administrative rules promulgated by the Commissioner of the Bureau of Labor and Industries, the fee required by ORS 279C.825(1) will be paid by Owner to the Commissioner.

C.3 PROMPT PAYMENT AND CONTRACT CONDITIONS

- C.3.1 As a condition to Owner's performance hereunder, the Contractor shall:
- C.3.1.1 Make payment promptly, as due, to all persons supplying to Contractor labor or materials for the prosecution of the Work provided for in the Contract.
- C.3.1.2 Pay all contributions or amounts due the State Industrial Accident Fund or successor program from such Contractor or Subcontractor incurred in the performance of the Contract.
- C.3.1.3 Not permit any lien or claim to be filed or prosecuted against the Owner on account of any labor or material furnished. Contractor will not assign any claims that Contractor has against Owner, or assign any sums due by Owner, to Subcontractors, suppliers, or manufacturers, and will not make any agreement or act in any way to give Subcontractors a claim or standing to make a claim against the Owner.
- C.3.1.4 Pay to the Department of Revenue all sums withheld from employees pursuant to ORS 316.167.
- C.3.2 If Contractor fails, neglects or refuses to make prompt payment of any claim for labor or services furnished to the Contractor of a Subcontractor by any person in connection with the Project as such claim becomes due, the proper officer(s) representing the Owner may pay the claim and charge the amount of the payment against funds due or to become due Contractor under the Contract. Payment of claims in this manner shall not relieve the Contractor or the Contractor's surety from obligation with respect to any unpaid claims.
- C.3.3 Contractor shall include in each subcontract for property or services entered into by the Contractor and a first-tier subcontractor, including a material supplier, for the purpose of performing a construction contract, a payment clause that obligates the Contractor to pay the first-tier Subcontractor for satisfactory performance under its subcontract within ten (10) Days out of such amounts as are paid to the Contractor by the Owner under such contract.
- C.3.4 If the Contractor or a first-tier subcontractor fails, neglects or refuses to pay a person that provides labor or materials in connection with the Contract within 30 days after receiving payment from the contracting agency or a contractor, the Contractor or first-tier subcontractor owes the person the amount due plus interest charges that begin at the end of the 10-day period within which payment is due under ORS 279C.580 (4) and that end upon final payment, unless payment is subject to a good faith dispute as defined in ORS 279C.580. The rate of interest on the amount due is nine percent per annum. The amount of interest may not be waived.
- C.3.5 If the Contractor or a subcontractor fails, neglects or refuses to make payment to a person furnishing labor or materials in connection with the Contract, the person may file a complaint with the Construction Contractors Board, unless payment is subject to a good faith dispute as defined in ORS 279C.580.
- C.3.6 All employers, including Contractor, that employ subject workers who work under the Contract in the State of Oregon shall comply with ORS 656.017 and provide the required Workers' Compensation coverage, unless such employers are exempt under ORS 656.126. Contractor shall ensure that each of its Subcontractors complies with these requirements.
- C.3.7 In accordance with ORS 279C.570, for all subcontracts that exceed \$500,000 that the Contractor withholds retainage, the Contractor shall place amounts deducted as retainage into an interest-bearing escrow account. Interest on the retainage amount accrues from the

date the payment request is approved until the date the retainage is paid to the Subcontractor to which it is due.

C.4 PAYMENT FOR MEDICAL CARE

As a condition to Owner's performance hereunder, Contractor shall promptly, as due, make payment to any person, co-partnership, association or corporation furnishing medical, surgical, and hospital care or other needed care and attention, incident to sickness or injury, to the employees of the Contractor, of all sums of which the Contractor agrees to pay for the services and all moneys and sums that the Contractor collected or deducted from the wages of employees under any law, contract or agreement for the purpose of providing or paying for the services.

C.5 HOURS OF LABOR

As a condition to Owner's performance hereunder, no person shall be employed to perform Work under the Contract for more than ten (10) hours in any one day or forty (40) hours in any one week, except in cases of necessity, emergency or where public policy absolutely requires it. In such instances, Contractor shall pay the employee at least time and a half pay:

- (a) For all overtime in excess of eight (8) hours a day or forty (40) hours in any one week when the work week is five consecutive Days, Monday through Friday; or
- (b) For all overtime in excess of ten (10) hours a day or forty (40) hours in any one week when the work week is four consecutive Days, Monday through Friday; and
- (c) For all Work performed on Saturday and on any legal holiday specified in ORS 279C.540.

This Section C.5 will not apply to Contractor's Work under the Contract to the extent Contractor is currently a party to a collective bargaining agreement with any labor organization.

This Section C.5 shall not excuse Contractor from completion of the Work within the time required under the Contract.

**SECTION D
CHANGES IN THE WORK**

D.1 CHANGES IN WORK

D.1.1 The terms of the Contract shall not be waived, altered, modified, supplemented or amended in any manner whatsoever, without prior written agreement and then only after any necessary approvals have been obtained. A Change Order is required to modify the Contract, which shall not be effective until its execution by the parties to the Contract and all approvals required by public contracting laws have been obtained.

D.1.2 It is mutually agreed that changes in Plans, quantities, or details of construction may be necessary or desirable during the course of construction. Within the general scope of the Contract, the Owner may at any time, without notice to the sureties and without impairing the Contract, require changes it deems necessary or desirable within the scope of this Project and consistent with this Section D.1. All changes to the Work shall be documented and Change Orders shall be executed under the conditions of the Contract Documents. Such changes may include, but are not limited to:

- (a) Modification of specifications and design.
- (b) Increases or decreases in quantities.
- (c) Increases or decreases to the amount of Work.
- (d) Addition or elimination of any Work item.
- (e) Change in the duration of the Project.

- (f) Acceleration or delay in performance of Work.
- (g) Deductive changes.

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

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

- (a) Unit Pricing: Unit pricing may be utilized at the Owner's option when unit prices or solicitation alternates were provided that established the cost for adjustments to Work, and a binding obligation exists under the Contract on the parties covering the terms and conditions of the adjustment to Work.
- (b) Fixed Fee: If the Owner elects not to utilize unit pricing, or in the event that unit pricing is not available or appropriate, fixed pricing may be used for adjustments to or deletions from the Work. In fixed pricing, the basis of payments or total price shall be agreed upon in writing between the parties to the Contract, and shall be established before the Work is done whenever feasible. Notwithstanding the foregoing, the mark-ups set forth in Section D.1.3(c) shall be utilized in establishing fixed pricing, and such mark-ups shall not be exceeded. Cost and price data relating to adjustments to or deletions from the Work shall be supplied by Contractor to Owner upon request, but Owner shall be under no obligation to make such requests.
- (c) Time and Material: In the event that unit pricing and fixed pricing are not utilized, then adjustments to or deletions from the Work shall be performed on a cost reimbursement basis for Direct Costs. Such Work shall be compensated on the basis of the actual, reasonable and allowable cost of labor, equipment, and material furnished on the Work performed. The Contractor or Subcontractor who performs the Work shall be allowed to add up to ten percent (10%) markup to the Direct Costs as full compensation for profit, Overhead and other indirect costs for Work performed with the Contractor's or Subcontractor's own agents

Each ascending tier Subcontractor or the Contractor that did not perform the Work, will be allowed to add up to five percent (5%) supplemental markup on the Direct Costs of the Work (but not the above allowable markups) covered by a Change Order. No additional markup shall be permitted for any third tier or greater descending Subcontractor.

Example: \$20,000 of Direct Costs Work performed by a 2nd Tier Subcontractor

	Markup	Allowed Total Fee Plus Markup
General Contractor	5%	\$1,000.00
1 st Tier Sub Contractor	5%	\$1,000.00
2 nd Tier Sub Contractor	10%	\$22,000.00

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

authorization from Owner in the form of a Change Order. Contractor shall not be required to complete such additional Work without additional authorization.

- D.1.4 Any necessary adjustment of Contract Time that may be required as a result of adjustments to or deletions from the Work must be agreed upon by the parties before the start of the revised Work unless Owner authorizes Contractor to start the revised Work before agreement on Contract Time adjustment.

Contractor shall submit any request for additional compensation (and additional Contract Time if Contractor was authorized to start Work before an adjustment of Contract Time was approved) as soon as possible but no later than thirty (30) Days after receipt of Owner's request for additional Work. If Contractor's request for additional compensation or adjustment of Contract Time is not made within the thirty (30) Day time limit, Contractor's requests pertaining to that additional Work shall be barred. The thirty (30) Day time limit for making requests shall not be extended for any reason, including without limitation Contractor's claimed inability to determine the amount of additional compensation or adjustment of Contract Time, unless an extension is granted in writing by Owner. If the Owner denies Contractor's request for additional compensation or adjustment of Contract Time, Contractor may proceed to file a Claim under Section D.3, Claims Review Process. No other reimbursement, compensation, or payment will be made, except as provided in Section D.1.5 for impact claims.

- D.1.5 If any adjustment to Work under Section D.1.3 causes an increase or decrease in the Contractor's cost of, or the Contract Time required for the performance of any other part of the Work under the Contract, Contractor shall submit a written request to the Owner, setting forth the nature and specific extent of the request, including all time and cost impacts against the Contract as soon as possible, but no later than thirty (30) Days after receipt of Owner's request for adjustments to or deletions from the Work by Contractor.

The thirty (30) Day time limit applies to claims of Subcontractors, suppliers, or manufacturers who may be affected by Owner's request for adjustments to or deletions from the Work and who request additional compensation or an extension of Contract Time to perform; Contractor has responsibility for contacting its Subcontractors, suppliers, or manufacturers within the thirty (30) Day time limit, and including their requests with Contractor's requests. If the request involves Work to be completed by Subcontractors, or materials to be furnished by suppliers or manufacturers, such requests shall be submitted to the Contractor in writing with full analysis and justification for the adjustments to compensation and Contract Time requested. The Contractor shall analyze and evaluate the merits of the requests submitted by Subcontractors, suppliers, and manufacturers to Contractor prior to including those requests and Contractor's analysis and evaluation of those requests with Contractor's requests for adjustments to compensation or Contract Time that Contractor submits to the Owner. Failure of Subcontractors, suppliers, manufacturers or others to submit their requests to Contractor for inclusion with Contractor's requests submitted to Owner within the time period and by the means described in this section shall constitute a waiver of these Subcontractor claims. The Owner will not consider direct requests or claims from Subcontractors, suppliers, manufacturers or others not a party to the Contract. The consideration of such requests and claims under this section does not give any Person, not a party to the Contract the right to bring a claim against Owner, whether in this claims process, in litigation, or in any dispute resolution process.

If the Owner denies the Contractor's request for adjustment to compensation or Contract Time, the Contractor may proceed to file a Claim under Section D.3, Claims Review Process.

- D.1.6 No request or Claim by the Contractor for additional costs or an adjustment of Contract Time shall be allowed if made after receipt of final payment application under the Contract. Final payment application must be made by Contractor within the time required under Section E.6.4.

- D.1.7 It is understood that changes in the Work are inherent in construction of this type. The number of changes, the scope of those changes, and the effect they have on the progress of the original Work cannot be defined at this time. The Contractor agrees that it will work in good faith with Owner to undertake changes, when agreed upon by execution of a Change Order. Each change will be evaluated for extension of Contract Time and increase or decrease in compensation based on its own merit.

D.2 DELAYS

- D.2.1 Contractor shall not be entitled to additional compensation or additional Contract Time for Avoidable Delays.

- D.2.2 In the event of Unavoidable Delays, Contractor may be entitled to the following:

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

In the event of any requests for additional compensation or additional Contract Time, or both, as applicable, arising under this Section D.2.2 for Unavoidable Delays, other than requests for differing Project Site conditions for which a review process is established under Section A.4.5, Contractor shall submit a written notification of the delay to the Owner within two (2) Days of the occurrence of the cause of the delay. This written notification shall state the cause of the potential delay, the Project components impacted by the delay, and the anticipated additional Contract Time extension or the additional compensation, or both, as applicable, resulting from the delay. Within seven (7) Days after the cause of the delay has been mitigated, or in no case more than thirty (30) Days after the initial written notification, the Contractor shall submit to the Owner, a complete and detailed request for additional compensation or additional Contract Time, or both, as applicable, resulting from the delay. If the Owner denies Contractor's request for additional compensation or adjustment of Contract Time, the Contractor may proceed to file a Claim under Section D.3, Claims Review Process.

If Contractor does not timely submit the notices required under this Section D.2, Contractor's Claim shall be barred.

D.3 CLAIMS REVIEW PROCESS

- D.3.1 All Contractor Claims shall be referred to the Owner for review. Contractor's Claims, including Claims for adjustments to compensation or Contract Time, shall be submitted in writing by Contractor to the Owner within five (5) Days after a denial of Contractor's initial request for an adjustment of Contract terms, payment of money, extension of Contract Time or other relief, provided that such initial request has been submitted in accordance with the requirements and within the time limits established in these County General Conditions. Within thirty (30) Days after the initial Claim, Owner shall receive from Contractor a complete and detailed description of the Claim (the "Detailed Notice") that includes all information required by Section D.3.2. Unless the Claim is made in accordance with these time requirements, it shall be barred.

D.3.2 The Detailed Notice of the Claim shall be submitted in writing by Contractor and shall include all information, records and documentation necessary for the Owner to properly and completely evaluate the claim, including, but not limited to a detailed, factual statement of the basis of the Claim, pertinent dates, Contract provisions which support or allow the Claim, reference to or copies of any documents which support the Claim, the dollar value of the Claim, and the Contract Time adjustment requested for the Claim. If the Claim involves Work to be completed by Subcontractors, the Contractor will analyze and evaluate the merits of the Subcontractor claim prior to forwarding it and that analysis and evaluation to the Owner. The Owner will not consider direct claims from Subcontractors, suppliers, manufacturers, or others not a party to the Contract. Contractor agrees that it will make no agreement, covenant, or assignment, nor will it commit any other act that will permit or assist any Subcontractor, supplier, manufacturer, or other to directly or indirectly make a claim against Owner.

D.3.3 The Owner, through the Architect/Engineer (or other employee or agent assigned by the Owner) will review all Claims and take one or more of the following preliminary actions within ten (10) Days of receipt of the Detailed Notice of a Claim: (1) request additional supporting information from the Contractor; (2) inform the Contractor and Owner in writing of the time required for adequate review and response; (3) reject the Claim in whole or in part and identify the reasons for rejection; (4) recommend approval of all or part of the Claim; (5) arrange a meeting with the Contractor for formal review of the Claim; or (6) propose an alternate resolution.

D.3.4 Once the Engineer or Project Manager determines the Owner is in receipt of a properly submitted claim, the Engineer or Project Manager may arrange a meeting, as agreed by the parties, with the Contractor in order to present the claim for formal review and discussion. A person authorized by the Contractor to execute Change Orders on behalf of the Contractor must be present and attend all claim meetings.

D.3.5 The Owner's decision, through the Architect/Engineer (or other employee or agent assigned by the Owner), shall be final and binding on the Contractor unless appealed by written notice to the Owner within fifteen (15) Days of receipt of the decision. The Contractor must present written documentation supporting the Claim within fifteen (15) Days of the notice of appeal. After receiving the appeal documentation, the Owner, through the appropriate department director, shall review the materials and render a decision within thirty (30) Days after receiving the appeal documents.

D.3.6 If, at any step in the claim decision or review process, the Contractor fails to promptly submit requested information or documentation that the Owner deems necessary to analyze the claim, the Contractor is deemed to have waived its right to further review, and the Claim will not be considered properly filed and preserved.

D.3.7 Both parties agree to exercise their best efforts in good faith to resolve all disputes within sixty (60) Days of the issuance of the appeal in Section D. 3.4 above. If the parties are unable to resolve their issues through mediation or otherwise, either party may seek redress through all available remedies in equity or in law.

D.3.8 Unless otherwise directed by Owner, Contractor shall proceed with the Work while any Claim, or mediation or litigation arising from a Claim, is pending. Regardless of the review period or the final decision of the Owner, the Contractor shall continue to diligently pursue the Work as identified in the Contract Documents. In no case is the Contractor justified or allowed to cease or delay Work, in whole or in part, without a written stop work order from the Owner.

SECTION E PAYMENTS

E.1 SCHEDULE OF VALUES

The Contractor shall submit, by or before the pre-construction conference (as described in Section H.1.3), a schedule of values ("Schedule of Values") for the Contract Work. This schedule shall provide a breakdown of values for the Contract Work and will be the basis for progress payments. The breakdown shall demonstrate reasonable, identifiable, and measurable components of the Work. Unless objected to by the Owner, this schedule shall be used as the basis for reviewing Contractor's applications for payment. If objected to by Owner, Contractor shall revise the schedule of values and resubmit the same for approval of Owner.

E.2 APPLICATIONS FOR PAYMENT

E.2.1 Owner shall make progress payments on the Contract monthly as Work progresses, in accordance with the requirements of this Section E.2 and ORS 279C.570. Applications for payment shall be based upon estimates of Work completed and the Schedule of Values. As a condition precedent to Owner's obligation to pay, all applications for payment shall be approved by the Owner. A progress payment shall not be considered acceptance or approval of any Work or waiver of any defects therein. Owner shall pay to Contractor interest in accordance with ORS 279C.570 for overdue invoices, not including retainage, due the Contractor. Overdue invoices will be those that have not been paid within the earlier of:

- (a) Thirty (30) days after receipt of the invoice; or
- (b) Fifteen (15) days after the payment is approved by the County.

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

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

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

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

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

Signed: _____
Dated: _____"

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

- (a) The request for stored material shall be submitted at least thirty (30) Days in advance of the application for payment on which it appears. Applications for payment shall be entertained for major equipment, components or expenditures only.
- (b) The Contractor shall submit applications for payment showing the quantity and cost of the material stored.
- (c) The material shall be stored in a bonded warehouse and Owner shall be granted the right to access the material for the purpose of removal or inspection at any time during the Contract Period.
- (d) The Contractor shall name the Owner as co-insured on the insurance policy covering the full value of the property while in the care and custody of the Contractor until it is installed. A certificate noting this coverage shall be issued to the Owner.
- (e) Payments shall be made for materials and equipment only. The submitted amount in the application for payment shall be reduced by the cost of transportation from the storage site to the Project Site and for the cost of an inspector to verify delivery and condition of the goods at the storage site. The cost of storage and inspection shall be borne solely by the Contractor.
- (f) Within sixty (60) Days of the application for payment, the Contractor shall submit evidence of payment covering the material and/or equipment stored and of payment for the storage site.
- (g) Payment for stored materials and/or equipment shall in no way indicate acceptance of the materials and/or equipment or waive any rights under the Contract for the rejection of the Work or materials and/or equipment not in conformance with the Contract Documents.
- (h) All required documentation shall be submitted with the respective application for payment.

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

- (a) Work that is defective and not remedied, or that has been demonstrated or identified as failing to conform with Applicable Laws or the Contract Documents;
- (b) third party claims filed or evidence reasonably indicating that such claims will likely be filed unless security acceptable to the Owner is provided by the Contractor;
- (c) failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment (in which case Owner may issue checks made payable jointly to Contractor and such unpaid persons under this provision, or directly to Subcontractors and suppliers at any level under Section C.3.2);

- (d) reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Price;
- (e) damage to the Work, Owner or Owner's agent;
- (f) reasonable evidence that the Work will not be completed within the Contract Time required by the Contract, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
- (g) failure to carry out the Work in accordance with the Contract Documents; or
- (h) assessment of liquidated damages, when withholding is made for offset purposes.

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

- (a) Take that portion of the Contract Price properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the total Contract Price allocated to that portion of the Work in the Schedule of Values, less retainage as provided in Section E.5. Pending final determination of cost to the Owner of changes in the Work, no amounts for changes in the Work can be included in applications for payment until the Contract Price has been adjusted by a Change Order;
- (b) Add that portion of the Contract Price properly allocable to materials and equipment delivered and suitably stored at the Project Site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner pursuant to Section E.2.3, suitably stored off the Project Site at a location agreed upon in writing), less retainage as provided in Section E.5;
- (c) Subtract the aggregate of previous payments made by the Owner; and
- (d) Subtract any amounts for which the Owner has withheld or nullified payment as provided in the Contract Documents.

E.2.6 Contractor's applications for payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay to a Subcontractor or material supplier.

E.2.7 The Contractor warrants to Owner that title to all Work covered by an application for payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an application for payment all Work for which payments are received from the Owner shall be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided financing, labor, materials and equipment relating to the Work.

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

E.3 PAYROLL CERTIFICATION REQUIREMENT

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

E.4 DUAL PAYMENT SOURCES

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

E.5 RETAINAGE

E.5.1 Retainage shall be withheld and released in accordance with the requirements set forth in Local Contract Review Board Rules or the applicable County standard.

E.5.1.1 Owner may reserve as retainage from any progress payment an amount not to exceed five percent of the payment. As Work progresses, Owner may reduce the amount of retainage on or may eliminate retainage on any remaining monthly Contract payments after fifty (50) percent of the Work under the Contract is completed if, in the Owner's discretion, such Work is progressing satisfactorily. Elimination or reduction of retainage shall be allowed only upon written application by the Contractor, which application shall include written approval of Contractor's surety; except that when the Work is ninety-seven and a half percent (97.5%) completed in Owner's estimation, the Owner may, at its discretion and without application by the Contractor, reduce the retained amount to hundred (100) percent of the value of the Work remaining to be done. Upon receipt of written application by the Contractor, Owner shall respond in writing within a reasonable time.

E.5.1.2 If retainage is withheld, unless the Contractor requests and the Owner accepts a form of retainage described in options (a) or (b) below, the Owner (except as otherwise provided below for a contract of \$500,000 or less), will deposit the retainage in an interest-bearing escrow account as required by ORS 279C.570(2). The Contractor shall execute such documentation and instructions respecting the interest-bearing escrow account as the Owner may require to protect its interests, including but not limited to a provision that no funds may be paid from the account to anyone without the Owner's advance written authorization. For a Contract over \$500,000, if the Contractor requests that the Owner deposit the retainage in an interest-bearing account under ORS 279C.560(5), the Owner will use an interest-bearing escrow account as stated above. For a Contract of \$500,000 or less, if the Contractor requests that the Owner deposit the retainage in an interest-bearing account under ORS 279C.560(5), the Owner will use an interest-bearing account (in a bank, savings bank, trust company or savings association) as provided under ORS 279C.450(5).

In accordance with the provisions of ORS 279C.560, Local Contract Review Board Rules, or the applicable County standard, unless the Owner finds in writing that accepting bonds, securities or other instruments described in option (a) below or a security bond described in option (b) below poses an extraordinary risk that is not typically associated with the bond, security or instrument, the Owner will approve the Contractor's written request:

- a. to be paid amounts which would otherwise have been retained from progress payments where Contractor has deposited acceptable bonds, securities or other instruments of equal value with Owner or in a custodial account or other mutually-agreed account satisfactory to Owner, with an approved bank or trust company to be held in lieu of the cash retainage for the benefit of Owner. Interest or earnings on the bonds, securities or other instruments shall accrue to the Contractor. The Contractor shall execute and provide such documentation and instructions respecting the bonds, securities and other instruments as the Owner may require to protect its interests. To be permissible, the bonds, securities and other instruments must be of a character approved by Owner; or

- b. that the Contractor be allowed, with the approval of the Owner, Owner allow Contractor to deposit a surety bond for the benefit of Owner, in a form acceptable to Owner, in lieu of all or a portion of funds retained, or to be retained. Such bond and any proceeds therefrom shall be made subject to all claims and liens in the manner and priority as set forth for retainage under ORS 279C.550 to ORS 279C.625.

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

E. 5.1.3 The retainage held by Owner shall be included in and paid to the Contractor as part of the final payment of the Contract Price. The Owner shall pay to Contractor interest at the rate of two thirds of one percent per month on the final payment due Contractor, interest to commence forty-five (45) Days after the date which Owner receives Contractor's final approved application for payment and Work under the Contract has been completed and accepted and to run until the date when final payment is tendered to Contractor. The Contractor shall notify Owner in writing when the Contractor considers the Work complete and deliver to Owner its final application for payment and Owner shall, within fifteen (15) Days after receiving the written notice and the application for payment, either accept the Work or notify the Contractor of Work yet to be performed on the Contract. If Owner does not within the time allowed notify the Contractor of Work yet to be performed to fulfill contractual obligations, the interest provided by this subsection shall commence to run forty-five (45) Days after the end of the fifteen (15) Day period.

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

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

E.5.1.6 The Contractor shall comply with all applicable legal requirements for withholding and releasing retainage and for prompt payments, including but not limited to those in ORS Chapters 279C and 701, and 49 CFR 26.29.

E.6 FINAL PAYMENT

E.6.1 Upon completion of all the Work under the Contract, the Contractor shall notify the Owner, in writing, that Contractor has completed Contractor's obligations under the Contract and shall prepare its application requesting final payment. The amount of final payment will be the difference between the total amount due the Contractor pursuant to the Contract Documents and the sum of all payments previously made. Upon receipt of such notice and application for payment, the Owner will inspect the Work, and, if acceptable, submit to Contractor a recommendation as to acceptance of the completed Work and the final estimate of the amount due the Contractor. If the Work is not acceptable, Owner will notify Contractor within fifteen (15) Days of Contractor's request for final payment. Upon approval of this final application for payment by the Owner and compliance by the Contractor with

provisions in Section K, and Contractor's satisfaction of other provisions of the Contract Documents as may be applicable, the Owner shall pay to the Contractor all monies due under the provisions of these Contract Documents.

- E.6.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Owner (1) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least thirty (30) Days' prior written notice has been given to the Owner, (2) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (3) consent of surety, if any, to final payment and (4), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien.
- E.6.3 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final application for payment.
- E.6.4 Contractor agrees to submit its final payment application within ninety (90) Days after Substantial Completion, unless written extension is granted by Owner. Contractor shall not delay final payment application for any reason, including without limitation nonpayment of Subcontractors, suppliers, manufacturers or others not a party to the Contract, or lack of resolution of a dispute with Owner or any other person of matters arising out of or relating to the Contract. If Contractor fails to submit its final payment application within ninety (90) Days after Substantial Completion, and Contractor has not obtained written extension by Owner, all requests or Claims for additional costs or an extension of Contract Time shall be barred.

SECTION F PROJECT SITE CONDITIONS

F.1 USE OF PREMISES

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

F.2 PROTECTION OF WORKERS, PROPERTY AND THE PUBLIC

- F.2.1 Contractor shall maintain continuous and adequate protection of all of the Work from damage and shall protect the Owner, workers and property from injury or loss arising in connection with the Contract. Contractor shall remedy acceptably to the Owner any damage, injury, or loss, except such as may be directly due to errors in the Contract Documents or caused by authorized representatives or personnel of the Owner. Contractor shall adequately protect adjacent property as provided by law and the Contract Documents.
- F.2.2 Contractor shall take all necessary precautions for the safety of all personnel on the Project Site or otherwise engaged in the undertaking of the Work and shall comply with the Contract Documents, best practices and all applicable provisions of federal, state and municipal safety laws and building codes to prevent

accidents or injury to persons on, about or adjacent to the premises where the Work is being performed. Contractor shall erect and properly maintain at all times, as required by the conditions and progress of the Work, all necessary safeguards for protection of workers and the public against any hazards created by construction. Contractor shall designate a responsible employee or associate on the Project Site, whose duty shall be the prevention of accidents. The name and position of the person designated shall be reported to the Owner. The Owner has no responsibility for Project Site safety. Project Site safety shall be the responsibility of the Contractor.

- F.2.3 Contractor shall not enter upon private property without first obtaining permission from the property owner or its duly authorized representative. Contractor shall be responsible for the preservation of all public and private property along and adjacent to the Work contemplated under the Contract and shall use every precaution necessary to prevent damage thereto. In the event the Contractor damages any property, the Contractor shall at once notify the property owner and make, or arrange to make, full restitution. Contractor shall, immediately and in writing, report to the Owner, all pertinent facts relating to such property damage and the ultimate disposition of the claim for damage.
- F.2.4 Contractor shall be responsible for protection of adjacent work areas including impacts brought about by activities, equipment, labor, utilities, vehicles and materials on the Project Site.
- F.2.5 Contractor shall at all times direct its activities in such a manner as to minimize adverse effects on the environment. Handling of all materials shall be conducted so no release will occur that may pollute or become hazardous.
- F.2.6 In an emergency affecting the safety of life or limb or of the Work or of adjoining property, the Contractor, without special instruction or authorization from the Owner, shall act reasonably to prevent threatened loss or injury, and shall so act, without appeal, if instructed by the Owner. Any compensation claimed by the Contractor on account of emergency work shall be determined in accordance with section D.
- F.2.7 Contractor shall comply with all Owner safety rules and regulations, if applicable. Prior to commencement of any Work, Contractor and Subcontractors shall be required to complete an Owner Contractor Safety Orientation and submit all Owner required safety plans.
- F.2.8 Contractor shall demonstrate that an employee drug testing program is in place.

F.3 CUTTING AND PATCHING

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

F.4 CLEANING UP

From time to time as may be prudent or ordered by the Owner and, in any event, immediately after completion of the Work, the Contractor shall, at its own expense, clean up and remove all refuse and unused materials of any kind resulting from the Work. If Contractor fails to do so within twenty-four (24) hours after notification by the Owner the work may be

done by others and the cost charged to the Contractor and deducted from payment due the Contractor.

F.5 ENVIRONMENTAL CONTAMINATION

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

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

F.5.1.2 Unless otherwise approved in the Solicitation Document, Contractor shall obtain the Owner’s written consent prior to bringing onto the Project Site any (i) environmental pollutants or (ii) hazardous substances or materials, as the same or reasonably similar terms are used in any Applicable Laws. In any event, Contractor shall provide prior written notice to Owner when hazardous materials are brought on to the Project Site. The Contractor, at all times, shall:

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

F.5.2 Contractor shall report all reportable quantity releases, as such releases are defined in Applicable Laws. Upon discovery, regardless of quantity, Contractor must verbally report all releases to the Owner in a prompt manner. A written follow-up report shall be submitted to Owner within 48 hours of the telephonic report. Such written report shall contain, as a minimum:

- (a) Description of items released (identity, quantity, manifest numbers, and any and all other documentation required by law).
- (b) Whether amount of items released is EPA/DEQ reportable, and, if so, when reported.
- (c) Exact time and location of release, including a description of the area involved.
- (d) Containment procedures initiated.

(e) Summary of communications about the release between Contractor and State, local or federal officials other than Owner. Any communication to the press will be done by Owner and Contractor will defer to Owner.

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

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

F.6 ENVIRONMENTAL CLEAN-UP

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

F.6.2 Upon being notified by Contractor of the presence of hazardous substance(s) on the Project Site, not brought on to the Project Site by Contractor, Owner shall arrange for the proper disposition of such hazardous substance(s).

F.7 DEMOLITION

F.7.1 For demolition tasks, if any, the Contractor shall salvage or recycle construction and demolition debris, if feasible and cost-effective.

**SECTION G
INDEMNITY, BONDING, AND INSURANCE**

G.1 RESPONSIBILITY FOR DAMAGES / INDEMNITY

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

G.1.2 To the fullest extent permitted by law, Contractor shall indemnify, defend (with counsel approved by Owner) and hold harmless the Owner and its elected officials, officers, directors, agents, and employees (collectively "Indemnitees") from and against all liabilities, damages, losses, claims, expenses, demands and actions of any nature whatsoever which arise out of, result from or are related to: (a) any damage, injury, loss, expense, inconvenience or delay described in this Section G.1; (b) any accident or occurrence which happens or is alleged to have happened in or about the Project Site or any place where the Work is being performed, or in the vicinity of either, at any time prior to the time the Work is fully completed in all respects; (c) any failure of the Contractor to

observe or perform any duty or obligation under the Contract Documents which is to be observed or performed by the Contractor, or any breach of any agreement, representation or warranty of the Contractor contained in the Contract Documents or in any subcontract; (d) the negligent acts or omissions of the Contractor, a Subcontractor or anyone directly or indirectly employed by them or any one of them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder (except to the extent otherwise void under ORS 30.140); and (e) any lien filed upon the Project or bond claim in connection with the Work. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section G.1.2.

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

G.2 PERFORMANCE AND PAYMENT SECURITY; PUBLIC WORKS BOND

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

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

G.2.3 Before execution of the Contract, the Contractor shall file with the Construction Contractors Board, and maintain in full force and effect, the separate public works bond required by Oregon Revised Statutes, Chapter 279C.830 and 279C.836, unless otherwise exempt under those provisions. The Contractor shall also include in every subcontract a provision requiring the Subcontractor to have a public works bond filed with the Construction Contractors Board before starting Work, unless otherwise exempt, and shall verify that the Subcontractor has filed a public works bond before permitting any Subcontractor to start Work.

G.3 INSURANCE

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

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

Subcontractor or anyone else directly employed by either the Contractor or its Subcontractors.

G.3.3 Builder's Risk Insurance:

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

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

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

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

G.3.4 General Liability Insurance:

G.3.4.1 Commercial General Liability: Upon execution of a Contract, Contractor shall obtain, and keep in effect at Contractor's expense for the term of the Contract, Commercial General Liability Insurance ("CGL") covering bodily injury and property damage in the amount of not less than \$1,000,000 per claim and \$2,000,000 per occurrence in a form satisfactory to Owner. This insurance shall include personal injury liability, products and completed operations, and contractual liability coverage for the indemnities provided under the Contract (to the extent contractual liability coverage for the indemnity is available in the marketplace), and shall be issued on an occurrence basis written on ISO Form GC 00 01 (12 04 or later) or an equivalent form approved in advance by Owner. The CGL shall provide separation of insured language. The policy or policies obtained by Contractor for purposes of fulfilling the requirements of this section shall be primary insurance with respect to the Owner. Any insurance or self-insurance maintained by the County shall be excess and shall not contribute to it.

G.3.4.2 Automobile Liability: Contractor shall obtain, at Contractor's expense, and keep in effect during the term of the Contract, Automobile Liability Insurance covering owned, and/or hired vehicles, as applicable. The coverage may be written in combination with the Commercial General Liability Insurance. Contractor shall provide proof of insurance of not less than \$1,000,000 per claim and \$2,000,000 per occurrence. Contractor

and its Subcontractors shall be responsible for ensuring that all non-owned vehicles maintain adequate Automobile Liability insurance while on Project Site.

- G.3.4.3 Owner may adjust the insurance amounts required in Section G.3.4.1 and G.3.4.2 based upon institution specific risk assessments through the issuance of Supplemental General Conditions and a Contract.
- G.3.4.4 To the extent that the Contract Documents require the Contractor to provide professional design services, design-build, or certifications related to systems, materials, or equipment, the Contractor shall (1) purchase and maintain professional liability/errors-and-omissions insurance with limits of not less than \$1,000,000 for each claim and \$2,000,000 general annual aggregate and (2) cause those Subcontractors (of any tier) who are providing professional design services including any design-build services to procure and maintain professional liability/errors-and-omissions insurance with limits of not less than \$1,000,000 for each claim and \$2,000,000 general annual aggregate. This policy shall be for the protection of the Owner, its elected officials, officers, agents and employees against liability for damages because of personal injury, bodily injury, death, or damage to property, including loss of use thereof, and damages because of negligent acts, errors and omissions in any way related to the Contract. The Owner, at its option, may require a complete copy of the above policy.
- G.3.4.5 "Tail" Coverage: If any of the required liability insurance is arranged on a "claims made" basis, "tail" coverage will be required at the completion of the Contract for a duration of 36 months or the maximum time period available in the marketplace if less than 36 months. Contractor shall furnish certification of "tail" coverage as described or continuous "claims made" liability coverage for 36 months following Final Completion. Continuous "claims made" coverage will be acceptable in lieu of "tail" coverage, provided its retroactive date is on or before the effective date of the Contract. Owner's receipt of the policy endorsement evidencing such coverage shall be a condition precedent to Owner's obligation to make final payment and to Owner's final acceptance of Work or services and related warranty (if any).
- G.3.4.6 Umbrella Liability (if required by Owner through issuance of Supplemental General Conditions): Contractor shall obtain, at Contractor's expense, and keep in effect during the term of the Contract, Umbrella liability Insurance over and above the general liability, automobile liability and workers' compensation coverage if required by Owner in specified limits at time of requirement.
- G.3.4.7 Pollution Liability may be required by Owner through issuance of Supplemental General Conditions.
- G.3.5 Additional Insured: The general liability insurance coverage, automobile liability, umbrella, and pollution liability if required, shall include the Owner as additional insureds but only with respect to the Contractor's activities to be performed under the Contract. The additional-insured endorsement for CGL insurance must be written on ISO Form CG 20 10 (10 01) and CG 20 37 (10 01), or their equivalent, but shall not use either of the following forms: CG 20 10 (10 93) or CG 20 10 (03 94). Proof of insurance must include a copy of the endorsement showing "Clackamas County, its elected officials, agents, officers, and employees" as scheduled insureds.

If Contractor cannot obtain an insurer to name the Owner as additional insureds, Contractor shall obtain at Contractor's expense, and keep in effect during the term of the Contract, Owners and Contractors Protective Liability Insurance, naming the Owner as additional insureds with not less than a \$2,000,000

limit per occurrence. This policy must be kept in effect for 36 months following Final Completion. As evidence of coverage, Contractor shall furnish the actual policy to Owner prior to execution of the Contract.

- G.3.6 Notice of Cancellation or Change: If the Contractor receives a non-renewal or cancellation notice from an insurance carrier affording coverage required herein, or receives notice that coverage no longer complies with the insurance requirements herein, Contractor agrees to notify Owner by fax within five (5) business days with a copy of the non-renewal or cancellation notice, or written specifics as to which coverage is no longer in compliance. When notified by Owner, the Contractor agrees to stop Work pursuant to the Contract at Contractor's expense, unless all required insurance remain in effect. Any failure to comply with the reporting provisions of this insurance, except for the potential exhaustion of aggregate limits, shall not affect the coverages provided to the Owner and its institutions, divisions, officers, and employees.
- Owner shall have the right, but not the obligation, of prohibiting Contractor from entering the Project Site until a new certificate(s) of insurance is provided to Owner evidencing the replacement coverage. The Contractor agrees that Owner reserves the right to withhold payment to Contractor until evidence of reinstated or replacement coverage is provided to Owner.
- G.3.7 Certificate(s) of Insurance/Insurance Carrier Qualification: As evidence of the insurance coverage required by the Contract, the Contractor shall furnish certificate(s) of insurance to the Owner prior to execution of the Contract. The certificate(s) will specify all of the parties who are additional insureds or loss payees for the Contract. A renewal certificate shall be sent to Owner at least 10 days prior to coverage expiration. Insurance coverage required under the Contract shall be obtained from insurance companies or entities acceptable to the Owner and that are eligible to provide such insurance under Oregon law. Eligible insurers include admitted insurers that have been issued a certificate of authority from the Oregon Department of Consumer and Business Services authorizing them to conduct an insurance business and issue policies of insurance in the state of Oregon, and certain non-admitted surplus lines insurers that satisfy the requirements of applicable Oregon law and which are subject to approval by the Owner. The Contractor shall be financially responsible for all deductibles, self-insured retentions and/or self-insurance included hereunder. Any deductible, self-insured retention and/or self-insurance in excess of \$50,000 shall be subject to approval by the Owner in writing and shall be a condition precedent to the effectiveness of any Contract.

SECTION H SCHEDULE OF WORK

H.1 CONTRACT PERIOD

- H.1.1 Time is of the essence. The Contractor shall at all times carry on the Work diligently, without delay and punctually fulfill all requirements herein.
- H.1.2 Notice to Proceed. Unless otherwise directed in the Contract Documents, Contractor shall commence Work on the Project Site within fifteen (15) Days of the Notice to Proceed. Notwithstanding the Notice to Proceed, Contractor shall not be authorized to proceed with the Work until all initial Contract requirements, including the Contract, performance bond and payment bond, and certificates of insurance, have been fully executed and submitted in a form acceptable to Owner.
- H.1.3 Unless otherwise not required in the Construction Documents, Contractor shall participate in a pre-construction conference with the Owner's representative and designated design team. The

purpose of this pre-construction conference is to review the Contractor's proposed Schedule of Values and to review any other Project logistics to be coordinated between the parties.

H.1.4 Unless specifically extended by a Change Order, all Work shall be complete by the date contained in the Contract Documents. The Owner shall have the right to accelerate the completion date of the Work, which may require the use of overtime. Such accelerated Work schedule shall be an acceleration in performance of Work under Section D.1.2(f) and shall be subject to the provisions of Section D.1.

H.1.5 The Owner shall not waive any rights under the Contract by permitting the Contractor to continue or complete in whole or in part the Work after the date described in Section H.1.2 above.

H.2 SCHEDULE

H.2.1 Contractor shall provide, by or before the pre-construction conference, the initial as-planned schedule for review and acceptance by the Owner. The submitted schedule must illustrate Work by Project components, labor trades, and long lead items broken down by building and/or floor where applicable. If Owner shall so elect, Contractor shall provide the schedule in CPM format showing the graphical network of planned activities, including i) a reasonably detailed list of all activities required to complete the Work; ii) the time and duration that each activity will take to completion; and iii) the dependencies between the activities. Schedules lacking adequate detail, or unreasonably detailed, will be rejected. The schedule shall include the following: Notice to Proceed or the date the Work commences, if no Notice to Proceed is issued by Owner, Substantial Completion, and Final Completion. Schedules shall be updated monthly, unless otherwise required by the Contract Documents, and submitted with the monthly application for payment. Acceptance of the Schedule by the Owner does not constitute agreement by the Owner as to the Contractor's sequencing, means, methods, or durations. Any positive difference between the Contractor's scheduled completion and the Contract completion date is float owned by the Owner. Owner reserves the right to negotiate the float if it is deemed to be in Owner's best interest to do so. In no case shall the Contractor make a claim for delays if the Work is completed within the Contract Time but after Contractor's scheduled completion.

H.2.2 All Work shall be completed during normal weekdays (Monday through Friday) between the hours of 7:00 a.m. and 5:00 p.m. unless otherwise specified in the Contract Documents. Unless otherwise specified in the Contract Documents, no Work shall be performed during the following holidays:

- New Year's Day
- Martin Luther King Day
- Memorial Day
- Independence Day
- Labor Day
- Veterans Day
- Thanksgiving Day
- Christmas Day
- President's Day

When a holiday falls on a Sunday, the following Monday shall be recognized as a legal holiday. When a holiday falls on Saturday, the preceding Friday shall be recognized as a legal holiday.

H.3 PARTIAL OCCUPANCY OR USE

The Owner may occupy or use any completed or partially completed portion of the Work at any stage, provided such occupancy or use is consented to by public authorities having

jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have reasonably accepted in writing the responsibilities assigned to each of them. Approval by the Contractor to partial occupancy or use shall not be unreasonably withheld. Immediately prior to such partial occupancy or use, the Owner and Contractor shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work. Partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

SECTION I CORRECTION OF WORK

I.1 CORRECTION OF WORK BEFORE FINAL PAYMENT

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

I.2 WARRANTY WORK

I.2.1 Neither the final certificate of payment nor any provision of the Contract Documents shall relieve the Contractor from responsibility for Defective Work and, unless a longer period is specified, Contractor shall correct all defects that appear in the Work within a period of one year from the date of issuance of the written notice of Substantial Completion by the Owner except for latent defects which will be remedied by the Contractor at any time they become apparent. The Owner shall give Contractor notice of defects with reasonable promptness. Contractor shall perform such warranty work within a reasonable time after Owner's demand and at Contractor's sole expense. If Contractor fails to complete the warranty work within such period as Owner determines reasonable, or at any time in the event of warranty work consisting of emergency repairs, Owner may perform such work and Contractor shall reimburse Owner all costs of the same within ten (10) Days after demand, without affecting Contractor's obligations. The Contractor shall perform the warranty Work by correcting defects within twenty-four (24) hours of notification by Owner, unless otherwise specified in the Contract Documents. Should the Contractor fail to respond within the specified response time, the Owner may, at its option, complete the necessary repairs using another contractor or its agents. If Owner completes the repairs using Owner's agent, Contractor shall pay Owner at the rate of one and one-half (1½) times the standard hourly rate of Owner's agent, plus related overhead and any direct non-salary costs. If Owner completes the repairs using another contractor, Contractor shall pay Owner the amount of Owner's direct costs billed by the other contractor for the work, plus the direct salary costs and related overhead and direct non-salary expenses of Owner's agents who

are required to monitor that contractor's work. Work performed by Owner using Owner's own agents or those of another contractor shall not affect the Contractor's contractual duties under these provisions, including warranty provisions.

- I.2.2 Nothing in this Section I.2 provision shall negate guarantees or warranties for periods longer than one year including without limitation, such guarantees or warranties required by other sections of the Contract Documents for specific installations, materials, processes, equipment or fixtures.
- I.2.3 In addition to Contractor's warranty, manufacturer's warranties shall pass to the Owner and shall not take effect until such portion of the Work covered by the applicable warranty has been accepted in writing by the Owner.
- I.2.4 The one-year period for correction of Work shall be extended with respect to portions of Work performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work, and shall be extended by corrective Work performed by the Contractor pursuant to this Section, as to the Work corrected. The Contractor shall remove from the Project Site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.
- I.2.5 Nothing contained in this Section I.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the period for correction of Work as described in this Section I.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.
- I.2.6 If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Price will be reduced as appropriate and equitable as determined by Owner. Such adjustment shall be effected whether or not final payment has been made.

SECTION J

SUSPENSION AND/OR TERMINATION OF THE WORK

J.1 OWNER'S RIGHT TO SUSPEND THE WORK

- J.1.1 The Owner has the authority to suspend portions or all of the Work due to the following causes:
 - (a) Failure of the Contractor to correct unsafe conditions;
 - (b) Failure of the Contractor to carry out any provision of the Contract;
 - (c) Failure of the Contractor to carry out orders;
 - (d) Conditions, in the opinion of the Owner, which are unsuitable for performing the Work;
 - (e) Time required to investigate differing Project Site conditions; or
 - (f) Any reason considered to be in the public interest.
- J.1.2 The Owner shall notify Contractor and the Contractor's Surety in writing of the effective date and time of the suspension, and Owner shall notify Contractor and Contractor's surety in writing to resume Work.

J.2 CONTRACTOR'S RESPONSIBILITIES

- J.2.1 During the period of the suspension, Contractor is responsible to continue maintenance at the Project just as if the Work were in progress. This includes, but is not limited to, protection of completed Work, maintenance of access, protection of stored materials, temporary facilities, and clean-up.
- J.2.2 When the Work is recommenced after the suspension, the Contractor shall replace or renew any Work damaged during the suspension, remove any materials or facilities used as part of temporary maintenance, and complete the Work in every respect as though its prosecution had been continuous and without suspension.

J.3 COMPENSATION FOR SUSPENSION

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

J.4 OWNER'S RIGHT TO TERMINATE CONTRACT

- J.4.1 The Owner may, without prejudice to any other right or remedy, and after giving Contractor seven (7) Days' written notice and an opportunity to cure, terminate the Contract in whole or in part under the following conditions:
 - (a) If Contractor should, voluntarily or involuntarily, seek protection under the United States Bankruptcy Code and Contractor as debtor-in-possession or the Trustee for the estate fails to assume the Contract within a reasonable time;
 - (b) If Contractor should make a general assignment for the benefit of Contractor's creditors;
 - (c) If a receiver should be appointed on account of Contractor's insolvency;
 - (d) If Contractor should repeatedly refuse or fail to supply an adequate number of skilled workers or proper materials to carry on the Work as required by the Contract Documents, or otherwise fail to perform the Work in a timely manner;
 - (e) If Contractor should repeatedly fail to make prompt payment to Subcontractors or for material or labor, or should disregard laws, ordinances or the instructions of the Owner;
 - (f) If Contractor is otherwise in breach of any part of the Contract; or
 - (g) If Contractor is in violation of Applicable Laws, either in the conduct of its business or in its performance of the Work.
- J.4.2 At any time that any of the above occurs, Owner may exercise all rights and remedies available to Owner at law or in equity, and, in addition, Owner may take possession of the premises and of all materials and appliances and finish the Work by whatever method it may deem expedient. In such case, the Contractor shall not be entitled to receive further payment until the Work is completed. If

the Owner's cost of finishing the Work exceeds the unpaid balance of the Contract Price, Contractor shall pay the difference to the Owner.

J.5 TERMINATION FOR CONVENIENCE, NON-APPROPRIATION OF FUNDS, OR FORCE MAJEURE

- J.5.1 Owner may terminate the Contract in whole or in part whenever Owner determines: (a) that termination of the Contract is in the best interest of Owner or the public; (b) that the Owner failed to receive funding, appropriations, allocations or other expenditure authority as contemplated by Owner's budget and Owner determines, in its sole determination, and its assessment and ranking of the policy objectives explicit or implicit in Owner's budget, Owner may determine it is necessary to and may terminate the Contract.; or (c) in the event of Force Majeure.
- J.5.2 The Owner shall provide the Contractor with seven (7) Days prior written notice of a termination for Owner's or for public convenience. After such notice, the Contractor shall provide the Owner with immediate and peaceful possession of the premises and materials located on and off the premises for which the Contractor received progress payment under Section E. Compensation for Work terminated by the Owner under this provision will be according to Section E. In no circumstance shall Contractor be entitled to lost profits for Work not performed due to termination. If the Contract is terminated for public convenience, neither the Contractor nor its Surety shall be relieved of liability for damages or losses suffered by the Owner as a result of defective, unacceptable or unauthorized Work completed or performed.

J.6 ACTION UPON TERMINATION

- J.6.1 Upon receiving a notice of termination, and except as directed otherwise by the Owner, Contractor shall immediately cease placing further subcontracts or orders for materials, services, or facilities. In addition, Contractor shall terminate all subcontracts or orders to the extent they relate to the Work terminated and, with the prior written approval of the Owner, settle all outstanding liabilities and termination settlement proposals arising from the termination of subcontracts and orders.
- J.6.2 As directed by the Owner, Contractor shall, upon termination, transfer title and deliver to the Owner all Record Documents, information, and other property that, if the Contract had been completed, would have been required to be furnished to the Owner.
- J.6.3 Upon Owner's notice of termination pursuant to either Section J.4 or J.5, if Owner shall so elect, Contractor shall assign to the Owner such subcontracts and orders as Owner shall specify. In the event Owner elects to take assignment of any such subcontract or order, Contractor shall take such action and shall execute such documents as Owner shall reasonably require for the effectiveness of such assignment and Contractor shall ensure that no contractual arrangement between it and its subcontractors or suppliers of any tier or sub-tier shall prevent such assignment.

SECTION K CONTRACT CLOSE OUT

K.1 RECORD DOCUMENTS

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

K.2 OPERATION AND MAINTENANCE MANUALS

As part of the Work, Contractor shall submit two completed operation and maintenance manuals ("O & M Manuals") for review by the Owner prior to submission of any pay request for more than 75% of the Work. Owner's receipt of the O & M Manuals shall be a condition precedent to any payment thereafter due. The O & M Manuals shall contain a complete set of all submittals, all product data as required by the specifications, training information, telephone list and contact information for all consultants, manufacturers, installer and suppliers, manufacturer's printed data, record and shop drawings, schematic diagrams of systems, appropriate equipment indices, warranties and bonds. The Owner shall review and return one O & M Manual for any modifications or adjustments required. Prior to submission of its final pay request, Contractor shall deliver two (2) complete and approved sets of O & M Manuals in paper form and one (1) complete and approved set in electronic form to the Owner and Owner's receipt of the O & M Manuals shall be a condition precedent to Owner's obligation to make final payment.

K.3 COMPLETION NOTICES

- K.3.1 Contractor shall provide Owner written notice of both Substantial and Final Completion. The certificate of Substantial Completion shall state the date of Substantial Completion, the responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and the time within which the Contractor shall finish all items on the Punch List accompanying the Certificate. Both completion notices must be signed and notarized by the Contractor and signed by the Architect/Engineer (if applicable) and Owner to be valid. The Owner shall provide the final signature on the notices. The notices shall take effect on the date they are signed by the Owner.
- K.3.2 Substantial Completion of a facility with operating systems (e.g., mechanical, electrical, HVAC) shall be that degree of completion that has provided a minimum of thirty (30) continuous Days of successful, trouble-free operation, which period shall begin after all performance and acceptance testing has been successfully demonstrated to the Owner. All equipment contained in the Work, plus all other components necessary to enable the Owner to operate the facility in the manner that was intended, shall be complete on the Substantial Completion date. The Contractor may request that a Punch List be prepared by the Owner with submission of the request for the Substantial Completion notice.

K.4 TRAINING

As part of the Work, and prior to submission of the final application for payment, the Contractor shall schedule with the Owner training sessions for all equipment and systems as required by the Contract Documents. Contractor shall schedule training sessions at least two weeks in advance of the date of training to allow Owner to provide its personnel with adequate notice. If assignments arise because of termination under Section J.4, then such assignments shall not relieve Contractor of liability hereunder. The O & M Manual shall be used as a basis for training. In addition to any off-Project Site training required by the Contract Documents, training shall include a formal session conducted at the Project Site after the equipment and/or system is completely installed and operational in its normal operating environment.

K.5 EXTRA MATERIALS

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

K.6 ENVIRONMENTAL CLEAN-UP

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

K.7 CERTIFICATE OF OCCUPANCY

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

K.8 OTHER CONTRACTOR RESPONSIBILITIES

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

The Owner's property is drug free and weapons free areas and the use of tobacco products is only allowed in designated areas. Contractor shall be required to ensure that its employees, Subcontractors and agents shall comply with these requirements.

SECTION L GENERAL PROVISIONS

L.1 NO THIRD PARTY BENEFICIARIES

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

L.2 SEVERABILITY

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

L.3 ACCESS TO RECORDS

L.3.1 Contractor shall keep, at all times on the Project Site, one record copy of the complete Contract Documents, including the Plans, Specifications, addenda, and Change Orders (if any) in good order and marked currently to record field changes and selections made during construction, and one record copy of Shop Drawings, Product Data, Samples and similar submittals, and shall at all times give the Owner access thereto.

L.3.2 Contractor shall retain and the Owner and its duly authorized representatives shall have access, for a period not less than ten (10)

years, to all Record Documents, financial and accounting records, and other books, documents, papers and records of Contractor which are pertinent to the Contract, including records pertaining to Overhead and indirect costs, for the purpose of making audit, examination, excerpts and transcripts. If for any reason, any part of the Work or the Contract shall be subject to litigation, Contractor shall retain all such records until all litigation is resolved and Contractor shall continue to provide Owner and/or its agents with full access to such records until such time as all litigation is complete and all periods for appeal have expired and full and final satisfaction of any judgment, order or decree is recorded and Owner receives a record copy of documentation from Contractor.

L.4 WAIVER

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

L.5 SUCCESSORS IN INTEREST

The provisions of the Contract shall be binding upon and shall accrue to the benefit of the parties to the Contract and their respective permitted successors and assigns.

L.6 GOVERNING LAW

The Contract shall be governed by and construed in accordance with the laws of the State of Oregon without giving effect to the conflict of law provisions thereof.

L.7 APPLICABLE LAW

Contractor hereto agrees to comply in all ways with applicable local, state and federal ordinances, statutes, laws and regulations.

L.8 NON-EXCLUSIVE RIGHTS AND REMEDIES

Except as otherwise expressly provided herein, the rights and remedies expressly afforded under the provisions of the Contract shall not be deemed exclusive, and shall be in addition to and cumulative with any and all rights and remedies otherwise available at law or in equity. The exercise by either Party of any one or more of such remedies shall not preclude the exercise by it, at the same or different times, of any other remedies for the same default or breach, or for any other default or breach, by the other Party.

L.9 INTERPRETATION

The titles of the sections of the Contract are inserted for convenience of reference only and shall be disregarded in construing or interpreting any of its provisions.

L.10 DEBT LIMITATION

The Contract is expressly subject to the debt limitation of Oregon counties set forth in Article XI, Section 10, of the Oregon Constitution, and is contingent upon funds being appropriated therefore. Any provisions herein which would conflict with law are deemed inoperative to that extent.

L.11 LITIGATION

Any Claim between Owner and Contractor that arises from or relates to the Contract and that is not resolved through the Claims Review Process in Section D.3 shall be brought and conducted solely and exclusively within the Circuit Court of Clackamas County for the State of Oregon; provided, however, if a Claim must be brought in a federal forum, then it shall be brought and conducted solely and exclusively within the United States District Court for the District of Oregon. In no event shall this section be construed as a waiver by the County of any form of defense or

immunity, whether sovereign immunity, governmental immunity, immunity based on the Eleventh Amendment to the Constitution of the United States or otherwise, from any claim or from the jurisdiction of any court. CONTRACTOR, BY EXECUTION OF THE CONTRACT, HEREBY CONSENTS TO THE IN PERSONAM JURISDICTION OF THE COURTS REFERENCED IN THIS SECTION.

L. 12 SURVIVAL

All warranty, indemnification, and record retention provisions of the Contract, and all of Contractor's other obligations under the Contract that are not fully performed by the time of Final Completion or termination, and all other rights and obligations which by their context are intended to survive, shall survive Final Completion or any termination of the Contract.

L.13 ACCESS TO RECORDS

L.13.1. Contractor shall keep, at all times on the Work site, one record copy of the complete Contract Documents, including the Plans, Specifications, Construction Change Directives and addenda, in good order and marked currently to record field changes and selections made during construction, and one copy of Shop Drawings, Project Data, Samples and similar submittals, and shall at all times give the Owner access thereto.

L.13.2 Contractor shall retain and the Owner and its duly authorized representatives shall have access, for a period not less than ten (10) years, to all Record Documents, financial and accounting records, and other books, documents, papers and records of Contractor which are pertinent to the Contract, including records pertaining to Overhead and indirect costs, for the purpose of making audit, examination, excerpts and transcripts. If for any reason, any part of the Work or this Contract shall be subject to litigation, Contractor shall retain all such records until all litigation is resolved and Contractor shall continue to provide Owner and/or its agents with full access to such records until such time as all litigation is complete and all periods for appeal have expired and full and final satisfaction of any judgment, order or decree is recorded and Owner receives a record copy of documentation from Contractor.

L.14 WAIVER

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

L. 15 NO ATTORNEY FEES.

In the event any arbitration, action or proceeding, including any bankruptcy proceeding, is instituted to enforce any term of this Contract, each party shall be responsible for its own attorneys' fees and expenses.



**CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT
PERFORMANCE BOND**

Bond No.: 7314229
 Project Name: Clackamas County Children's Commission -
 Estacada Head Start Improvements Project (CD#1796)

<u>Old Republic</u>			
<u>Surety Company</u>	(Surety #1)	Bond Amount No. 1:	<u>\$ 547,000.00</u>
<u>N/A</u>	(Surety #2)*	Bond Amount No. 2:*	<u>\$ N/A</u>
* If using multiple sureties		Total Penal Sum of Bond:	<u>\$ 547,000.00</u>

We, Endres Northwest Inc. as Principal, and the above identified Surety (ies), authorized to transact surety business in Oregon, as Surety, hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns firmly by these presents to pay unto Clackamas County, the sum of (Total Penal Sum of Bond) Five Hundred Forty Seven Thousand and 00/100 (Provided, that we the Sureties bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety); and

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

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

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

NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH that if the Principal herein shall faithfully and truly observe and comply with the terms, conditions and provisions of the Contract, in all respects, and shall well and truly and fully do and perform all matters and things undertaken by Contractor to be performed under the Contract, upon the terms set forth therein, and within the time prescribed therein, or as extended as provided in the Contract, with or without notice to the Sureties, and shall defend, indemnify, and save harmless Clackamas County and its elected officials, officers, employees and agents, against any direct or indirect damages or claim of every kind and description that shall be suffered or claimed to be suffered in connection with or

arising out of the performance of the Contract by the Principal or its subcontractors, and shall in all respects perform said contract according to law, then this obligation is to be void; otherwise, it shall remain in full force and effect for so long as any term of the Contract remains in effect.

Nonpayment of the bond premium will not invalidate this bond nor shall Clackamas County, be obligated for the payment of any premiums.

This bond is given and received under authority of Oregon Revised Statutes Chapter 279C and the Clackamas County Local Contractor Review Board Rules, the provisions of which hereby are incorporated into this bond and made a part hereof.

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

Dated this 19th day of December, 2022.

PRINCIPAL: Endres Northwest Inc.

By: _____
Signature

Official Capacity

Attest: _____
Corporation Secretary

SURETY: Old Republic Surety Company
[Add signatures for each if using multiple bonds]

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

Amber Lynn Reese

Name

Signature

10260 SW Greenburg Road, Suite 1060

Address

Portland OR 97223

City State Zip

(503) 245-6242 (503) 245-7986

Phone Fax



CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT

PAYMENT BOND

Bond No.: 7314229
Project Name: Clackamas County Children's Commission -
Estacada Head Start Improvements Project (CD #1796)

Table with 3 columns: Surety Company, Bond Amount No., and Amount. Row 1: Old Republic Surety Company (Surety #1), Bond Amount No. 1, \$ 547,000.00. Row 2: N/A (Surety #2)*, Bond Amount No. 2:*, \$ N/A. Row 3: Total Penal Sum of Bond, \$ 547,000.00.

We, Endres Northwest Inc., as Principal, and the above identified Surety(ies), authorized to transact surety business in Oregon, as Surety, hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns firmly by these presents to pay unto Clackamas County, the sum of (Total Penal Sum of Bond) Five Hundred Forty Seven Thousand and 00/100 (Provided, that we the Sureties bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety); and

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

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

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

NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH that if the Principal shall faithfully and truly observe and comply with the terms, conditions and provisions of the Contract, in all respects, and shall well and truly and fully do and perform all matters and things by it undertaken to be performed under said Contract and any duly authorized modifications that are made, upon the terms set forth therein, and within the time prescribed therein, or as extended therein as provided in the Contract, with or without notice to the Sureties, and shall defend, indemnify, and save harmless Clackamas County and its elected officials, officers, employees and agents, against any claim for direct or indirect damages of every kind and description that shall be suffered or claimed to be suffered in connection with or arising out of the performance of the Contract by the Contractor or its subcontractors, and shall promptly pay all persons supplying labor, materials or both to the Principal or its subcontractors for prosecution of the work provided in the Contract; and shall promptly pay all contributions due the State Industrial Accident Fund and the State Unemployment Compensation Fund from the Principal or its subcontractors in connection with the performance of the Contract; and shall pay over to the Oregon Department of Revenue all sums required to be deducted and retained from the wages of employees of the Principal and its subcontractors pursuant to ORS 316.167, and

shall permit no lien nor claim to be filed or prosecuted against Clackamas County on account of any labor or materials furnished; and shall do all things required of the Principal by the laws of this State, then this obligation shall be void; otherwise, it shall remain in full force and effect for so long as any term of the Contract remains in effect.

Nonpayment of the bond premium will not invalidate this bond nor shall Clackamas County be obligated for the payment of any premiums.

This bond is given and received under authority of Oregon Revised Statutes Chapter 279C and the Clackamas County Local Contractor Review Board Rules, the provisions of which hereby are incorporated into this bond and made a part hereof.

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

Dated this 19th day of December, 2022.

PRINCIPAL: Endres Northwest Inc.

By: _____
Signature


Official Capacity

Attest: _____
Corporation Secretary

SURETY: Old Republic Surety Company
[Add signatures for each if using multiple bonds]

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

Amber Lynn Reese


Name

Signature

10260 SW Greenburg Road, Suite 1060

Address

Portland OR 97223

City State Zip

(503) 245-6242 (503) 245-7986

Phone Fax



POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That OLD REPUBLIC SURETY COMPANY, a Wisconsin stock insurance corporation, does make, constitute and appoint: Sara Sophie Sellin, Kari Michelle Motley, Misti Marie Brill, Michael S. Mansfield, Tamara A. Ringeisen, Donald Percell Shanklin, Bryan R. Ludwick, Amber Lynn Reese, Lois F. Weathers of Portland, OR

its true and lawful Attorney(s)-in-Fact, with full power and authority for and on behalf of the company as surety, to execute and deliver and affix the seal of the company thereto (if a seal is required), bonds, undertakings, recognizances or other written obligations in the nature thereof, (other than bail bonds, bank depository bonds, mortgage deficiency bonds, mortgage guaranty bonds, guarantees of installment paper and note guaranty bonds, self-insurance workers compensation bonds guaranteeing payment of benefits, or black lung bonds), as follows:

ALL WRITTEN INSTRUMENTS

and to bind OLD REPUBLIC SURETY COMPANY thereby, and all of the acts of said Attorneys-in-Fact, pursuant to these presents, are ratified and confirmed. This appointment is made under and by authority of the board of directors at a special meeting held on February 18, 1982.

This Power of Attorney is signed and sealed by facsimile under and by the authority of the following resolutions adopted by the board of directors of the OLD REPUBLIC SURETY COMPANY on February 18, 1982.

RESOLVED that, the president, any vice-president or assistant vice president, in conjunction with the secretary or any assistant secretary, may appoint attorneys-in-fact or agents with authority as defined or limited in the instrument evidencing the appointment in each case, for and on behalf of the company to execute and deliver and affix the seal of the company to bonds, undertakings, recognizances, and suretyship obligations of all kinds; and said officers may remove any such attorney-in-fact or agent and revoke any Power of Attorney previously granted to such person.

- RESOLVED FURTHER, that any bond, undertaking, recognizance, or suretyship obligation shall be valid and binding upon the Company (i) when signed by the president, any vice president or assistant vice president, and attested and sealed (if a seal be required) by any secretary or assistant secretary; or (ii) when signed by the president, any vice president or assistant vice president, secretary or assistant secretary, and countersigned and sealed (if a seal be required) by a duly authorized attorney-in-fact or agent; or (iii) when duly executed and sealed (if a seal be required) by one or more attorneys-in-fact or agents pursuant to and within the limits of the authority evidenced by the Power of Attorney issued by the company to such person or persons.

RESOLVED FURTHER that the signature of any authorized officer and the seal of the company may be affixed by facsimile to any Power of Attorney or certification thereof authorizing the execution and delivery of any bond, undertaking, recognizance, or other suretyship obligations of the company; and such signature and seal when so used shall have the same force and effect as though manually affixed.

IN WITNESS WHEREOF, OLD REPUBLIC SURETY COMPANY has caused these presents to be signed by its proper officer, and its corporate seal to be affixed this 16th day of September, 2022.

Signatures of Karen J. Haffner (Assistant Secretary) and Alan Pavlic (President) with the Old Republic Surety Company corporate seal.

STATE OF WISCONSIN, COUNTY OF WAUKESHA - SS On this 16th day of September, 2022, personally came before me, Alan Pavlic and Karen J. Haffner, to me known to be the individuals and officers of the OLD REPUBLIC SURETY COMPANY who executed the above instrument, and they each acknowledged the execution of the same, and being by me duly sworn, did severally depose and say: that they are the said officers of the corporation aforesaid, and that the seal affixed to the above instrument is the seal of the corporation, and that said corporate seal and their signatures as such officers were duly affixed and subscribed to the said instrument by the authority of the board of directors of said corporation.

Signature of Kathryn R. Pearson, Notary Public, with commission expiration date of September 28, 2026.

CERTIFICATE I, the undersigned, assistant secretary of the OLD REPUBLIC SURETY COMPANY, a Wisconsin corporation, CERTIFY that the foregoing and attached Power of Attorney remains in full force and has not been revoked; and furthermore, that the Resolutions of the board of directors set forth in the Power of Attorney, are now in force.

77 5520 Signed and sealed at the City of Brookfield, WI this 19th day of December, 2022. Signature of Karen J. Haffner (Assistant Secretary).

Oregon Bureau of Labor and Industries

Prevailing Wage Rates for Public Works Contracts

Val Hoyle
Labor Commissioner
Rates Effective July 1, 2022





VAL HOYLE
Labor Commissioner

In this rate book are the new prevailing wage rates for Oregon non-residential public works projects, effective July 1, 2022.

Prevailing wage rates are the minimum hourly wages that must be paid to all workers employed on all public works projects. In the 2021 Legislative Session, the Legislature passed [Senate Bill \(SB\) 493](#) which was signed by the Governor with the effective date of January 1, 2022. SB 493 amends state PWR law (ORS 279C.815) and provides that the prevailing rate of wage for each locality is the wage in the collective bargaining agreement that covers that occupation. If more than one collective bargaining agreement covers that occupation, the highest rate of wage among the collective bargaining agreements will prevail. Accordingly, the rates in this book are determined using wage information from current collective bargaining agreements for each trade and occupation for each of the 14 geographic regions of the state.

Thank you for your engagement in the process and commitment to Oregon law.

Our team is ready to help support you with any questions you have. We also offer regular, free informational seminars and webinars for contractors and public agencies. Contact us at PWR.Email@boli.oregon.gov or (971) 353-2416.

Val Hoyle
Labor Commissioner

More information about prevailing wage rates:

The Oregon Bureau of Labor & Industries publishes the prevailing wage rates (PWR) that are required to be paid to workers on non-residential Oregon public works projects.

A separate document, [Definitions of Covered Occupations for Public Works Contracts in Oregon](#), provides occupational definitions used to classify the duties performed on public works projects. These definitions are used to find the correct prevailing wage rate.

The rate book and definition publications are available online at <https://www.oregon.gov/boli> as well as additional information and supporting documents and forms.

Please contact us at PWR.Email@boli.oregon.gov or (971) 353-2416, for additional information such as:

- Applicable prevailing wage rates for projects (Generally, the rates in effect at the time the bid specifications are first advertised are those that apply for the duration of the project.)
- Federal Davis-Bacon rates (In cases where projects are subject to both state PWR and federal Davis-Bacon rates, the higher wage must be paid.)
- Required PWR provisions for specifications and contracts
- Apprentice rates



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Forms necessary to comply with ORS 279C.800 through ORS 279C.870 can be found on our website at <https://www.oregon.gov/boli/employers/Pages/prevailing-wage.aspx>. Contractors are encouraged to use and keep on file the forms provided as master copies for use on future prevailing wage rate projects.

All of the information in this booklet can be accessed and printed from the Internet at: www.oregon.gov/BOLI

Pursuant to ORS 279C.800 to ORS 279C.870, the prevailing wage rates contained in this booklet have been adopted for use on public works contracts in Oregon.

Required Postings for Prevailing Wage Contractors and Subcontractors

PREVAILING WAGE RATES

Every contractor and subcontractor engaged in work on a public works must post the applicable prevailing wage rates for that project in an obvious place on the worksite so workers have ready access to the information.

DETAILS OF FRINGE BENEFIT PROGRAMS

When a contractor or subcontractor provides or contributes to a health and welfare plan or a pension plan, or both, for employees who are working on a public works project, the details of all fringe benefit plans or programs must be posted on the worksite.

The posting must include a description of the plan or plans, information about how and where claims can be made and where to obtain more information. The notice must be posted in an obvious place on the work site in the same location as the prevailing wage rates.

WORK SCHEDULE

Contractors and subcontractors must give workers the regular work schedule (days of the week and number of hours per day) in writing before beginning work on the project.

Contractors and subcontractors may provide the schedule at the time of hire, prior to starting work on the contract, or by posting the schedule in a location frequented by employees, along with the prevailing wage rate information and any fringe benefit information.

If an employer fails to give written notice of the worker's schedule, the work schedule will be presumed to be a five-day schedule. The schedule may only be changed if the change is intended to be permanent and is not designed to evade the PWR overtime requirements.

*ORS 279C.840(4); OAR 839-025-0033(1). ORS 279C.840(5); OAR 839-025-0033(2).
ORS 279C.540(2); OAR 839-025-0034.*

PUBLIC WORKS BONDS

Every contractor and subcontractor who works on public works projects subject to the prevailing wage rate (PWR) law is required to file a \$30,000 **“PUBLIC WORKS BOND”** with the Construction Contractors’ Board (CCB). This includes flagging and landscaping companies, temporary employment agencies, and sometimes sole proprietors.

The key elements of ORS 279C.830(2) and ORS 279C.836 specify that:

- Specifications for every contract for public works must contain language stating that the contractor and every subcontractor must have a public works bond filed with the CCB before starting work on the project, unless otherwise exempt.
- Every contract awarded by a contracting agency must contain language requiring the contractor:
 - To have a public works bond filed with the CCB before starting work on the project, unless otherwise exempt; and
 - To include in every subcontract a provision requiring the subcontractor to have a public works bond filed with the CCB before starting work on the project unless otherwise exempt
- Every subcontract that a contractor or subcontractor awards in connection with a public works contract between a contractor and a public agency must require any subcontractor to have a public works bond filed with the CCB before starting work on the public works project, unless otherwise exempt.
- Before permitting a subcontractor to start work on a public works project, contractors must first verify their subcontractors either have filed the bond, or have elected not to file a public works bond due to a bona fide exemption.
- The PWR bond is to be used exclusively for unpaid wages determined to be due by the Bureau of Labor & Industries.
- The bond is in effect continuously (you do not have to have one per project).
- A public works bond is in addition to any other required bond the contractor or subcontractor is required to obtain.

Exemptions:

- Allowed for a disadvantaged business enterprise, a minority-owned business, woman-owned business, a business that a service-disabled veteran owns or an emerging small business certified under ORS 200.055, for the first FOUR years of certification;
 - Exempt contractor must still file written verification of certification with the CCB, and give the CCB written notice that they elect not to file a bond.
 - The prime contractor must give written notice to the public agency that they elect not to file a public works bond.
 - Subcontractors must give written notice to the prime contractor that they elect not to file a public works bond.
- For projects with a total project cost of \$100,000 or less, a public works bond is not required. (Note this is the total project cost, not an individual contract amount.)
- Emergency projects, as defined in ORS 279A.010(f).

PREVAILING WAGE RATES

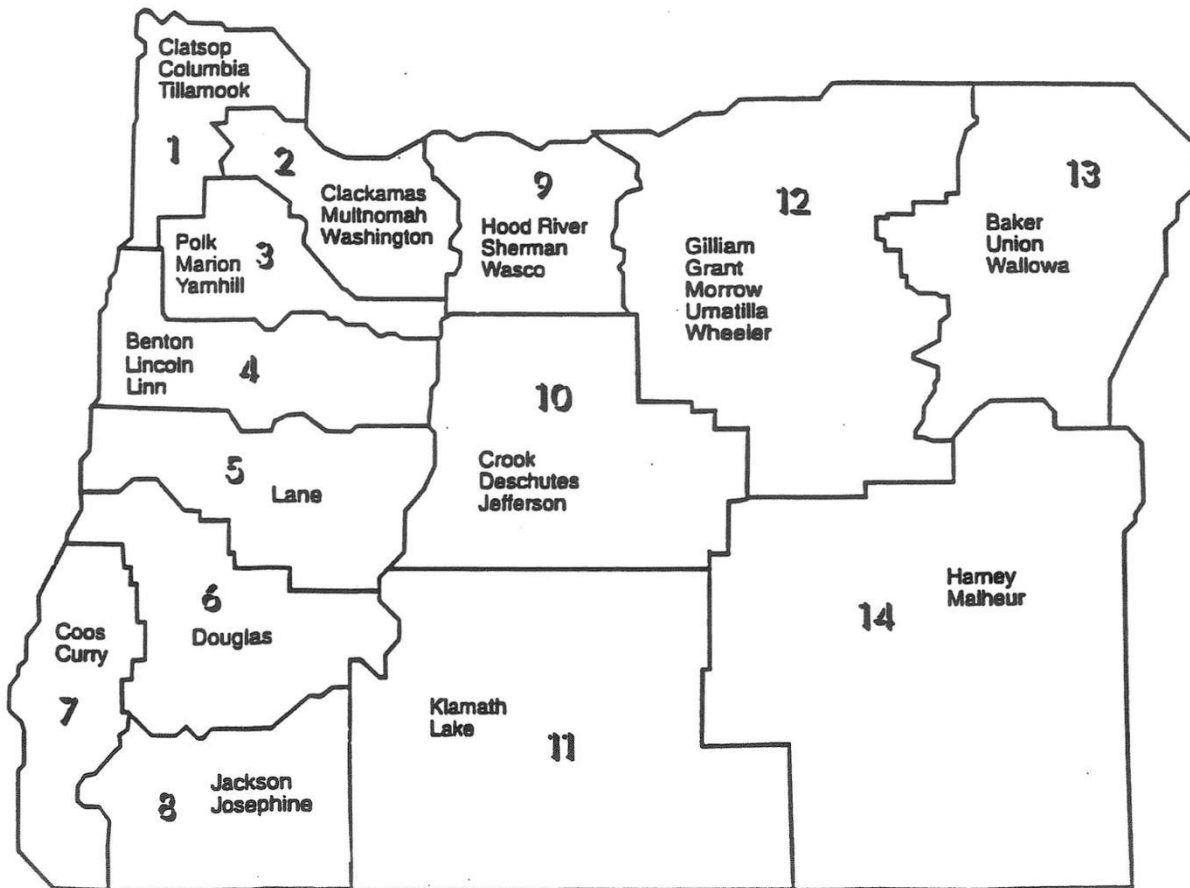
FINDING THE CORRECT PREVAILING WAGE RATE

To find the correct rate(s) required on your public works project, you will need:

- the date the project was first advertised for bid
- the county your project is in
- the duties of workers on the job

Generally, the rate you should look for is based on the date the project was first advertised for bid. (See OAR 839-025-0020(8) for information about projects that contract through a CM/GC, or contract manager/general contractor.)

The Labor Commissioner must establish the prevailing rate of wage for each region as defined in law. (See ORS 279C.800.) Each region is comprised of one to five counties. See below instructions on locating the correct prevailing wage rate for your public works project.



To find the correct rate in this rate book:

1. Determine the duties that are being performed by each worker. Use the booklet Definitions of Covered Occupations to find the definition that most closely matches the actual work performed by the worker. You can find this publication online at <https://www.oregon.gov/boli/employers/Pages/occupational-definitions.aspx>.

2. Find the correct occupation in the “Prevailing Wage Rate for Public Works Contracts” below. The prevailing wage rate is made up of an hourly base rate and an hourly fringe rate. The combination of these two amounts must be paid to each worker. Watch for possible zone differential, shift differential, and/or hazard pay. If the occupation lists different rates for different Areas of the state, locate the Area that includes the county where the project is located.

Apprentices must be paid consistent with their registered apprenticeship program standard. You can find apprenticeship rates on our website at <https://www.oregon.gov/boli/employers/Pages/prevailing-wage-rates.aspx>. You may also contact the agency to confirm the correct apprenticeship rate.

The “Prevailing Wage Rate Laws” handbook provides specific information and answers questions regarding prevailing wage laws and is available on our website at <https://www.oregon.gov/boli/employers/Pages/prevailing-wage.aspx>.

If you have any questions about any of this information, please contact the Bureau of Labor & Industries at PWR.Email@boli.oregon.gov or (971) 353-2416.

July 1, 2022

Prevailing Wage Rates by Occupations—Table of Contents

Using the booklet, [Definitions of Covered Occupations](#), find the definition and group number, if applicable, that most closely matches the actual work being performed by the worker.

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ASBESTOS WORKER/INSULATOR 57.17 23.02

Firestop Containment 42.38 16.69

BOILERMAKER 40.46 30.59

BRICKLAYER/STONEMASON 43.00 24.25

This trade is tended by "Tenders to Mason Trades."

Add \$1.00 per hour to base rate for refractory repair work.

CARPENTER

Zone A (Base Rate)

Group 1	44.80	19.21
Group 2	44.97	19.21
Group 3	50.24	19.21
Group 4	Eliminated	
Group 5	45.40	19.21
Group 6	45.74	19.21

Zone Differential for Carpenters

Add to Zone A Base Rate

Zone B	1.25 per hour
Zone C	1.70 per hour
Zone D	2.00 per hour
Zone E	3.00 per hour
Zone F	5.00 per hour
Zone G	10.00 per hour

Zone A: Projects located within 30 miles of the respective city hall of the cities listed.

Zone B: More than 30 miles but less than 40 miles.

Zone C: More than 40 miles but less than 50 miles.

Zone D: More than 50 miles but less than 60 miles.

Zone E: More than 60 miles but less than 70 miles.

Zone F: More than 70 miles but less than 100 miles.

Zone G: More than 100 miles.

Reference Cities for Group 1 and 2 Carpenters

Albany	Goldendale	Madras	Roseburg
Astoria	Grants Pass	Medford	Salem
Baker City	Hermiston	Newport	The Dalles
Bend	Hood River	Ontario	Tillamook
Brookings	Klamath Falls	Pendleton	Vancouver
Burns	La Grande	Portland	
Coos Bay	Lakeview	Port Orford	
Eugene	Longview	Reedsport	

Reference Cities for Group 3 Carpenters

Eugene	Medford	Portland	Vancouver
Longview	North Bend	The Dalles	

CARPENTER (continued)

Reference Cities for Group 5 and 6 Carpenters

Bend	Longview	North Bend
Eugene	Medford	Portland

Zones for **Group 6** Carpenter are determined by the distance between the project site and **either**

- 1) The worker’s residence; **or**
- 2) City Hall of a reference city listed, whichever is closer.

Note: All job or project locations shall be computed (determined) on the basis of road miles and in the following manner. A mileage measurement will start at the entrance to the respective city hall, facing the project (if possible), and shall proceed by the normal route (shortest time--best road via Google Maps) to the geographical center on the highway, railroad, and street construction projects (end of measurement). On all project contracts, the geographical center where the major portion of the construction is located, shall be considered the center of the project (end measurement).

Group 2, 5 and 6:

Welders shall receive a 5% premium per hour based on their Group’s journeyman wage rate, with an 8-hour minimum.

Group 1 and 3:

When working with toxic treated wood, workers shall receive \$.25/hour premium pay for minimum of eight (8) hours.

Group 5 and 6:

When working with creosote and other toxic treated wood, workers shall receive \$.25/hour premium pay for minimum of eight (8) hours.

Group 6:

When working in sheet pile coffer dams or cells up to the external water level, workers shall receive \$.15/hour premium pay for minimum of eight (8) hours.

CEMENT MASON

This trade is tended by “Concrete Laborer.”

Group 1	39.97	21.17
Group 2	40.81	21.17
Group 3	40.81	21.17
Group 4	41.64	21.17

Zone Differential for Cement Mason

Add to Basic Hourly Rate

Zone A	3.00 per hour
Zone B	5.00 per hour
Zone C	10.00 per hour

- Zone A: Projects located 60-79 miles of the respective city hall of the Reference Cities listed below.
- Zone B: Projects located 80-99 miles of the respective city hall of the Reference Cities listed below.
- Zone C: Projects located 100 or more miles of the respective city hall of the Reference Cities listed below.

Reference Cities for Cement Mason

Bend	Eugene	Pendleton	Salem	Vancouver
Corvallis	Medford	Portland	The Dalles	

When a contractor takes current employees to a project that is located more than 59 miles from the city hall of the Reference City that is closest to the contractor’s place of business, Zone Pay is to be paid for the distance between the city hall of the identified Reference City and the project site.

CEMENT MASON (continued)

Note: All miles are to be determined on the basis of road miles using the normal route (shortest time – best road), from the city hall of the Reference City closest to the contractor’s place of business and the project.

DIVER & DIVER TENDER

Zone 1 (Base Rate)

DIVER	95.32	19.21
DIVER TENDER	51.32	19.21

- 1) For those workers who reside within a reference city below, their zone pay shall be computed from the city hall of the city wherein they reside.
- 2) For those workers who reside nearer to a project than is the city hall of any reference city below, the mileage from their residence may be used in computing their zone pay differential.
- 3) The zone pay for all other projects shall be computed from the city hall of the nearest reference city listed below.

Zone Differential for Diver/Diver Tender

Add to Zone 1 Base Rate

Zone 2	1.25 per hour
Zone 3	1.70 per hour
Zone 4	2.00 per hour
Zone 5	3.00 per hour
Zone 6	5.00 per hour
Zone 7	10.00 per hour

- Zone 1: Projects located within 30 miles of city hall of the reference cities listed.
- Zone 2: More than 30 miles, but less than 40 miles.
- Zone 3: More than 40 miles, but less than 50 miles.
- Zone 4: More than 50 miles, but less than 60 miles.
- Zone 5: More than 60 miles, but less than 70 miles.
- Zone 6: More than 70 miles, but less than 100 miles.
- Zone 7: More than 100 miles.

Reference Cities for Diver/Diver Tender

Bend	Longview	North Bend
Eugene	Medford	Portland

Note: All job or project locations shall be computed (determined) on the basis of road miles and in the following manner. A mileage measurement will start at the entrance to the respective city hall, facing the project (if possible), and shall proceed by the normal route (shortest time--best road via Google Maps) to the geographical center on the highway, railroad, and street construction projects (end of measurement). On all project contracts, the geographical center where the major portion of the construction is located, shall be considered the center of the project (end measurement).

Diver Depth Pay:

<u>Depth Below Water Surface (FSW)</u>	<u>Daily Depth Pay</u>
50-100 ft.	\$2.00 per foot over 50 feet
101-150 ft.	\$3.00 per foot over 100 feet
151-220 ft.	\$4.00 per foot over 150 feet
Over 220 ft.	\$5.00 per foot over 220 feet

The actual depth in FSW shall be used in determining depth premium.

See Diver Enclosure Pay on page 9

DIVER & DIVER TENDER (continued)

Diver Enclosure Pay (working without vertical escape):

<u>Distance Traveled in the Enclosure</u>	<u>Daily Enclosure Pay</u>
0 – 25ft.	N/C
25 – 300 ft.	\$1.00 per foot from the entrance
300 – 600 ft.	\$1.50 per foot beginning at 300 ft.
Over 600 ft.	\$2.00 per foot beginning at 600 ft.

DREDGERZone A (Base Rate)

Leverman (Hydraulic & Clamshell)	51.46	16.15
Assistant Engineer (Watch Engineer, Mechanic Machinist)	48.30	16.15
Tenderman (Boatman Attending Dredge Plant), Fireman	46.81	16.15
Fill Equipment Operator	45.64	16.15
Assistant Mate	42.94	16.15

Zone Differential for Dredgers

Add to Zone A Base Rate

Zone B	3.00 per hour
Zone C	6.00 per hour

Zone mileage based on road miles:

- Zone A: Center of jobsite to no more than 30 miles from the city hall of Portland.
 Zone B: More than 30 miles but not more than 60 miles.
 Zone C: Over 60 miles.

DRYWALL, LATHER, ACOUSTICAL CARPENTER & CEILING INSTALLERZone 1 (Base Rate)

1. DRYWALL INSTALLER	44.74	18.91
2. LATHER, ACOUSTICAL CARPENTER & CEILING INSTALLER	44.74	18.91

Zone Differential for Lather, Acoustical Carpenter & Ceiling Installer

Zone mileage based on road miles:

Zone B	61-80 miles	6.00 per hour
Zone C	81-100 miles	9.00 per hour
Zone D	101 or more	12.00 per hour

The correct transportation allowance shall be based on AAA road mileage from the City Hall of the transportation reference cities herein listed.

See reference cities for zone differential on page 10

DRYWALL, LATHER, ACOUSTICAL CARPENTER & CEILING INSTALLER (continued)

Reference Cities for Drywall, Lather, Acoustical Carpenter & Ceiling Installer

Albany	Bend	Grants Pass	Medford	Portland	Seaside
Astoria	Brookings	Hermiston	Newport	Reedsport	The Dalles
Baker	Coquille	Klamath Falls	North Bend	Roseburg	Tillamook
Bandon	Eugene	Kelso-Longview	Pendleton	Salem	Vancouver

Certified welders shall receive 5% over the base wage rate, with an eight (8) hour minimum.

ELECTRICIAN

Area 1 (Region 14)

Electrician	40.97	18.58
Lighting Maintenance and Material Handler	19.95	10.00

Reference County

Malheur

Shift Differential

1 st Shift “day”	Between the hours of 8:00am and 4:30pm	8 hours pay for 8 hours work
2 nd Shift “swing”	Between the hours of 4:30pm and 12:30am	8 hours pay for 8 hours work plus 7.5% for all hours worked
3 rd Shift “graveyard”	Between the hours of 12:30am and 8:00am	8 hours pay for 8 hours work plus 15% for all hours worked.

When workers are required to work under compressed air or to work from trusses, scaffolds, swinging scaffolds, bosun’s chair or on building frames, stacks or towers at a distance, the following should be added to base rate.

50 – 90 feet to the ground	Add 1 ½ x the base rate
90+ feet to the ground	Add 2 x the base rate

Pursuant to ORS 279C.815(2)(b), the Electrician Area 6 rate is the highest rate of wage among the collective bargaining agreements for Electrician Areas 1 and 6.

Area 2 (Regions 12 and 13)

Electrician	51.75	24.18
Cable Splicer	54.34	24.26
Certified Welder	56.93	24.34
Material Handler	31.05	13.06

Reference Counties

Baker	Grant	Umatilla	Wallowa
Gilliam	Morrow	Union	Wheeler

Add 50% of the base rate when workers are required to work under the following conditions:

- 1) Under compressed air with atmospheric pressure exceeding normal pressure by at least 10%.
- 2) From trusses, swing scaffolds, bosun’s chairs, open platforms, unguarded scaffolds, open ladders, frames, tanks, stacks, silos and towers where the workman is subject to a direct fall of (a) more than 60 feet or (b) into turbulent water under bridges, powerhouses or spillway faces of dams.

ELECTRICIAN (continued)

Area 3 (Regions 4, 5, 6 and 7)

Electrician	43.97	22.81
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Reference Counties

Coos	Curry	Douglas
Lane – See Area 4		Lincoln – See Area 4

Shift Differential

1 st Shift “day”	Between the hours of 8:00am and 4:30pm	8 hours pay for 8 hours work
2 nd Shift “swing”	Between the hours of 4:30pm and 1:00am	8 hours pay for 8 hours work plus 17% for all hours worked
3 rd Shift “graveyard”	Between the hours of 12:30am and 9:00am	8 hours pay for 8 hours work plus 31% for all hours worked.

When workers are required to work under compressed air or where gas masks are required, or to work from trusses, all scaffolds including mobile elevated platforms, any temporary structure, bosun’s chair or on frames, stacks, towers, tanks, within 15’ of the leading edges of any building at a distance of:

50 – 75 feet to the ground	Add 1 ½ x the base rate
75+ feet to the ground	Add 2 x the base rate

High Time is not required to be paid on any permanent structure with permanent adequate safeguards (handrails, mid-rails, and toe guards). Any vehicle equipped with outriggers are exempted from this section.

Area 4 (Regions 3, 4, 5, and 10)

Electrician	49.36	20.20
Cable Splicer	54.30	20.35
Lighting Maintenance/Material Handler	22.67	10.08

Reference Counties for Area 4

Benton	Deschutes	Lane	Lincoln
Crook	Jefferson	Linn	
Marion – See Area 5 rate	Polk – See Area 5 rate	Yamhill – See Area 5 rate	

Shift Differential

1 st Shift “day”	Between the hours of 8:00am and 4:30pm	8 hours pay for 8 hours work
2 nd Shift “swing”	Between the hours of 4:30pm and 1:00am	8 hours pay for 8 hours work plus 17% for all hours worked
3 rd Shift “graveyard”	Between the hours of 12:30am and 9:00am	8 hours pay for 8 hours work plus 31.4% for all hours worked.

ELECTRICIAN (continued)

Area 5 (Regions 1, 2, 3 and 9)

Electrician	53.85	27.84
Electrical Welder	59.24	28.00
Material Handler/Lighting Maintenance	30.69	19.62

Reference Counties

Clackamas	Hood River	Polk	Wasco
Clatsop	Marion	Sherman	Washington
Columbia	Multnomah	Tillamook	Yamhill

Shift Differential

1 st Shift “day”	Between the hours of 7:00am and 5:30pm	8 hours pay for 8 hours work
2 nd Shift “swing”	Between the hours of 4:30pm and 3:00am	8 hours pay for 8 hours work plus 17.3% for all hours worked
3 rd Shift “graveyard”	Between the hours of 12:30am and 11:00am	8 hours pay for 8 hours work plus 31.4% for all hours worked.

Zone Pay for Area 5 – Electrician and Electrical Welder

Add to Basic Hourly Rate

Zone mileage based on air miles:

Zone 1	31-50 miles	1.50 per hour
Zone 2	51-70 miles	3.50 per hour
Zone 3	71-90 miles	5.50 per hour
Zone 4	Beyond 90	9.00 per hour

There shall be a 30-mile free zone from downtown Portland City Hall and a similar 15-mile free zone around the following cities:

Astoria	Seaside	Tillamook
Hood River	The Dalles	

Further, the free zone at the Oregon coast shall extend along Hwy 101 west to the ocean Hwy 101 east 10 miles if not already covered by the above 15-mile free zone.

Area 6 (Regions 6, 8, 11 and 14)

Electrician	40.97	18.58
Lighting Maintenance and Material Handler	19.95	10.00

Reference Counties

Harney	Josephine	Lake
Jackson	Klamath	Malheur

Douglas – **See Area 3 rate**

See shift differential on page 13

ELECTRICIAN (continued)

Shift Differential

1 st Shift “day”	Between the hours of 8:00am and 4:30pm	8 hours pay for 8 hours work
2 nd Shift “swing”	Between the hours of 4:30pm and 1:00am	8 hours pay for 8 hours work plus 7.5% for all hours worked
3 rd Shift “graveyard”	Between the hours of 12:30am and 9:00am	8 hours pay for 8 hours work plus 15% for all hours worked.

When workers are required to work under compressed air or to work from trusses, scaffolds, swinging scaffolds, bosun’s chair or on building frames, stacks or towers at a distance, the following should be added to base rate.

50 – 90 feet to the ground	Add 1 ½ x the base rate
90+ feet to the ground	Add 2 x the base rate

ELEVATOR CONSTRUCTOR, INSTALLER AND MECHANIC

Area 1 (Regions 12 and 13)

Mechanic **59.70** **43.48**

Reference Counties

Baker Union Wallowa

Umatilla – **See Area 2 rate**

Area 2 (Regions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 14)

Mechanic **59.95** **43.68**

Reference Counties

Benton	Douglas	Klamath	Multnomah	Deschutes
Clackamas	Gilliam	Lake	Polk	Josephine
Clatsop	Grant	Lane	Sherman	Morrow
Columbia	Harney	Lincoln	Tillamook	Wheeler
Coos	Hood River	Linn	Umatilla	Yamhill
Crook	Jackson	Malheur	Wasco	
Curry	Jefferson	Marion	Washington	

FENCE CONSTRUCTOR (NON-METAL) **34.98** **16.55**

FENCE ERECTOR (METAL) **34.98** **16.55**

GLAZIER **44.43** **25.09**

Add \$1.00 to base rate when employee works from a swing stage, scaffold, suspended contrivance or mechanical apparatus from the third floor up or thirty feet of free fall (whichever is less), and employee is required to wear a safety belt.

Add twenty percent (20%) to base rate when employee works from a bosun chair (non-motorized single-man apparatus), regardless of height.

Certified welders shall receive twenty percent (20%) above the base rate for actual time spent performing welding duties.

HAZARDOUS MATERIALS HANDLER **28.03 14.18**

HIGHWAY/PARKING STRIPER **38.18 15.08**

Shift Differential

Add \$1.85/hour to base rate for shifts that start between 3:00pm and 4:00am.

IRONWORKER

Zone 1 (Base Rate): **41.13 30.72**

Zone Differential for Ironworker

Add to Basic Hourly Rate

Zone 2 **5.63/hr.** or \$45.00 maximum per day

Zone 3 **8.75/hr.** or \$70.00 maximum per day

Zone 4 **11.25/hr.** or \$90.00 maximum per day

Zone 1: Projects located within 45 miles of city hall in the reference cities listed below.

Zone 2: More than 46 miles, but less than 60 miles.

Zone 3: More than 61 miles, but less than 100 miles.

Zone 4: More than 100 miles.

Note: Zone pay for Ironworkers shall be determined using the quickest route per Google Maps and computed from the city hall or dispatch center of the reference cities listed below **or** the residence of the employee, whichever is nearer to the project.

Reference Cities and Dispatch Center

Medford

Portland

LABORER

Zone A (Base Rate):

Group 1	34.98	16.55
Group 2	36.25	16.55
Group 3 (Flagger)	30.38	16.55
Group 4 (Landscape Laborer)	24.17	16.55

Zone Differential for Laborers

Add to Zone A Base Rate

Zone B **.85** per hour

Zone C **1.25** per hour

Zone D **2.00** per hour

Zone E **4.00** per hour

Zone F **5.00** per hour

Zone A: Projects located within 30 miles of city hall in the reference cities listed.

Zone B: More than 30 miles but less than 40 miles.

Zone C: More than 40 miles but less than 50 miles.

Zone D: More than 50 miles but less than 80 miles.

Zone E: More than 80 miles but less than 100 miles.

Zone F: More than 100 miles.

See reference cities for zone differential page 15

LABORER (continued)

Reference Cities for Laborer

Albany	Burns	Hermiston	Roseburg
Astoria	Coos Bay	Klamath Falls	Salem
Baker City	Eugene	Medford	The Dalles
Bend	Grants Pass	Portland	

Note: All job or project locations shall be computed (determined) on the basis of road miles and in the following manner. A mileage measurement will start at the entrance to the respective city hall, facing the project (if possible), and shall proceed by the normal route (shortest time, best road) to the geographical center on the highway, railroad, and street construction projects (end of measurement). On all other project contracts, the geographical center where the major portion of the construction is located, shall be considered the center of the project (end measurement).

Any Laborer working in Live Sewers shall receive forty dollars (\$40) per day in addition to their regular pay.

LANDSCAPE LABORER/TECHNICIAN (Laborer Group 4) **24.17** **16.55**

LIMITED ENERGY ELECTRICIAN

Area 1 (Region 14) **33.76** **14.26**

Reference County

Malheur

Pursuant to ORS 279C.815(2)(b), the Limited Energy Electrician Area 6 rate is the highest rate of wage among the collective bargaining agreements for Limited Energy Electrician Areas 1 and 6.

Area 2 (Regions 12 and 13) **33.19** **15.16**

Reference Counties

Baker	Grant	Umatilla	Wallowa
Gilliam	Morrow	Union	Wheeler

Area 3 (Regions 4, 5, 6 and 7) **33.42** **20.14**

Reference Counties

Benton	Curry	Lane	Linn
Coos	Douglas	Lincoln	

Area 4 (Regions 3, 4, 5 and 10) **36.17** **17.26**

Reference Counties

Benton	Jefferson	Linn
Crook	Lane	Lincoln
Deschutes		

Benton – See Area 3 rate	Linn – See Area 3 rate	Polk – See Area 5 rate
Lane – See Area 3 rate	Marion – See Area 5 rate	Yamhill – See Area 5 rate

LIMITED ENERGY ELECTRICIAN (continued)

Area 5 (Regions 1, 2, 3 and 9) **44.23** **22.30**

Reference Counties

Clackamas	Hood River	Polk	Wasco
Clatsop	Marion	Sherman	Washington
Columbia	Multnomah	Tillamook	Yamhill

Area 6 (Regions 6, 8, 11 and 14) **33.76** **14.26**

Reference Counties

Harney	Josephine	Lake
Jackson	Klamath	Malheur

Douglas – See Area 3 rate

LINE CONSTRUCTOR

Area 1 (All Regions)

Group 1	64.58	23.24
Group 2	57.66	23.13
Group 3	33.05	15.49
Group 4	49.59	19.69
Group 5	43.25	16.85
Group 6	35.75	16.62
Group 7	19.24	12.42

Reference Counties

All counties

Pursuant to ORS 279C.815(2)(b), the Line Constructor Area 1 rate is the highest rate of wage among the collective bargaining agreements for Line Constructor Area 1 and Area 2.

MARBLE SETTER **44.00** **24.25**

This trade is tendered by “Tile, Terrazzo, & Marble Finishers.”

Add \$1.00 per hour to base rate for refractory repair work.

PAINTER & DRYWALL TAPER

COMMERCIAL PAINTING	30.72	14.18
INDUSTRIAL PAINTING	32.52	14.18
BRIDGE PAINTING	38.19	14.18

Shift Differential for Painter

Add \$2.00/hour to base rate for entire shift if any hours are worked outside of 5:00 a.m. to 5:00 p.m.

See Drywall Taper on page 17.

PAINTER & DRYWALL TAPER (continued)

DRYWALL TAPER

<u>Zone A (Base Rate)</u>	42.52	19.13
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Zone Differential for Drywall Taper

Add to Zone A Base Rate

Zone B	6.00 per hour
Zone C	9.00 per hour
Zone D	12.00 per hour

Dispatch Cities for Drywall Taper

Albany	Bend	Grants Pass	Medford	Portland	Seaside
Astoria	Brookings	Hermiston	Newport	Reedsport	The Dalles
Baker	Coquille	Klamath Falls	North Bend	Roseburg	Tillamook
Bandon	Eugene	Kelso-Longview	Pendleton	Salem	Vancouver

Zone A: Projects located less than 61 miles of the respective city hall of the dispatch cities listed.

Zone B: Projects located 61 miles to 80 miles.

Zone C: Projects located 81 miles to 100 miles.

Zone D: Projects located 101 miles or more.

Note: Zone pay is based on AAA Road Mileage.

PLASTERER AND STUCCO MASON

This trade is tended by "Tenders to Plasterers."

<u>Zone A (Base Rate)</u>	41.16	19.23
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Zone Differential for Plasterer and Stucco Mason

Add to Zone A Base Rate

Zone B	6.00 per hour
Zone C	9.00 per hour
Zone D	12.00 per hour

Zone A: Projects located less than 61 miles of the respective city hall of the reference cities listed below.

Zone B: Projects located 61 miles to 80 miles.

Zone C: Projects located 81 miles to 100 miles.

Zone D: Projects located 101 miles or more.

Reference Cities for Plasterer & Stucco Mason

Bend	Eugene	Medford	Portland	Seaside
Coos Bay	La Grande	Newport	Salem	The Dalles

Add \$1.00 to base rate for swinging scaffold work.

Add \$2.00 to base rate for nozzle technicians on plastering machines.

PLUMBER/PIPEFITTER/STEAMFITTER**Area 1 (Regions 13 and 14)****34.00****17.07**Reference Counties

Harney Malheur

Baker – **See Area 2 rates**Zone Differential for Area 1

Add to Base Rate

Zone 1 **2.50** per hourZone 2 **3.50** per hourZone 3 **5.00** per hour

Zone mileage based on road miles:

Zone 1: Forty (40) to fifty five (55) miles from City Hall in Boise, Idaho.Zone 2: Fifty five (55) to one hundred (100) miles from City Hall in Boise, Idaho.Zone 3: Over one hundred (100) miles from City Hall in Boise, Idaho.

Add \$2.21 to base rate if it is possible for worker to fall 30 ft. or more, or if required to wear a fresh-air mask or similar equipment for 2 hours or more.

Area 2 (Regions 12 and 13)**54.00****34.11**Reference CountiesBaker Grant Umatilla Wallowa
Gilliam Morrow Union WheelerZone Differential for Area 2

Add to Base Rate

Zone 2 **10.62/hr.** not to exceed \$80.00 day.

Zone 2: Eighty (80) miles or more from City Hall in Pasco, Washington.

Zone mileage based on road miles:

Add \$1.00 to base rate in one-hour minimum increments if it is possible for worker to fall 35 ft. or more.

Add \$1.00 to base rate in one-hour minimum increments if worker is required to wear a mask in hazardous areas.

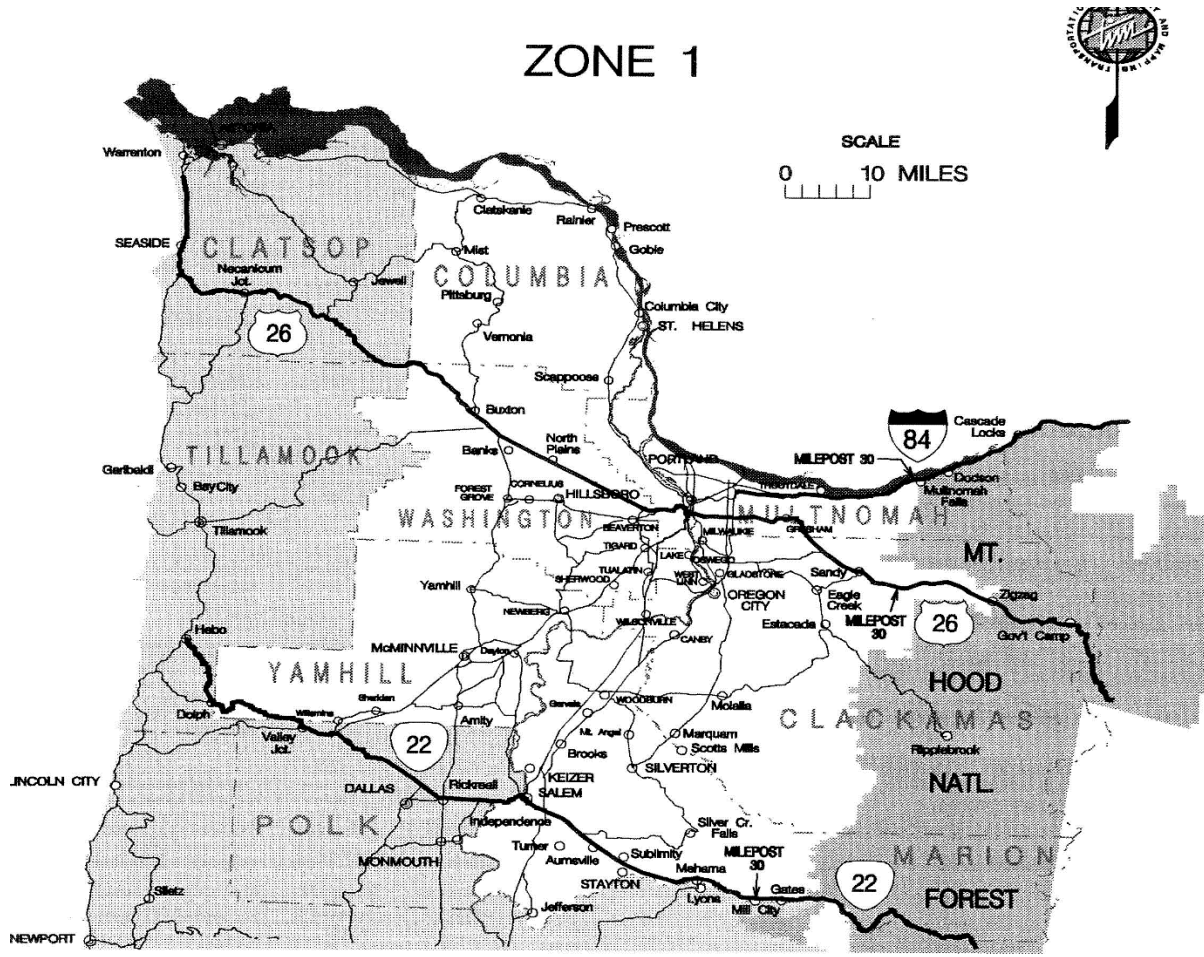
Area 3 (Regions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12)**50.68****35.00**Reference CountiesBenton Deschutes Lake Sherman
Clackamas Douglas Lane Tillamook
Clatsop Hood River Lincoln Wasco
Columbia Jackson Linn Washington
Coos Jefferson Marion Yamhill
Crook Josephine Multnomah
Curry Klamath PolkGilliam – **See Area 2 rate**Wheeler – **See Area 2 rate**

POWER EQUIPMENT OPERATOR

Zone 1 (Base Rate)

Group 1	51.65	16.35
Group 1A	53.81	16.35
Group 1B	55.97	16.35
Group 2	49.74	16.35
Group 3	48.59	16.35
Group 4	45.26	16.35
Group 5	44.02	16.35
Group 6	40.80	16.35

POWER EQUIPMENT OPERATOR MAP



Zone Pay Differential for Power Equipment Operator
 Add to Zone 1 Base Rate

Zone 2	3.00 per hour
Zone 3	6.00 per hour

For projects in the following metropolitan counties:

Clackamas	Marion	Washington
Columbia	Multnomah	Yamhill

POWER EQUIPMENT OPERATOR (continued)

- (A) All jobs or projects located in Multnomah, Clackamas and Marion counties, West of the western boundary of Mt. Hood National Forest and West of Mile Post 30 on Interstate 84 and West of Mile Post 30 on State Hwy 26 and West of Mile Post 30 on Hwy 22 and all jobs located in Yamhill County, Washington County and Columbia County shall receive Zone 1 pay for all classifications.
- (B) All jobs or projects located in the area outside the *identified boundary* above, but less than 50 miles from the Portland City Hall shall receive Zone 2 pay for all classifications.
- (C) All jobs or projects located more than 50 miles from the Portland City Hall, but outside the identified border above, shall receive Zone 3 pay for all classifications.

Reference cities for projects in all remaining counties:

Albany	Coos Bay	Grants Pass	Medford
Bend	Eugene	Klamath Falls	Roseburg

- (A) All jobs or projects located within 30 miles of the respective city hall of the above mentioned cities shall receive Zone 1 pay for all classifications.
- (B) All jobs or projects located more than 30 miles and less than 50 miles from the respective city hall of the above mentioned cities shall receive Zone 2 for all classifications.
- (C) All jobs or projects located more than 50 miles from the respective city hall of the above mentioned cities shall receive Zone 3 pay for all classifications.

Note: All job or project locations shall be computed (determined) on the basis of road miles and in the following manner. A mileage measurement will start at the entrance to the respective city hall, facing the project (if possible), and shall proceed by the normal route (shortest time-best road) to the geographical center on the highway, railroad, and street construction projects (end of measurement). On all other project contracts, the geographical center where the major portion of the construction is located, shall be considered the center of the project (end measurement).

Add \$10.00/hour hyperbaric pay for Group 4 Tunnel Boring Machine Mechanic.

Add \$0.40 to the base rate for any and all work performed underground, including operating, servicing and repairing of equipment.

Add \$0.50 to the base rate per hour for any employee who works suspended by a rope or cable.

Add \$0.50 to the base rate for employees who do "pioneer" work (break open a cut, build road, etc.) more than one hundred fifty (150) feet above grade elevation.

Note: A Hazardous Waste Removal Differential must be added to the base rate if work is performed inside the boundary of a Federally Designated Waste Site. For information on this differential, call the Prevailing Wage Rate Coordinator at (971) 353-2416.

Shift Differential

Two-Shift Operations:

On a two-shift operation, when the second shift starts after 4:30 p.m., second-shift workers shall be paid the base hourly wage rate plus 5% for all hours worked.

When the second shift starts at 8:00 p.m. or later, the second-shift workers shall be paid at the base hourly wage rate plus 10% for all hours worked.

Three-Shift Operations:

On a three-shift operation, the base hourly wage rate plus five percent (5%) shall be paid to all second-shift workers for all hours worked, and the base hourly wage rate plus ten percent (10%) shall be paid to all third shift workers for all hours worked.

ROOFER

Area 1 (Regions 1, 2, 9, 10, 12 and 13) **38.78 20.48**

Reference Counties

Baker	Deschutes	Morrow	Union
Clackamas	Gilliam	Multnomah	Wasco
Clatsop	Grant	Sherman	Wallowa
Columbia	Hood River	Tillamook	Washington
Crook	Jefferson	Umatilla	Wheeler

Add 10% to the base rate for handling coal tar pitch or coal tar based materials.

Add 10% to the base rate for handling fiberglass insulation.

Area 2 (Regions 3, 4, 5, 6, 7, 8, 10, 11 and 14) **32.55 18.65**

Reference Counties

Benton	Harney	Lake	Malheur
Coos	Jackson	Lane	Marion
Curry	Josephine	Lincoln	Polk
Douglas	Klamath	Linn	Yamhill

Crook – **See Area 1 rates** Deschutes – **See Area 1 rates**

Add \$2.00 to the base rate for handling coal tar products.

Add \$1.50 to the base rate for handling fiberglass insulation.

Area 4 (Regions 12 and 13) **38.78 20.48**

Reference Counties

Umatilla	Union	Wallowa
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Pursuant to ORS 279C.815(2)(b), the Roofer Area 1 rate is the highest rate of wage among the collective bargaining agreements for Roofer Areas 1, 4 and 5.

Add 10% to the base rate for handling coal tar pitch or coal tar based materials.

Add 10% to the base rate for handling fiberglass insulation.

Area 5 (Region 12) **38.78 20.48**

Reference County

Morrow

Pursuant to ORS 279C.815(2)(b), the Roofer Area 1 rate is the highest rate of wage among the collective bargaining agreements for Roofer Areas 1, 4 and 5.

Add 10% to the base rate for handling coal tar pitch or coal tar based materials.

Add 10% to the base rate for handling fiberglass insulation.

SHEET METAL WORKER**Area 1 (Regions 1, 2, 3, 4, 9 and 12)****45.80****25.46**Reference Counties

Benton	Grant	Morrow	Umatilla
Clackamas	Hood River	Multnomah	Wasco
Clatsop	Lincoln	Polk	Washington
Columbia	Linn	Sherman	Wheeler
Gilliam	Marion	Tillamook	Yamhill

Add \$1.00 to base rate for work performed on any swinging platform, swinging chair or swinging ladder.

Add \$1.00 to base rate for work where a worker is exposed to resins, chemicals or acid.

Area 2 (Regions 13 and 14)

Reference Counties

Baker – **See Area 3 rate** Malheur – **See Area 6 rate**

Area 3 (Regions 12 and 13)**44.09****25.28**Reference Counties

Baker Union Wallowa

Morrow – **See Area 1 rate** Umatilla – **See Area 1 rate**

Add \$.45 to base rate for work performed on any swinging stage, swinging scaffold or boson chair in excess of thirty (30) feet above the ground.

Add \$1.00 to base rate for work where it is necessary to wear a chemically activated type face mask.

Area 4 (Regions 5 and 6)**37.78****22.72**Reference Counties

Douglas Lane

Add \$1.00 to base rate for work performed on any swinging platform, swinging chair or swinging ladder.

Add \$1.00 to base rate for work where a worker is exposed to resins, chemicals or acid.

Area 5 (Region 7)**38.14****23.76**Reference Counties

Coos Curry

Add \$1.00 to base rate for work performed on any swinging platform, swinging chair or swinging ladder.

Add \$1.00 to base rate for work where a worker is exposed to resins, chemicals or acid.

SHEET METAL WORKER (continued)

Area 6 (Regions 7, 8, 11 and 14) **32.12** **21.39**

Reference Counties

Harney	Josephine	Lake
Jackson	Klamath	Malheur

Curry – **See Area 5 rate**

Add \$1.00 to base rate for work performed on any swinging platform, swinging chair or swinging ladder.

Add \$1.00 to base rate for work where a worker is exposed to resins, chemicals or acid.

Area 7 (Region 10) **35.36** **21.31**

Reference Counties

Crook	Deschutes	Jefferson
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Add \$1.00 to base rate for work performed on any swinging platform, swinging chair or swinging ladder.

Add \$1.00 to base rate for work where a worker is exposed to resins, chemicals or acid.

SOFT FLOOR LAYER **37.23** **18.17**

SPRINKLER FITTER

Area 1 (Regions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 14) **44.13** **25.84**

Reference Counties

Benton	Douglas	Klamath	Multnomah
Clackamas	Gilliam	Lake	Polk
Clatsop	Grant	Lane	Sherman
Columbia	Harney	Lincoln	Tillamook
Coos	Hood River	Linn	Umatilla
Crook	Jackson	Malheur	Wasco
Curry	Jefferson	Marion	Washington
Deschutes	Josephine	Morrow	Wheeler
			Yamhill

Area 2 (Regions 12, 13, 14) **37.81** **25.83**

Reference Counties

Baker	Union	Wallowa
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Gilliam – See Area 1 rate	Malheur – See Area 1 rate	Umatilla – See Area 1 rate
Grant – See Area 1 rate	Morrow – See Area 1 rate	

TENDER TO MASON TRADES (Brick and Stonemason, Mortar Mixer, Hod Carrier) **38.79** **16.55**

Add \$0.50 to base rate for refractory repair work.

TENDER TO PLASTERER AND STUCCO MASON

Zone A (Base Rate) 37.62 17.80

Zone Differential for Tender to Plasterer and Stucco Mason

Add to Zone A Base Rate

- Zone B **6.00** per hour
- Zone C **9.00** per hour
- Zone D **12.00** per hour

Zone A: Projects located within 60 miles of city hall in the reference cities listed.

Zone B: More than 61 miles but less than 80 miles.

Zone C: More than 81 miles but less than 100 miles.

Zone D: More than 101 miles

Reference Cities

Bend	Eugene	Medford	Portland	Seaside
Coos Bay	La Grande	Newport	Salem	The Dalles

Add \$0.50 to base rate for refractory repair work.

TESTING AND BALANCING (TAB) TECHNICIAN

For work performed under the [Sheet Metal](#) classification, including Air-Handling Equipment, Ductwork

See [SHEET METAL WORKER RATE](#)

For work performed under the [Plumber/Pipefitter/Steamfitter](#) classification, including Water Distribution Systems

See [PLUMBER/PIPEFITTER/STEAMFITTER RATE](#)

TILE SETTER/TERRAZZO WORKER: Hard Tile Setter 37.65 20.83

This trade is tended by "Tile, Terrazzo, & Marble Finisher."

Add \$1.00 when performing terrazzo work.

Add \$1.00 when working with epoxy, furnane, or alklor acetylene.

TILE, TERRAZZO, AND MARBLE FINISHER

1. TILE, TERRAZZO FINISHER 28.29 15.30

Add \$1.00 when performing terrazzo work.

Add \$1.00 when working with epoxy, furnane, or alklor acetylene.

2. BRICK & MARBLE FINISHER 28.29 15.43

Add \$1.00 per hour to base rate for refractory repair work.

TRUCK DRIVER

Zone A (Base Rate)

Group 1	30.09	16.73
Group 2	30.23	16.73
Group 3	30.37	16.73
Group 4	30.67	16.73
Group 5	30.91	16.73
Group 6	31.10	16.73
Group 7	31.32	16.73

Zone differential for Truck Drivers

Add to Zone A Base Rate

Zone B	.65 per hour
Zone C	1.15 per hour
Zone D	1.70 per hour
Zone E	2.75 per hour

- Zone A: Projects within 30 miles of the cities listed.
- Zone B: More than 30 miles but less than 40 miles.
- Zone C: More than 40 miles but less than 50 miles.
- Zone D: More than 50 miles but less than 80 miles.
- Zone E: More than 80 miles.

Reference Cities

Albany	Burns	Hermiston	Madras	Oregon City	Roseburg
Astoria	Coos Bay	Hood River	Medford	Pendleton	Salem
Baker	Corvallis	Klamath Falls	McMinnville	Portland	The Dalles
Bend	Eugene	La Grande	Newport	Port Orford	Tillamook
Bingen	Goldendale	Lakeview	Ontario	Reedsport	Vancouver
Brookings	Grants Pass	Longview			

Note: All job or project locations shall be computed (determined) on the basis of road miles and in the following manner. A mileage measurement will start at the entrance to the respective city hall, facing the project (if possible), and shall proceed by the normal route (shortest time-best road) to the geographical center on the highway, railroad, and street construction projects (end of measurement). On all other project contracts, the geographical center where the major portion of the construction is located, shall be considered the center of the project (end measurement).

**LIST OF CONTRACTORS INELIGIBLE
TO RECEIVE PUBLIC WORKS CONTRACTS
PUBLICATION DATE: JULY 1, 2022**

To: All Oregon Contracting Agencies

Pursuant to ORS 279C.860, contractors on this list are ineligible to receive public works contracts subject to the Prevailing Wage Rate Law. These contractors and subcontractors, as well as any firm, corporation, partnership or association in which the contractor or subcontractor has a financial interest are ineligible to receive public works contracts until removed from this list. You can find the most current and up to date list of contractors ineligible to receive public works contracts on our website at <https://www.oregon.gov/boli/employers/Pages/pwr-ineligible-contractors.aspx>.

If you have questions regarding the list or for the most current information regarding persons ineligible to receive prevailing wage contracts, please contact the Prevailing Wage Rate Coordinator in Portland at (971) 353-2416.

	<u>CONTRACTOR NAME</u>	<u>DATE PLACED</u>	<u>REMOVAL DATE</u>
1.	A1 Dumptruck Services LLC 703 N Hayden Meadows Dr., #206 Portland, OR 97213 731 N Hayden Meadows Dr., #206 Portland, OR 97217 2408 NE 164 th Avenue Vancouver, WA 98684	February 24, 2020	February 23, 2027
2.	Advanced Flagging & Pilot Car Inc. 16400 NE Las Brisas Ct., Apt. 43 Portland, OR 97230 650 NE Holladay St. Portland, OR 97232 16400 NE Las Brisas Ct. Portland, OR 97230	February 5, 2021	February 4, 2024
3.	Barker, Michael 32966 Tennessee Road Lebanon, OR 97355	January 5, 2021	January 4, 2024
4.	Bell-Eddy, Kimberly 8535 Woodard Ave. SE Salem, OR 97317	January 12, 2016	January 11, 2023
5.	Cameron Creations Steven Cameron Nancy Cameron PO Box 2 Lowell, OR 97452	May 25, 2000	Not to be Removed
6.	Canell's Flagging LLC 731 N Hayden Meadows Dr., Ste 107 Portland, OR 97217	November 24, 2020	November 23, 2023
7.	Canell, Angela 2416 NE 11 th Avenue Portland, OR 97212 529 SE Grand #307 Portland, OR 97214	November 24, 2020	November 23, 2023
8.	CJ Construction, Inc. 2969 Ferguson St NW Salem, OR 97304 846 55 th Ave. Salem, OR 97304	December 11, 2020	November 6, 2023

**LIST OF CONTRACTORS INELIGIBLE
TO RECEIVE PUBLIC WORKS CONTRACTS
PUBLICATION DATE: JULY 1, 2022**

	<u>CONTRACTOR NAME</u>	<u>DATE PLACED</u>	<u>REMOVAL DATE</u>
9.	Covington, Timothy aka Tim York 16055 NE Stanton St. Portland, OR 97230 2933 NE 11 th Ave. Portland, OR 97212 12231 NE Stanton St. Portland, OR 97230	April 13, 2021	April 12, 2024
10.	Diversified Masonry LLC PO Box 144 Ranchester, WY 82839	January 5, 2021	January 4, 2024
11.	Friedman, Jennifer 2526 Ellen Lane NW Salem, OR 97304 4400 Shaw St NW Salem, OR 97304 4400 Salem-Dallas Hwy Salem, OR 97304 PO Box 5172 Salem, OR 97304	December 11, 2020	October 10, 2023
12.	Friedman, Scott 2969 Ferguson St NW Salem, OR 97304 4400 Dallas Hwy Salem, OR 97304 PO Box 5172 Salem, OR 97304	December 11, 2020	October 10, 2023
13.	Graeme, Eugene 169 SE Cody Lane Madras, OR 97741	July 3, 2017	July 2, 2027
14.	Green Thumb Landscape and Maintenance, Inc., aka Green Thumb Landscaping, aka GT General Contracting 4400 Dallas Hwy Salem, OR 97304 PO Box 5172 Salem, OR 97304	December 11, 2020	October 10, 2023
15.	Green Thumb LLC, aka Green Thumb Contracting 4400 Salem-Dallas Hwy Salem, OR 97304 4400 Shaw St NW Salem, OR 97304 PO Box 5172 Salem, OR 97304	December 11, 2020	October 10, 2023
16.	High-N-Shine Concrete Floors 9024 Silver Star Ave. Vancouver, WA 98664	February 3, 2020	February 2, 2023

**LIST OF CONTRACTORS INELIGIBLE
TO RECEIVE PUBLIC WORKS CONTRACTS
PUBLICATION DATE: JULY 1, 2022**

	<u>CONTRACTOR NAME</u>	<u>DATE PLACED</u>	<u>REMOVAL DATE</u>
17.	Hoang, Lisa aka Kim Lien Hoang, aka Lien Kim Hoang, aka Kim Hope, aka Lisa K Ryan, aka Ryan Lien Hoang, aka Kim L Hoang, aka Lien Hoang Ryan, aka Lien K Hoang-Ryan, aka Hoang K Lien, aka Lisa Hall, aka Lisa Kim Ryan, aka Lien Ryan, aka Lien Hoang Ryan, aka Kim Hoang Lien, aka K Lisa Hoang 703 N Hayden Meadows Dr, #206 Portland, OR 97213 731 N Hayden Meadows Dr, #206 Portland, OR 97217 2408 NE 164 th Avenue Vancouver, WA 98684	February 24, 2020	February 23, 2027
18.	Kim Bell Flagging, Inc. 8535 Woodard Ave. SE Salem, OR 97317	January 12, 2016	January 11, 2023
19.	Miller, David 731 NW Naito Parkway, #215 Portland, OR 97209	June 17, 2020	Not to be Removed
20.	Nam, Sang In dba Cornerstone Janitorial Services 130 NE Danbury Ave. Hillsboro, OR 97124	September 20, 2016	Not to be Removed
21.	Nguyen, Hai T. 9024 Silver Star Ave. Vancouver, WA 98664	February 3, 2020	February 2, 2023
22.	NW Flagging LLC 703 N Hayden Meadows Dr., #206 Portland, OR 97213 731 N Hayden Meadows Dr., #206 Portland, OR 97217 2408 NE 164 th Avenue Vancouver, WA 98684	February 24, 2020	February 23, 2027
23.	Oregon Building & Landscaping Services LLC 703 N Hayden Meadows Dr., #206 Portland, OR 97213 731 N Hayden Meadows Dr., #206 Portland, OR 97217 2408 NE 164 th Avenue Vancouver, WA 98684	February 24, 2020	February 23, 2027

**LIST OF CONTRACTORS INELIGIBLE
TO RECEIVE PUBLIC WORKS CONTRACTS
PUBLICATION DATE: JULY 1, 2022**

	<u>CONTRACTOR NAME</u>	<u>DATE PLACED</u>	<u>REMOVAL DATE</u>
24.	Pacific NW Drywall & Acoustics LLC aka Pacific NW Drywall& Acoustics LLC 731 NW Naito Parkway #215 Portland, OR 97209	June 17, 2020	Not to be Removed
25.	Polson, Pacharee 9024 Silver Star Ave. Vancouver, WA 98664	February 3, 2020	February 2, 2023
26.	Regional Traffic Management LLC 703 N Hayden Meadows Dr., #206 Portland, OR 97213 731 N Hayden Meadows Dr., #206 Portland, OR 97217 2408 NE 164 th Avenue Vancouver, WA 98684	February 24, 2020	February 23, 2027
27.	Tatom, Alan 168 Clearwater Avenue NE Salem, OR 97301	July 10, 2015	July 9, 2025
28.	Thomas, Antonio 16400 NE Las Brisas Ct., Apt. 43 Portland, OR 97230 650 NE Holladay St. Portland, OR 97232 16400 NE Las Brisas Ct. Portland, OR 97230	February 5, 2021	February 4, 2024
29.	Walker, Phillip 580 Market Street NE Salem, OR 97301	July 10, 2015	July 9, 2025
30.	WCI Construction LLC 169 SE Cody Lane Madras, OR 97741	July 3, 2017	July 2, 2027
31.	WWJD Traffic Control, Inc. 168 Clearwater Avenue NE Salem, OR 97301	July 10, 2015	July 9, 2025

**VAL HOYLE, COMMISSIONER
BUREAU OF LABOR AND INDUSTRIES**

Prevailing Wage Rate Laws Handbook

The 2022 edition of the ***Prevailing Wage Rate Laws Handbook*** is now available on our website at <https://www.oregon.gov/boli/employers/Pages/prevailing-wage.aspx>.

In addition to providing this and other PWR publications, Oregon BOLI Labor & Industries' PWR Unit regularly offers free, informational seminars for both public agencies and contractors. The current schedule is available online at <https://www.oregon.gov/boli/employers/Pages/prevailing-wage-seminars.aspx>.

If you are interested in being included on our mailing lists for future seminar notifications, please contact us at PWR.Email@boli.oregon.gov or (971) 353-2416.

"General Decision Number: OR20220023 06/24/2022

Superseded General Decision Number: OR20210023

State: Oregon

Construction Type: Building

County: Clackamas County in Oregon.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

<p>If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<ul style="list-style-type: none"> . Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least \$15.00 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2022.
<p>If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<ul style="list-style-type: none"> . Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least \$11.25 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Modification Number	Publication Date
0	01/07/2022
1	02/18/2022

2	02/25/2022
3	04/01/2022
4	04/15/2022
5	05/20/2022
6	06/24/2022

BROR0001-014 06/01/2020

	Rates	Fringes
BRICK FINISHER.....	\$ 26.94	14.94
BRICKLAYER.....	\$ 41.20	22.39
TILE FINISHER.....	\$ 26.94	14.81
TILE SETTER.....	\$ 35.35	20.42

 CARP1503-007 06/01/2021

	Rates	Fringes
Carpenters:		
Hardwood floors and batt insulation.....	\$ 43.97	18.56
Including metal stud installation, from work and scaffold building.....	\$ 43.80	18.56

 CARP9001-003 06/01/2020

	Rates	Fringes
Acoustical Ceiling Installer & Drywall Hanger.....	\$ 42.04	18.01
LATHER.....	\$ 42.04	18.01

 ELEC0048-018 01/01/2022

	Rates	Fringes
ELECTRICIAN.....	\$ 53.85	26.54

 ELEC0048-019 01/01/2020

	Rates	Fringes
ELECTRICIAN		
Computer Installation, telephone installation, HVAC temperature control installation, Electrical low voltage wiring installer and sound technician only.....	\$ 30.57	19.05
Electrical installer alarms and Low voltage wiring for alarms only.....	\$ 38.87	20.25

 ENGI0701-021 01/01/2020

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1.....	\$ 45.90	15.35
GROUP 1A.....	\$ 48.06	15.35
GROUP 1B.....	\$ 50.22	15.35
GROUP 2.....	\$ 43.99	15.35

GROUP 3.....	\$ 42.84	15.35
GROUP 4.....	\$ 41.01	15.35
GROUP 5.....	\$ 39.77	15.35
GROUP 6.....	\$ 36.55	15.35

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: CRANE: Helicopter Operator, when used in erecting work; Whirley Operator, 90 ton and over; LATTICE BOOM CRANE: Operator 200 tons through 299 tons, and/or over 200 feet boom; HYDRAULIC CRANE: Hydraulic Crane Operator 90 tons through 199 tons with luffing or tower attachments

GROUP 1A: HYDRAULIC CRANE: Hydraulic Operator, 200 tons and over (with luffing or tower attachment); LATTICE BOOM CRANE: Operator, 200 tons through 299 tons, with over 200 feet boom;

GROUP 1B: LATTICE BOOM CRANE: Operator, 300 tons through 399 tons with over 200 feet boom; Operator 400 tons and over

GROUP 2: CRANE: Cableway Operator, 25 tons and over; HYDRAULIC CRANE: Hydraulic crane operator 90 tons through 199 tons (without luffing or tower attachment); TOWER/WHIRLEY OPERATOR: Tower Crane Operator; Whirley Operator, under 90 tons; LATTICE BOOM CRANE: 90 through 199 tons and/or 150 to 200 feet boom; HYDRAULIC CRANE: Hydraulic crane operator, 50 tons through 89 tons (with luffing or tower attachment); Rubber tired scraper with tandem scrapers, multi-engine Trenching Machine-Wheel Operator; Excavator over 130,000 lbs; Loader 120,000 lbs and above

GROUP 3: HYDRAULIC CRANE: Hydraulic crane operator, 50 tons through 89 tons (without luffing or tower attachment); LATTICE BOOM CRANES: Lattice Boom Crane-50 through 89 tons (and less than 150 feet boom); Rubber Tired Scraper: with tandem scrapers; self loading, paddle wheel, auger type, finish and/or 2 or more units; Excavator over 80,000 lbs through 130,000; Loader 60,000 lbs and less than 120,000 lbs.

GROUP 4: CRANE: Hydraulic Crane Operator, under 50 tons; LATTICE BOOM CRANE OPERATOR: Lattice Boom Crane Operator, under 50 tons; TRACKHOE/EXCAVATOR-ROBOTIC: up to and including 20,000 lbs. with any or all attachments; Excavator Operator over 20,000 lbs through 80,000 lbs.; Tractor operator with boom attachment; DRILLING: Churn Drill and Earth Boring Machine Operator; Directional Drill Operator over 20,000 lbs pullback; CRANE: Chicago boom and similar types; Boom type lifting device, 5 ton capacity or less; HYDRAULIC HOES: Robotic Hydraulic backhoe operator, track and wheel type up to and including 20,000 lbs. with any or all attachments; Asphalt Paver; Screed Operator; Rubber-Tired Scraper, single engine, single scraper; Compactor-Self Propelled; Trenching Machine, digging capacity over 3 ft Depth; Excavator over 20,000 lbs through 80,000 lbs; Loaders 25,000 lbs and less than 60,000 lbs

GROUP 5: TRACKHOE/EXCAVATOR-HYDRAULIC: up to and including 20,000 lbs.; Boom truck operator; DRILLING: Churn Drill and Earth Boring Machine Operator; Directional Drill Operator less than 20,000 lbs pullback; HYDRAULIC HOES: Hydraulic Backhoe Operator, wheel type (Ford, John Deere, Case type); Hydraulic Backhoe Operator track type up to and including 20,000 lbs.; Concrete Pumper; Concrete Paver; Compactor;

Loaders, rubber tired type , less than 25,00 lbs; Forklift over 5 ton, Man Lift/Outside Elevator

GROUP 6: LOADERS: (less than 1 cu yd.); Roller (Non-Asphalt); Oiler; Bobcat/Skid Loader; Grade Checker; Crane oiler; Forklift

Zone Differential (add to Zone 1 rates):

Zone 2 - \$3.00

Zone 3 - \$6.00

For the following metropolitan counties: MULTNOMAH; CLACKAMAS; MARION; WASHINGTON; YAMHILL; AND COLUMBIA; CLARK; AND COWLITZ COUNTY, WASHINGTON WITH MODIFICATIONS AS INDICATED:

All jobs or projects located in Multnomah, Clackamas and Marion Counties, West of the western boundary of Mt. Hood National Forest and West of Mile Post 30 on Interstate 84 and West of Mile Post 30 on State Highway 26 and West of Mile Post 30 on Highway 22 and all jobs or projects located in Yamhill County, Washington County and Columbia County and all jobs or projects located in Clark & Cowlitz County, Washington except that portion of Cowlitz County in the Mt. St. Helens ""Blast Zone"" shall receive Zone I pay for all classifications.

All jobs or projects located in the area outside the identified boundary above, but less than 50 miles from the Portland City Hall shall receive Zone II pay for all classifications.

All jobs or projects located more than 50 miles from the Portland City Hall, but outside the identified border above, shall receive Zone III pay for all classifications.

For the following cities: ALBANY; BEND; COOS BAY; EUGENE; GRANTS PASS; KLAMATH FALLS; MEDFORD; ROSEBURG

All jobs or projects located within 30 miles of the respective city hall of the above mentioned cities shall receive Zone I pay for all classifications.

All jobs or projects located more than 30 miles and less than 50 miles from the respective city hall of the above mentioned cities shall receive Zone II pay for all classifications.

All jobs or projects located more than 50 miles from the respective city hall of the above mentioned cities shall receive Zone III pay for all classifications.

IRON0029-011 01/03/2022

	Rates	Fringes
IRONWORKER (Ornamental, Reinforcing, and Structural).....	\$ 41.13	30.72

* LAB00737-005 06/01/2022

Rates Fringes

Laborers: (Mason

Tender-Cement/Concrete).....\$ 38.79 16.85

* LAB00737-006 06/01/2022

Rates Fringes

Laborers: (Mason Tender-Brick)...\$ 38.79 16.85

* LAB00737-007 06/01/2022

Rates Fringes

Laborers: (Mason Tender-Stone)...\$ 38.79 16.85

* LAB00737-014 06/01/2022

Rates Fringes

Laborers:

GROUP 1.....\$ 34.98 16.85

GROUP 2.....\$ 36.25 16.85

LABORER CLASSIFICATIONS

GROUP 1: Form-Stripping; Demolition, General Laborer, Power Tool Operator

GROUP 2: Vibrating Plate, Grade Checker, Asphalt Raker

PAIN0055-022 07/01/2020

Rates Fringes

PAINTER

BRUSH, ROLLER AND SPRAY.....\$ 25.94 13.34

PAIN0055-023 07/01/2019

Rates Fringes

DRYWALL FINISHER/TAPER.....\$ 38.48 16.71

PAIN0740-002 01/01/2021

Rates Fringes

GLAZIER.....\$ 45.30 20.47

PAIN1236-007 06/01/2021

Rates Fringes

FLOOR LAYER: Vinyl Flooring.....\$ 35.77 17.43

PLAS0082-004 07/01/2021

Rates Fringes

PLASTERER

Including Stucco.....\$ 39.65 18.98

PLAS0555-006 07/01/2020

Rates Fringes

CEMENT MASON/CONCRETE FINISHER...	\$ 35.52	19.42

PLUM0290-009 04/01/2022		
	Rates	Fringes
PIPEFITTER		
Including HVAC Pipe		
Installation.....	\$ 50.68	31.16

PLUM0290-010 04/01/2022		
	Rates	Fringes
PLUMBER.....		
	\$ 50.68	31.16

ROOF0049-004 07/01/2021		
	Rates	Fringes
ROOFER		
Excluding Metal Roof.....	\$ 37.43	20.18

SFOR0669-002 01/01/2021		
	Rates	Fringes
SPRINKLER FITTER		
Fire Sprinklers.....	\$ 40.71	25.30

SHEE0016-013 07/01/2019		
	Rates	Fringes
Sheet Metal Worker		
Excluding HVAC Duct		
Installation.....	\$ 41.55	20.44

* SUOR2009-021 11/09/2009		
	Rates	Fringes
LABORER: Landscape.....	\$ 12.38 **	0.00
LABORER: Pipelayer.....	\$ 22.63	6.07
MILLWRIGHT.....	\$ 17.62	3.19
OPERATOR: Grader/Blade.....	\$ 16.00	2.80
SHEET METAL WORKER (HVAC Duct		
Installation Only).....	\$ 24.58	5.76
TRUCK DRIVER: Dump Truck.....	\$ 15.67	4.33
TRUCK DRIVER: Water Truck.....	\$ 18.11	5.05

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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 ** Workers in this classification may be entitled to a higher

minimum wage under Executive Order 14026 (\$15.00) or 13658 (\$11.25). Please see the Note at the top of the wage determination for more information.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and

the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISIO"

Applicability

The Project or Program to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

A. 1. (i) Minimum Wages. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section I(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible, place where it can be easily seen by the workers.

(ii) (a) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part

of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

2. Withholding. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work, all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

3. (i) Payrolls and basic records. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1(b)(2)(B) of the Davis-bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5 (a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been

communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017.)

(ii) (a) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i) except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this subparagraph for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to HUD or its designee. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149.)

(b) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR 5.5 (a)(3)(ii), the appropriate information is being maintained under 29 CFR 5.5(a)(3)(i), and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by subparagraph A.3.(ii)(b).

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under subparagraph A.3.(i) available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.

(i) **Apprentices.** Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who

is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) **Trainees.** Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by

the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under 29 CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract

6. Subcontracts. The contractor or subcontractor will insert in any subcontracts the clauses contained in subparagraphs 1 through 11 in this paragraph A and such other clauses as HUD or its designee may by appropriate instructions require, and a copy of the applicable prevailing wage decision, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this paragraph.

7. Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

10. (i) Certification of Eligibility. By entering into this contract the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be

awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1 01 0, Title 18, U.S.C., "Federal Housing Administration transactions", provides in part: "Whoever, for the purpose of . . . influencing in any way the action of such Administration..... makes, utters or publishes any statement knowing the same to be false..... shall be fined not more than \$5,000 or imprisoned not more than two years, or both."

11. Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. Contract Work Hours and Safety Standards Act. The provisions of this paragraph B are applicable where the amount of the prime contract exceeds \$100,000. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which the individual is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (1) of this paragraph, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in subparagraph (1) of this paragraph.

(3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

C. Health and Safety. The provisions of this paragraph C are applicable where the amount of the prime contract exceeds \$100,000.

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, (Public Law 91-54, 83 Stat 96). 40 USC 3701 et seq.

(3) The contractor shall include the provisions of this paragraph in every subcontract so that such provisions will be binding on each subcontractor. The contractor shall take such action with respect to any subcontractor as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.



ANNUAL SECTION 3 SUMMARY REPORTING REQUIREMENTS

FOR RECIPIENTS OF HUD COMMUNITY PLANNING & DEVELOPMENT FUNDING

*TECHNICAL ASSISTANCE ON FORM HUD-60002

Why HUD Enforces Section 3?

Each year the U.S. Department of Housing and Urban Development invests billions of federal dollars into distressed communities for projects designed to build and rehabilitate housing, improve roads, develop community centers, and otherwise assist families achieve the American Dream.

The Section 3 regulation recognizes that HUD funding typically results in projects/activities that generate new employment, training and contracting opportunities. These economic opportunities not only provide "bricks and mortar", but can also positively impact the lives of local residents who live in the neighborhoods being redeveloped.

Section 3 of the Housing and Urban Development Act of 1968 [12 U.S.C. 1701u and 24 CFR Part 135] is HUD's legislative directive for providing preference to low- and very low-income residents of the local community (regardless of race or gender), and the businesses that substantially employ these persons, for new employment, training, and contracting opportunities resulting from HUD-funded projects.

Further, as a condition of receiving HUD Community Planning and Development assistance, recipients certify that they will comply with the requirements of Section 3 annually pursuant to 24 CFR 570.607(b). Accordingly, the Department has the legal responsibility to monitor recipients for compliance and can impose penalties upon those that fail to meet these obligations.

Applicability of Section 3 to Community Planning & Development Assistance

The requirements of Section 3 apply to recipients of HUD Community Planning and Development funding exceeding \$200,000.

Section 3 covered projects are those in which a *combined* (or aggregate) amount of covered funding exceeding \$200,000, is invested into activities involving **housing construction, demolition, rehabilitation, or other public construction**—i.e., roads, sewers, community centers, etc. [Example: Section 3 applies to the combined investment of more than \$200,000 into multiple single-family housing rehabilitation projects during a program year].

Contractors or subcontractors that receive contracts in excess of \$100,000 for Section 3 covered projects/activities are required to comply with the Section 3 regulations in the same manner as direct recipients.

If the recipient agency receives Section 3 covered funding and invests these funds into covered projects/activities, but no individual contract exceeds \$100,000, responsibility for complying with Section 3 only applies to the recipient.

Accordingly, the recipient must attempt to reach the Section 3 minimum numerical goals found at 24 CFR Part 135.30 by: 1) Awarding 10 percent of the total dollar amount of all covered construction contracts to Section 3 businesses; and 2) Offering 30 percent of new employment opportunities to Section 3 businesses.

Section 3 Covered Community Planning and Development funding

- Community Development Block Grants (CDBG)
- Home Investment Partnership Assistance
- Housing Opportunities for Persons with Aids (HOPWA)
- Economic Development Initiative (EDI)
- Brownfield Economic Development Initiative (BEDI)
- Emergency Shelter Grants
- Homeless Assistance
- University Partnership Grants
- Neighborhood Stimulus Program (NSP)
- Certain Grants Awarded Under HUD Notices of Funding Availability (NOFAs)

*NOTE: The requirements of Section 3 only apply to the portion(s) of covered funding that were used for project/activities involving housing construction, rehabilitation, demolition, or other public construction.

Section 3 applies to the entire covered project or activity regardless of whether the activity was fully or partially funded with covered assistance.

Section 3 Covered Recipient Agencies

“Recipient” refers to any entity that receives Section 3 covered financial assistance directly from HUD or from another recipient and includes, but is not limited to any of the following:

- States; Units of Local Government; Native American Tribes; or other Public Bodies
- Public or Private Nonprofit Organizations
- Private Agencies or Institutions
- Mortgagors; Developers; Limited Dividend Sponsors; Builders; Property Managers; Community Housing Development Organizations
- Successors, assignees or transferees of any such entity listed above

- Recipients do NOT include any ultimate beneficiary under the HUD program that Section 3 applies and does NOT refer to contractors.

Triggering the Requirements of Section 3

Section 3 is triggered when the normal completion of construction and rehabilitation projects creates the need for new employment, contracting, or training opportunities.

The Section 3 regulations should not be construed to mean that recipients are required to hire Section 3 residents or award contracts to Section 3 businesses other than what is needed to complete covered projects/activities.

If the expenditure of covered funding does not result in new employment, contracting, or training opportunities, the requirements of Section 3 have not been triggered. However, each agency must still submit Section 3 annual reports indicating this information.

Recipient Responsibilities Pursuant to Section 3

Each recipient (and their covered contractors, subcontractors, or subrecipients) are required to comply with the requirements of Section 3 for new employment, training, or contracting opportunities resulting from the expenditure of covered funding. This responsibility includes:

1. Implementing procedures to notify Section 3 residents and business concerns about training, employment, and contracting opportunities generated by Section 3 covered assistance;
2. Notifying potential contractors working on Section 3 covered projects of their responsibilities;
3. Incorporating the Section 3 Clause into all covered solicitations and contracts [see 24 CFR Part 135.38];
4. Facilitating the training and employment of Section 3 residents and the award of contracts to Section 3 business concerns;
5. Assisting and actively cooperating with the Department in making contractors and subcontractors comply;
6. Refraining from entering into contracts with contractors that are in violation of Section 3 regulations;
7. Documenting actions taken to comply with Section 3; and
8. Submitting Section 3 Annual Summary Reports (form HUD-60002) in accordance with 24 CFR Part 135.90.

In addition to the responsibilities described above, **State and County agencies or consortia** that distribute covered funds to units of local government, nonprofit organizations, or other subrecipients, must attempt to reach the minimum numerical goals set forth at 24 CFR Part 135.30, regardless of the number of subrecipients that receive covered funding. State or County agencies must also do the following:

1. Inform subrecipients about the requirements of Section 3;
2. Assist subrecipients and their contractors with achieving compliance;
3. Monitor subrecipients' performance with respect to meeting the requirements of Section 3; and
4. Report to HUD on the cumulative Section 3 activities taking place within their jurisdiction on an annual basis.

Section 3 Residents and Business Concerns

Section 3 Residents Are:

1. Residents of Public and Indian Housing; or
2. Individuals that reside in the metropolitan area or nonmetropolitan county in which the Section 3 covered assistance is expended and whose income do not exceed the local HUD income limits set forth for low- or very low-income households.

Section 3 Business Concerns Are One of the Following:

1. Businesses that are 51 percent or more owned by Section 3 residents;
2. Businesses whose permanent, full-time employees include persons, at least 30 percent of whom are currently Section 3 residents, or within three years of the date of first employment with the firm were Section 3 residents; or
3. Businesses that provide evidence of a commitment to subcontract in excess of 25 percent of the dollar amount of all subcontracts to be awarded to businesses that meet the qualifications described above.

In accordance with the regulation, residents and businesses concerns seeking Section 3 preference shall certify, or submit evidence to the recipient, contractor, subcontractor or subrecipient (if requested) verifying that they meet the definitions provided above.

Recipients can use their discretion for determining the type of verification that is required by prospective Section 3 residents and business concerns. Some examples include: proof of residency in a public housing authority; proof of federal subsidies for housing, food stamps, or unemployment benefits; and payroll data or other relevant business information.

Section 3 Summary Reports (Form HUD-60002)

Annually, each direct recipient of Community Planning and Development funding is required to submit form HUD-60002 to HUD's Economic Opportunity Division in Washington, DC. , preferably online from the following website: www.hud.gov/section3.

Due Date: Form HUD-60002 is due at the same time as annual performance (e.g., CAPERS) reports

The Section 3 Summary Report shall follow the same program, fiscal, or calendar year as the annual performance report and should correspond to the covered projects and activities that were administered during the reporting period.

NOTE: Section 3 reports must be submitted by all agencies that receive Community Planning and Development funding in excess of \$200,000 whether the requirements were triggered or not.

Determining What Should Be Reported on Form HUD-60002

Section 3 Annual Summary Reports are intended to measure each recipient's efforts to comply with the statutory and regulatory requirements of Section 3 in its own operations **AND** those of its covered contractors, subcontractors, and subrecipients. Each submission of form HUD-60002 should indicate the following:

- The total dollar amount of HUD funding that was received by the recipient for covered projects/activities during the specified reporting period.
- The total number of new employees that were hired by the recipient and/or its covered contractors, subcontractors, and subrecipients, as a result of performing or completing covered project/activities.
- The number of new employees that were hired by the recipient (or its covered contractors, subcontractors, and subrecipients), as a result of covered projects/activities, that met the definition of a Section 3 resident.
- The total number of man hours worked on covered projects (optional).
- The aggregate number of hours worked by Section 3 residents on covered projects (optional).
- The total number of Section 3 residents that participated in training opportunities that were made available by the recipient agency, its contractors, subrecipients, or other local community resource agencies.
- The total dollar amount of construction and/or non-construction contracts (or subcontracts) that were awarded with covered funding.
- The dollar amount of the recipient's construction or non-construction contracts (or subcontracts) that were awarded to Section 3 business concerns.
- Detailed narrative descriptions of the specific actions that were taken by the recipient (or its covered contractors, subcontractors, subrecipients, or others) to comply with the requirements of Section 3 and/or meet the minimum numerical goals for employment and contracting opportunities.

Section 3 Reporting and Compliance Determinations

Absent evidence to the contrary, the Department considers recipients of covered funding to be in compliance with Section 3 if they meet the minimum numerical goals set forth at 24 CFR Part 135.30. Specifically:

- a. 30 percent of the aggregate number of new hires shall be Section 3 residents;
- b. 10 percent of the total dollar amount of all covered construction contracts shall be awarded to Section 3 business concerns; and
- c. 3 percent of the total dollar amount of all covered non-construction contracts shall be awarded to Section 3 business concerns.

Recipients that fail to meet the minimum numerical goals above bear the burden of demonstrating why it was not possible to do so. Such justifications should describe the efforts that were taken, barriers encountered, and other relevant information that will enable the Department to make a compliance determination.

Recipients that submit Section 3 reports containing **all zeros**, without a sufficient explanation to justify their submission, are in **noncompliance** with the requirements of Section 3.

Failure to comply with the requirements of Section 3 may result in sanctions, including: debarment, suspension, or limited denial of participation in HUD programs pursuant to 24 CFR Part 24.

Recipients that are subject to annual A-133 Audits may also receive an audit finding for failure to submit form HUD-60002 to HUD.

Important Notes for Submitting Form HUD-60002

- Recipients must submit a separate form HUD-60002 for each type of covered funding (*e.g.*, separate reports must be submitted for CDBG and HOME funding).
- Use the online Section 3 Summary Reporting System at: www.hud.gov/section3 to ensure that form HUD- 60002 is received by the Economic Opportunity Division in HUD Headquarters in a timely manner.
- The "reporting period" option in the online Section 3 Summary Reporting System (box #7) lists quarters but the Section 3 reporting is an annual requirement. Accordingly, recipients should select **Quarter 4** to document the total amount of covered activities/projects that were completed during the entire reporting period.
- If the recipient (or its covered contractors, subcontractors and subrecipients) did not hire any new employees during the reporting period, and/or if no covered construction or non-construction contracts were awarded, the recipient must indicate this in Part III of form HUD-60002 and certify that this information is true and accurate by penalty of law.

Where Are Reports Submitted

Form HUD-60002 must be submitted to HUD's Economic Opportunity Division, in Washington, DC. Recipients are strongly encouraged to submit form HUD-60002 online at: www.hud.gov/section3.

Recipients can also download a hard copy of form HUD 60002 from the website listed above. Hard copies shall be submitted via fax or mail to:

U.S. Department of Housing and Urban Development
Attn: Economic Opportunity Division
451 Seventh Street, SW
Room 5235
Washington, DC 20410
202-708-1286 (fax)

Additional Section 3 Guidance and Technical Assistance

The Economic Opportunity Division is committed to providing recipient's guidance and technical assistance for compliance with the requirements of Section 3.

For additional information, please visit the Section 3 website at: www.hud.gov/section3. This webpage provides the following tools and information:

- Section 3 Statute—12 U.S.C. 1701u
- Section 3 Regulation—24 CFR Part 135
- Frequently Asked Questions
- Section 3 Model Programs
- Guidance on Section 3 and Economic Stimulus Funding
- Guidance on Section 3 and the Neighborhood Stimulus Program (NSP)
- Sample Section 3 Certification Forms (residents and business concerns)
- Link to HUD's Local Income Eligibility Calculator
- Link to Section 3 Annual Reporting System(form HUD-60002)
- Downloadable Forms
- Contact Information for Economic Opportunity Division staff
- Email inquiries on Section 3 can be sent to section3@hud.gov



CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT
PROJECT INFORMATION, PLANS, SPECIFICATIONS AND DRAWINGS

PROJECT: Clackamas County Children's Commission –
Estacada Head Start Improvements Project
(Estacada, OR)

Background: Clackamas County Children's Commission is in need of building improvements to serve the citizens of the Greater Estacada Area to provide Head Start Services at their Estacada location.

Project Estimate: \$240,000.00

Key Dates:

All Basic Bid Work may begin as soon as the Notice to Proceed ("NTP") is issued

Substantial Completion: 110 Days from NTP – estimated to be March 4, 2023

Final Completion: 125 Days from NTP – estimated to be March 19, 2023

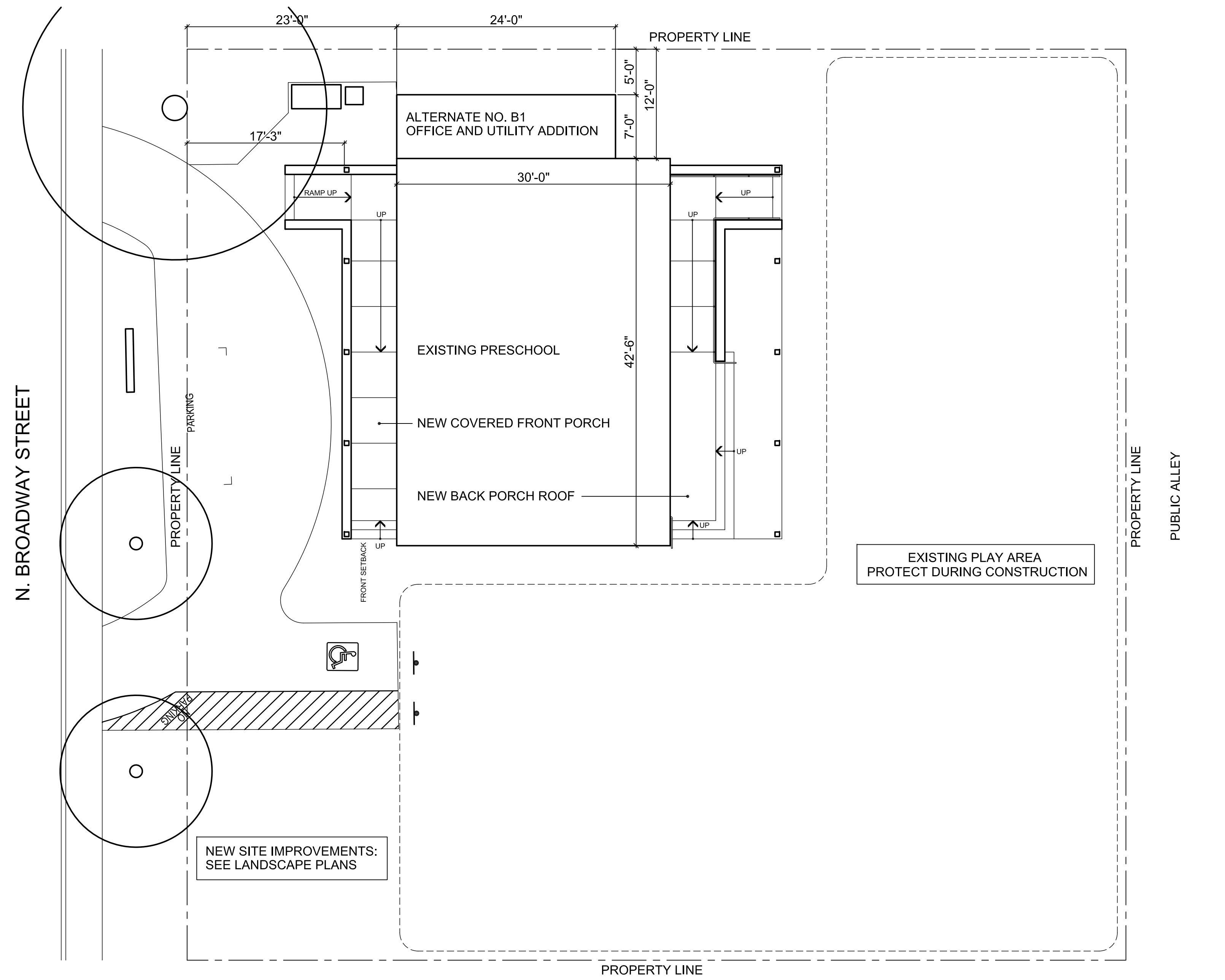
Holidays will not be include in these number of days (Example Labor Day etc).

Time is of the essence for this Project. Note the Liquidated Damages requirements as described in the Supplemental General Conditions.

The Scope further includes the following Plans, Specifications and Drawings:

J. Timothy Richard Architect, LLC. – Bid Permit Drawings Set
Issued, May 10, 2022

J. Timothy Richard Architect, LLC. – Bid Permit Specifications Set
Issued, May 10, 2022



PROPERTY DESCRIPTION:

CLACKAMAS COUNTY CHILDREN'S COMMISSION HEAD START PRESCHOOL.
 264 N. BROADWAY STREET, ESTACADA, OREGON.
 MAP NUMBER: 34E20DD
 TAXLOT: 34E20DD11000
 PARCEL NUMBER: 00938221
 DOCUMENT NUMBER: 2018-040620

PHASE II - PROJECT DESCRIPTION:

DEMOLITION: EXISTING FRONT PORCH, ROOF AND RAMP, ROOFING, SIDING, WINDOWS, DOORS AND WALLS AS REQUIRED FOR NEW WORK.

NEW WORK: NEW CONCRETE PORCH, STEPS, ACCESSIBLE RAMP, PORCH ROOF, ROOFING, DOORS AND WINDOWS.

SITE IMPROVEMENTS: NEW DRIVEWAY, ACCESSIBLE PARKING, WALKWAYS, WASTE / RECYCLING AREA, LANDSCAPING, TREE MAINTENANCE AND REMOVAL.

ALTERNATE NO. S1 - ALTERNATE SITE IMPROVEMENTS
 ALTERNATE NO. B1 - OFFICE AND UTILITY ADDITION
 ALTERNATE NO. M1 - ALTERNATE MECHANICAL SYSTEM

DRAWING INDEX:

- CS.1 COVER SHEET / PROJECT INFORMATION / SITE PLAN / GENERAL NOTES / INDEX
- LD.0 LANDSCAPE DEMOLITION PLAN
- LD.1 LANDSCAPE DEMOLITION PLAN - ALT. S1
- L1.0 LANDSCAPE MATERIALS PLAN
- L1.1 LANDSCAPE MATERIALS PLAN - ALT. S1
- L2.0 LANDSCAPE LAYOUT PLAN
- L2.1 LANDSCAPE LAYOUT PLAN - ALT. S1
- L3.0 LANDSCAPE GRADING PLAN
- L3.1 LANDSCAPE GRADING PLAN - ALT. S1
- L4.0 LANDSCAPE PLANTING PLAN
- L4.1 LANDSCAPE PLANTING PLAN - ALT. S1
- L5.0 SITE DETAILS
- L5.1 PLANTING DETAILS
- A1.0 EXISTING / DEMOLITION PLAN / FOUNDATION PLAN
- A1.1 FLOOR PLAN
- A1.2 REFLECTED CEILING PLAN
- A1.3 ROOF FRAMING PLAN
- A1.4 ROOF PLAN
- A2.0 EXTERIOR ELEVATIONS
- A2.1 EXTERIOR ELEVATIONS
- A3.0 BUILDING SECTIONS
- A4.0 PORCH SECTION
- A5.0 PORCH DETAILS
- A5.1 PORCH DETAILS
- A5.2 WALL SECTIONS @ WINDOWS AND DOORS
- A5.3 ALTERNATE B1 DETAILS
- M1.0 MECHANICAL LEGENDS AND SCHEDULES
- M2.0 MECHANICAL EXISTING FLOOR PLAN / DEMOLITION PLAN
- P1.0 PLUMBING - EXISTING FLOOR PLAN / DEMOLITION PLAN
- E1.0 ELECTRICAL LEGENDS AND SCHEDULES
- E2.0 EXISTING ELECTRICAL DEMOLITION PLAN / ELECTRICAL PLAN

GENERAL NOTES:

- NOTE: SEE PROJECT MANUAL FOR ADDITIONAL INFORMATION**
- A. THESE NOTES SHALL STIPULATE THE MINIMUM STANDARDS OF CONSTRUCTION.
 - B. THE OWNER SHALL BE RESPONSIBLE FOR THE BUILDING PERMIT.
 - C. ALL WORK ON THE PROJECT SHALL BE DONE IN CONFORMANCE WITH THE CURRENT EDITION OF THE 2019 OREGON STRUCTURAL SPECIALTY CODE AND ALL OTHER APPLICABLE STATE AND LOCAL CODES AND ORDINANCES.
 - D. CONTRACTOR RESPONSIBILITIES: VERIFY ALL DIMENSIONS, COORDINATE ALL TRADES, ASSURE ALL WORK IS DONE TO THE HIGHEST STANDARDS OF THE RESPECTIVE TRADE. NOTIFY ARCHITECT OF ANY DISCREPANCIES BEFORE PROCEEDING.
 - E. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY FACILITIES. THE CONTRACTOR SHALL ALSO PROVIDE WASTE DISPOSAL, BARRIERS, WARNING SIGNS, AND TEMPORARY FENCES AS REQUIRED. THE CONTRACTOR SHALL MAINTAIN A NEAT AND ORDERLY WORK SITE AND SHALL NOT ALLOW DIRT AND DEBRIS TO ACCUMULATE ON SITE.
 - F. THE CONTRACTOR SHALL INCORPORATE A CONSTRUCTION WASTE MANAGEMENT PROGRAM. SALVAGE ALL USABLE MATERIALS. RECYCLE THROUGH LOCAL "RE-BUILDING" CENTER(S). RECYCLE ALL MATERIALS POSSIBLE THAT ARE NOT SALVAGED. CONTACT METRO FOR RECYCLING INFORMATION.
 - G. THE CONTRACTOR SHALL INCORPORATE SUSTAINABLE BUILDING PRACTICES TO THE HIGHEST EXTENT POSSIBLE.
 - H. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SECURITY OF THE SITE AND ALL MATERIALS THERE ON UNTIL COMPLETION.

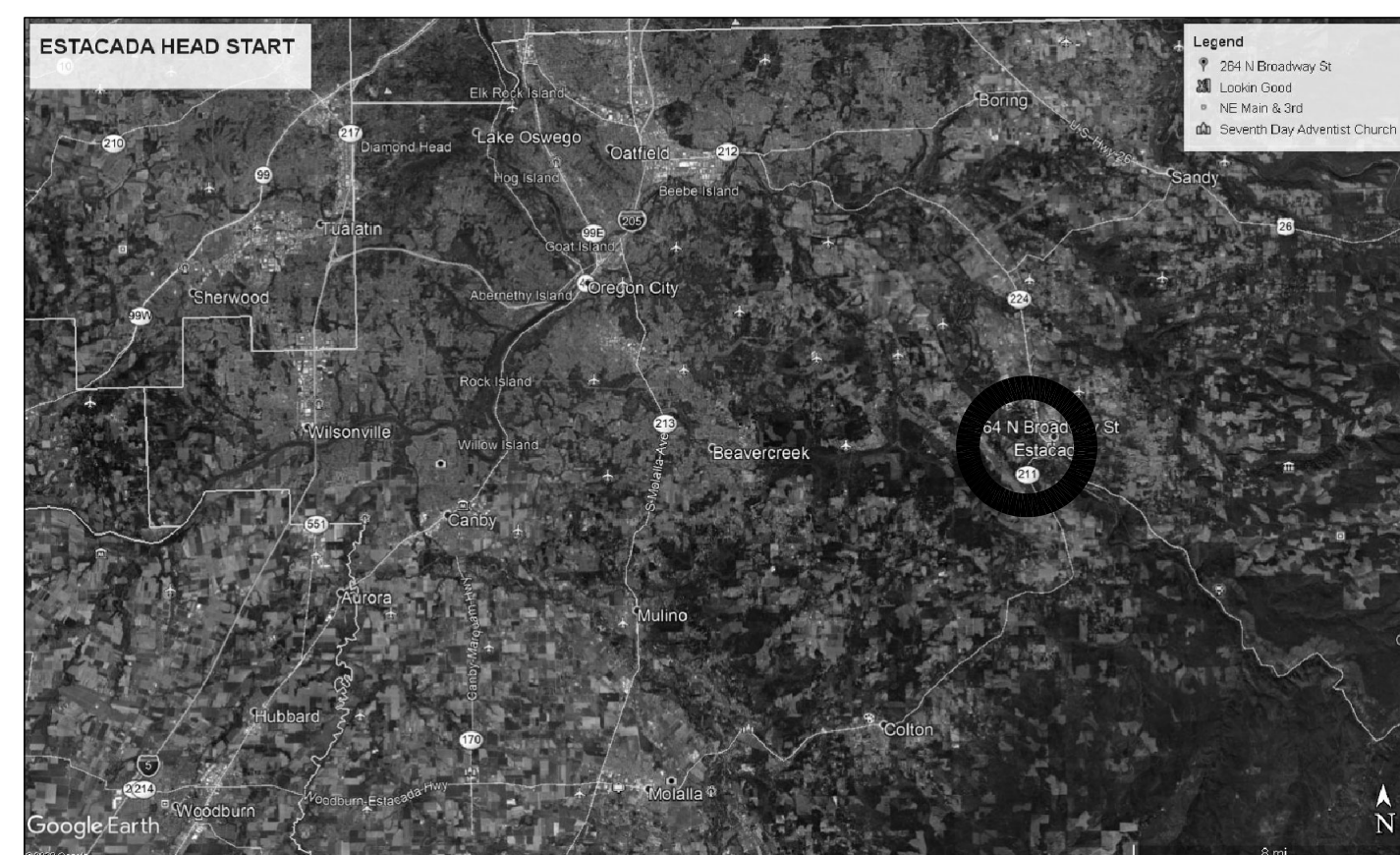
PROJECT INFORMATION:

HISTORIC RESOURCE:	ESTACADA HEAD START WAS DESIGNED AS A RESIDENCE AND CONVERTED INTO A DAY CARE FACILITY BY PREVIOUS OWNERS. THE BUILDING IS A SINGLE STORY WOOD FRAME BUILDING.
EXISTING OCCUPANCY:	GROUP E
CONSTRUCTION TYPE:	TYPE VB
EXISTING USE:	CLACKAMAS COUNTY CHILDREN'S COMMISSION HEAD START PRE-SCHOOL TWO 20-PERSON CLASSROOM AND SUPPORT AREAS
SQUARE FOOTAGE:	INTERIOR CONDITIONED SPACE = 1,260 SF
ALTERNATE B1 SQUARE FOOTAGE:	168 SF (OFFICE 65 SF / SUPPORT AREAS 103 SF) TOTAL SF WITH ALTERNATE B1 = 1,428 NEW FRONT PORCH = 240 SF / NEW BACK PORCH COVER = 480 SF
BUILDING HEIGHT:	SINGLE STORY - 20 FEET ABOVE PLANE GRADE
SQUARE FOOTAGE BY USE:	CLASSROOM = 850 SF SUPERVISOR'S OFFICE = 210 SF (TEACHING / SUPPORT STAFF OFFICES LOCATED IN CLASSROOMS) SUPPORT AREAS / RESTROOMS / CIRCULATION = APPROXIMATELY 200 SF
EXISTING OCCUPANT LOAD:	(1) 20 STUDENT CLASSROOMS - 20 STUDENTS + 3 STAFF = TOTAL OCCUPANTS = 23 *
PROPOSED OCCUPANT LOAD:	NO CHANGE
* ACTUAL OCCUPANT LOAD IS LIMITED BY FEDERAL REGULATIONS FOR HEAD START CLASSROOM ALLOWABLE OCCUPANTS	
OCCUPANT LOAD BASED ON CODE:	TABLE 1004.5 MAXIMUM FLOOR AREA ALLOWANCE PER OCCUPANT: DAY CARE = 25 SF NET PER OCCUPANT 1,260 SF / 35 SF PER OCCUPANT = 36 OCCUPANTS INCLUDING ALTERNATE B1: 1,428 SF / 35 SF PER OCCUPANT = 41 OCCUPANTS
FIRE PROTECTION:	CITY OF ESTACADA FIRE DEPARTMENT IS LOCATED 1/2 MILE FROM FACILITY. FACILITY IS EQUIPPED WITH SECURITY AND FIRE MONITORING SYSTEMS.
ACCESSIBILITY:	NEW ACCESSIBLE RAMP IS PROPOSED FOR THE MAIN ENTRY. EXISTING ACCESSIBLE RAMP PROVIDES EGRESS AND ACCESS TO THE ACCESSIBLE PLAY AREA.

1 SITE PLAN
 CS.1 SCALE: 1/8" = 1'-0"



2 LOCATION MAP
 CS.1 SCALE: 1/8" = 1'-0"



3 VICINITY MAP
 CS.1 SCALE: 1/8" = 1'-0"



HEAD START

ESTACADA HEAD START IMPROVEMENTS PROJECT
 264 N. BROADWAY
 ESTACADA, OREGON

CONTRACT DOCUMENTS

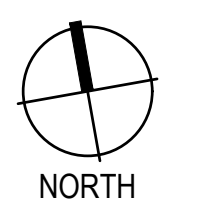
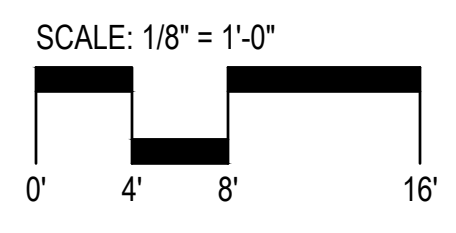
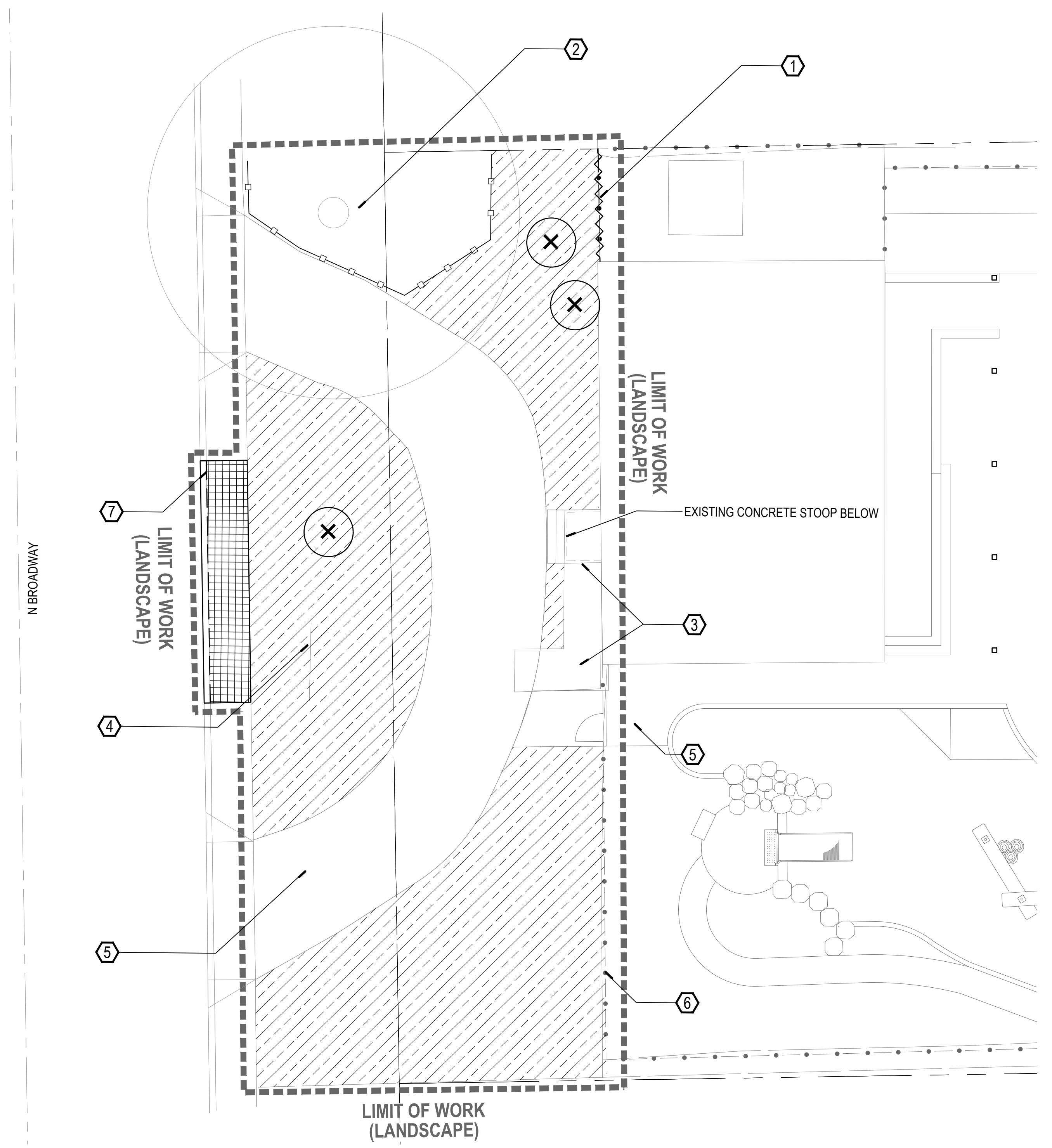
PROJECT INFO
DRAWING INDEX
VICINITY MAP
LOCATION MAP
SITE PLAN

DATE:
10 MAY 2022

DRAWN BY:
JTR

CHECKED BY:
RC

REVISIONS



LEGEND

- CLEAR AND GRUB
- CONCRETE PAVING REMOVAL
- SAWCUT CONCRETE PAVING
- TREE PROTECTION FENCING, 48" HIGH ORANGE SNOW FENCING WITH METAL SPIKES
- FENCE REMOVAL
- EXISTING TREE TO BE REMOVED

DEMOLITION KEY NOTES

1. EXISTING FENCE AND GATE TO BE REMOVED.
2. NO EQUIPMENT OR CONSTRUCTINO MANTERIALS TO BE STORED UNDER DRIPLINE OF THE EXISTING OAK TREE.
3. EXISTING RAMP, STAIRS AND CONCRETE STOOP TO BE REMOVED.
4. EXISTING SIGN TO BE REMOVED.
5. PRESERVE AND PROTECT EXISTING CONCRETE PAVING.
6. PRESERVE AND PROTECT EXISTING FENCE.
7. REMOVE AND REPLACE DAMAGED SIDEWALK. CUT AT CURB AS REQUIRED.

DEMOLITION NOTES

1. ELEMENTS ON THE DRAWINGS SHOWN TO BE REMOVED SHALL BE REMOVED TO THEIR FULL DEPTHS OF THEIR CONSTRUCTION.
2. ITEMS THAT ARE ENCOUNTERED ON SITE (INCLUDING BELOW GRADE) THAT ARE NOT SHOWN ON THE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE.
3. EROSION AND SEDIMENT CONTROL METHODS TO REMAIN IN PLACE DURING ALL CONSTRUCTION PHASES.
4. THE LOCATION OF EXISTING UTILITIES AS SHOWN ON THE DRAWINGS MAY VARY IN THE FIELD. ADDITIONAL UTILITIES MAY EXIST ON SITE BUT ARE NOT SHOWN ON THE DRAWINGS. VERIFY THE ACTUAL LOCATION OF ALL UTILITIES BEFORE ANY CONSTRUCTION ACTIVITIES COMMENCE.
5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT THE CONSTRUCTION SITE AND THEIR EQUIPMENT.
6. SEE SPECIFICATIONS FOR GENERAL STRIPPING OF SITE.
7. SEE GRADING PLAN AND DETAILS FOR EXCAVATION DEPTHS FOR SIDEWALKS, PAVEMENTS AND PLANTING AREAS.
8. PRESERVE AND PROTECT BUILDING FOUNDATIONS AND FENCE POST FOOTINGS EXCEPT WHERE IT IS NOTED OTHERWISE.

JTRA
ARCHITECTURE
+ design

J TIMOTHY RICHARD ARCHITECT
4543 NE 23RD AVENUE
PORTLAND - OREGON - 97211
c: 503-449-7326
e: tjrichard@houseoftyee.com

GREEN WORKS

LANDSCAPE ARCHITECTURE
ENVIRONMENTAL DESIGN
110 SE Main St., Suite 100
Portland, OR 97214
Ph: 503 222 5512
Email: info@greenworkspc.com

Clackamas County
Children's Commission

HEAD START

16518 SE RIVER ROAD
MILWAUKIE - OREGON - 97267

ESTACADA HEAD START IMPROVEMENTS PROJECT
264 N. BROADWAY
ESTACADA, OREGON

CONTRACT DOCUMENTS

DEMOLITION PLAN

DATE:
10 MAY 2022

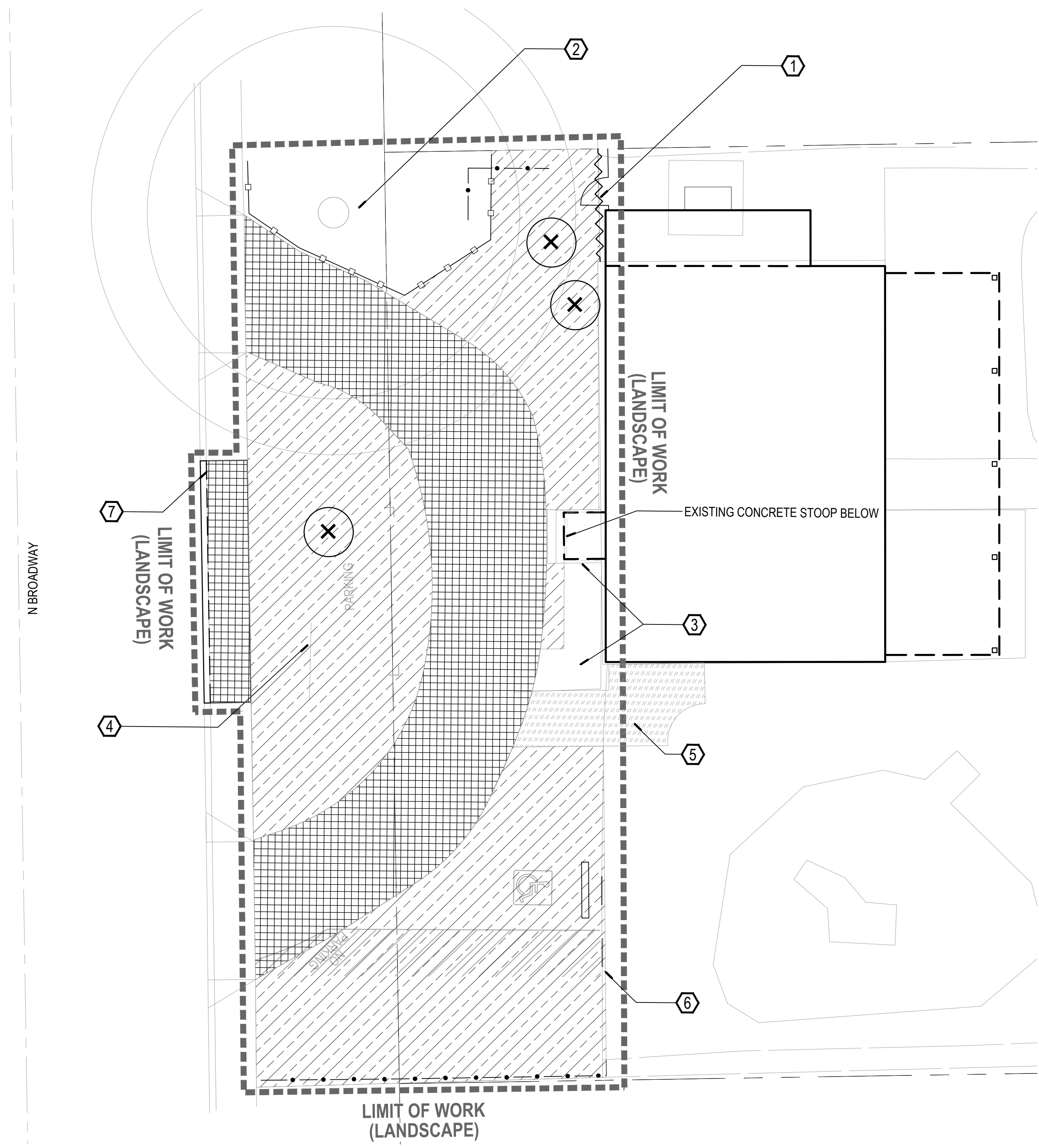
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CW

CHECKED BY:
RC

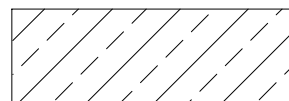
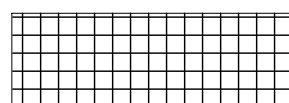
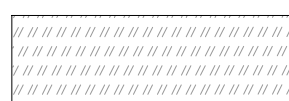
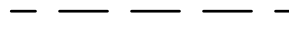
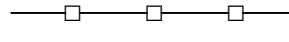

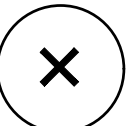
REVISIONS

NO.	DESCRIPTION

LD.0



LEGEND

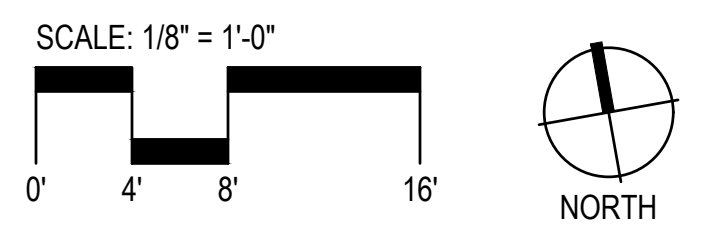
-  CLEAR AND GRUB
-  CONCRETE PAVING REMOVAL
-  PRESERVE EXISTING CONCRETE PAVING
-  SAWCUT CONCRETE PAVING
-  TREE PROTECTION FENCING, 48" HIGH ORANGE SNOW FENCING WITH METAL SPIKES
-  FENCE REMOVAL
-  EXISTING TREE TO BE REMOVED

DEMOLITION KEY NOTES

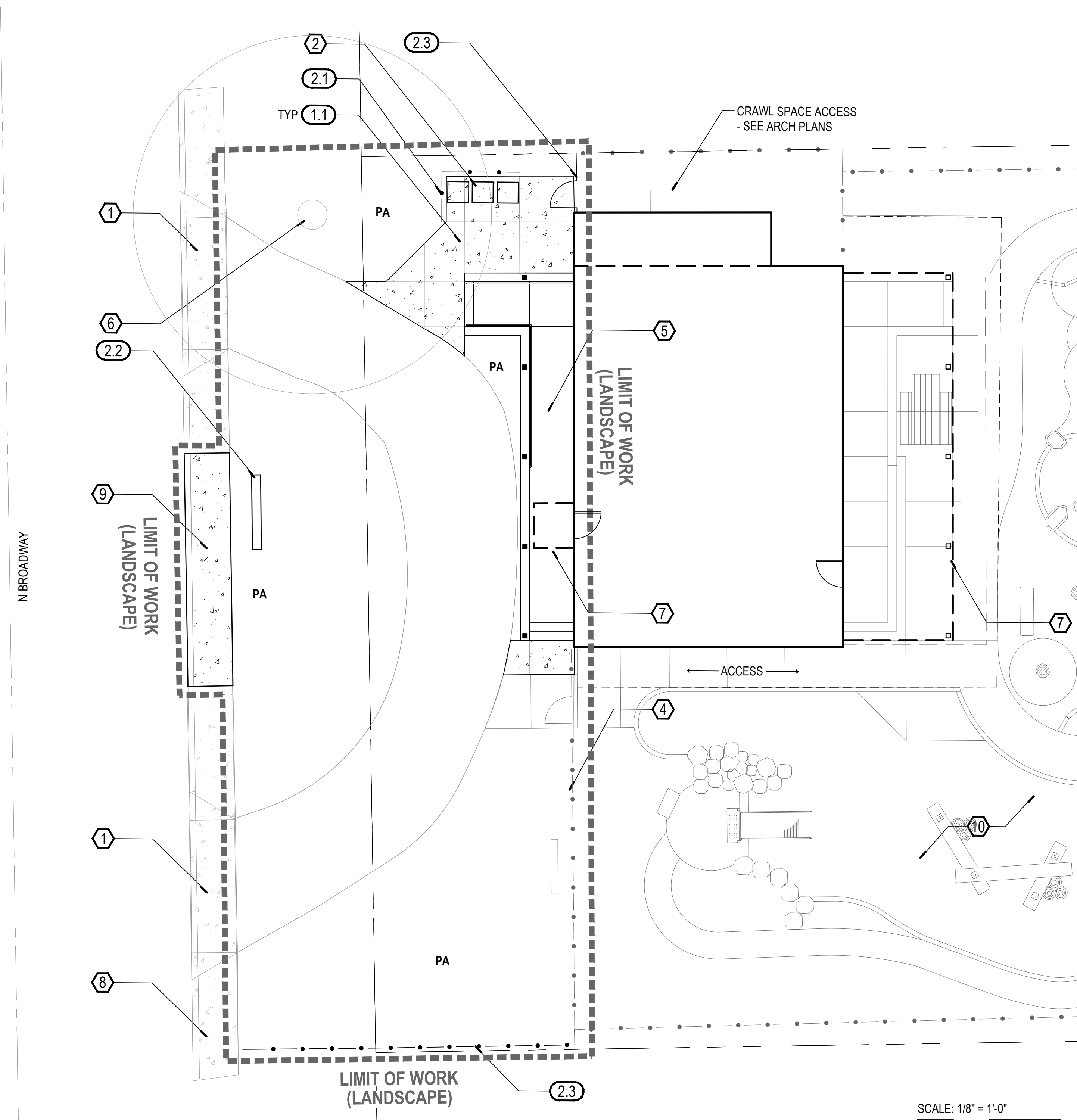
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8. PRESERVE AND PROTECT BUILDING FOUNDATIONS AND FENCE POST FOOTINGS EXCEPT WHERE IT IS NOTED OTHERWISE.



NO.	DESCRIPTION



MATERIALS LEGEND

- CONCRETE PAVING (3/L5.0)
- CHAINLINK FENCE (7/L5.0)
- CONTRACTION JOINT (5/L5.0)
- DOWELED EXPANSION JOINT (6/L5.0)
- PA PLANTING AREA

SITE DETAIL KEY NOTES

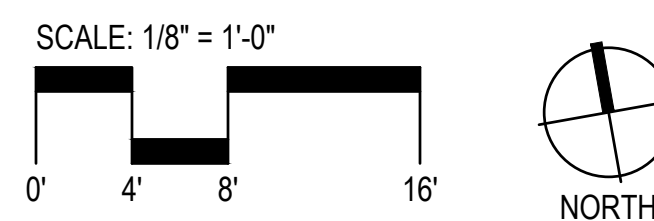
(1.0) SURFACING	DETAIL/SHEET
1.1 CONCRETE PAVING	3/L5.0
1.2 ASPHALT PAVING	1/L5.0
(2.0) SITE FURNISHINGS	DETAIL/SHEET OR SPEC
2.1 48" HIGH WOOD SCREEN	X/L5.0
2.2 MONUMENT SIGN PROVIDED BY OTHERS	---
2.3 48" HIGH CHAINLINK FENCING	7/L5.0

SITE KEYNOTES

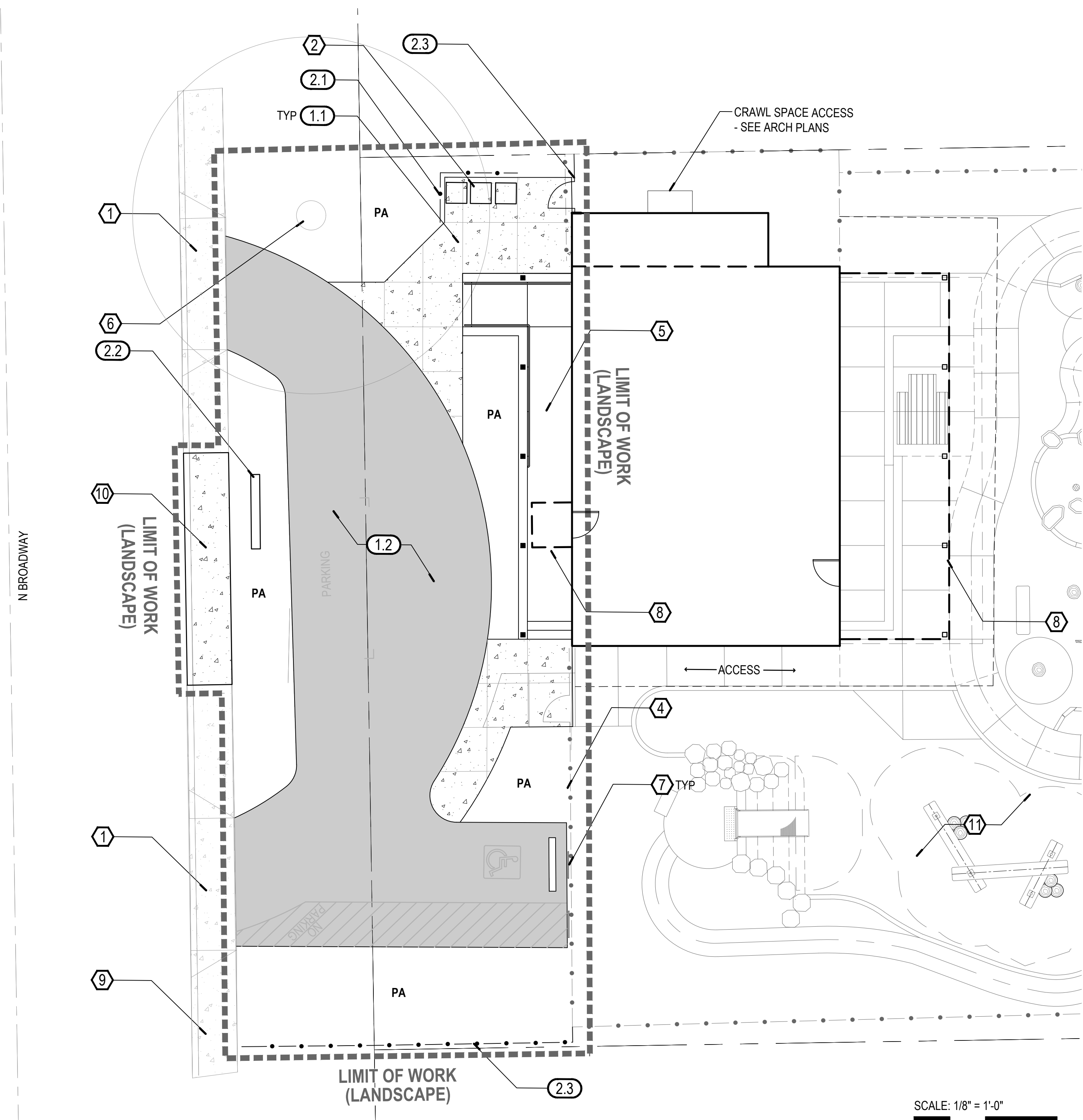
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3. FENCE AND GATE TO BE REPLACED FOLLOWING BUILDING CONSTRUCTION.
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6. EXISTING TREE TO REMAIN (48" DIA. OAK)
7. NEW PORCH ROOF - SEE ARCH PLANS.
8. EXISTING SIDEWALK TO REMAIN EXCEPT WHERE NOTED.
9. SIDEWALK REPLACEMENT. CURB TO REMAIN - CUT AS REQUIRED.
10. PRESERVE AND PROTECT EXISTING PLAY EQUIPMENT

GENERAL NOTES

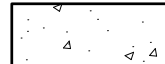
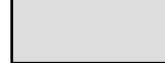
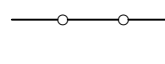
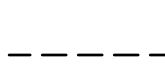


1. SURVEY INFORMATION:
HORIZONTAL DATUM: BASIS OF BEARINGS FOR THIS SURVEY IS THE OREGON COORDINATE REFERENCE SYSTEM (OGRS), PORTLAND ZONE, THE RESULTANT BEARING OF THE CENTERLINE OF 97TH AVENUE IS NORTH 00°34'45" EAST.
VERTICAL DATUM: NAVD 88 (GEOID 12A)
2. ALL WORK PERFORMED IN CONNECTION WITH THE CONTRACT DOCUMENTS, INCLUDING MATERIALS FURNISHED, WORKMANSHIP, AND MEANS AND METHODS OF CONSTRUCTION SHALL CONFORM TO THE LATEST STANDARDS, PRACTICES AND REQUIREMENTS OF THE APPLICABLE FEDERAL, STATE AND LOCAL AUTHORITIES.
3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL UTILITY LOCATIONS, DEPTHS AND ELEVATIONS PRIOR TO CONSTRUCTION AND ARRANGE FOR THE RELOCATION OF ANY IN CONFLICT WITH ALL CONSTRUCTION ACTIVITIES. THE LOCATIONS AND IDENTIFICATION OF UTILITIES WITHIN THIS DOCUMENT IS FOR INFORMATION ONLY AND IS NOT GUARANTEED TO BE ACCURATE. ANY DISCREPANCIES BETWEEN SURVEY INFORMATION AND FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE IMMEDIATELY.
4. IT SHALL BE UNDERSTOOD THAT THE IMPROVEMENTS SHOWN IN THE DRAWINGS AND SPECIFICATIONS IS MEANT TO COMPLY WITH ALL APPLICABLE CODES AND ORDINANCES. DESIGN CHANGES, CONFLICTS, OR ISSUES THAT ARISE THAT WOULD CONTRADICT RELEVANT CODES AND ORDINANCES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE IMMEDIATELY.



5. CONTRACTOR TO COMPLY WITH OREGON LAW REQUIRING ADHERENCE TO THE RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THE CONTRACTOR MUST NOTIFY THE OREGON UTILITY NOTIFICATION CENTER AT LEAST 2 BUSINESS DAYS, BUT NOT MORE THAN 10 BUSINESS DAYS, BEFORE COMMENCING AN EXCAVATION. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH OAR 952-001-0090 AND ORS 757.541 TO 757.57. PHONE CONTACT FOR THE OREGON UTILITY NOTIFICATION CENTER IS 503-232-1987.
6. CONTRACTOR TO REPAIR AT OWN EXPENSE FOR ANY DAMAGE DONE TO UTILITY SYSTEMS, SURFACE PAVEMENTS, SITE FEATURES, AND STRUCTURES, WHETHER INSIDE OR OUTSIDE OF THE PROJECT LIMITS, THAT ARE NOT DIRECTLY INDICATED TO BE REMOVED OR RELOCATED AS PART OF THE PROJECT CONSTRUCTION.
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8. UPON PROJECT COMPLETION, THE PROJECT AREA AND ADJACENT SPACES SHALL BE FREE AND CLEAR OF ALL CONSTRUCTION MATERIALS, WASTE AND DEBRIS. CONTRACTOR TO REMOVE AND PROPERLY DISPOSE OF ALL MATERIALS AS INDICATED IN THE PROJECT CONTRACT DOCUMENTS AND MUST MEET ALL APPLICABLE REGULATIONS OVERSEEING WASTE DISPOSAL.



MATERIALS LEGEND

-  CONCRETE PAVING (3/L5.0)
-  ASPHALT PAVING (1/L5.0)
-  CHAINLINK FENCE (7/L5.0)
-  CONTRACTION JOINT (5/L5.0)
-  DOWELED EXPANSION JOINT (6/L5.0)
-  PA PLANTING AREA

SITE DETAIL KEY NOTES

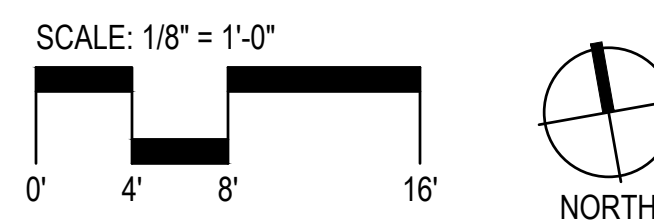
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1.2	ASPHALT PAVING	1/L5.0
(2.0)	SITE FURNISHINGS	DETAIL/SHEET OR SPEC
2.1	48" HIGH WOOD SCREEN	X/L5.0
2.2	MONUMENT SIGN PROVIDED BY OTHERS	---
2.3	48" HIGH CHAINLINK FENCING	7/L5.0

SITE KEYNOTES

1. EXISTING DRIVEWAY APRON TO REMAIN.
2. TRASH AND RECYCLING BINS.
3. FENCE AND GATE TO BE REPLACED FOLLOWING BUILDING CONSTRUCTION.
4. EXISTING FENCE AND GATE TO REMAIN.
5. STAIRS AND ACCESSIBLE RAMP - SEE ARCHITECTURAL PLANS
6. EXISTING TREE TO REMAIN (48" DIA. OAK)
7. PARKING SIGNAGE TO BE MOUNTED TO FENCE.
8. NEW PORCH ROOF - SEE ARCH PLANS.
9. EXISTING SIDEWALK TO REMAIN EXCEPT WHERE NOTED.
10. SIDEWALK REPLACEMENT. CURB TO REMAIN - CUT AS REQUIRED.
11. PRESERVE AND PROTECT EXISTING PLAY EQUIPMENT.

GENERAL NOTES

1. SURVEY INFORMATION:
HORIZONTAL DATUM: BASIS OF BEARINGS FOR THIS SURVEY IS THE OREGON COORDINATE REFERENCE SYSTEM (OGRS), PORTLAND ZONE, THE RESULTANT BEARING OF THE CENTERLINE OF 97TH AVENUE IS NORTH 00°34'45" EAST.
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HEAD
START

ESTACADA
HEAD START
IMPROVEMENTS
PROJECT
264 N. BROADWAY
ESTACADA, OREGON

CONTRACT
DOCUMENTS

MATERIALS
PLAN - ALT S1

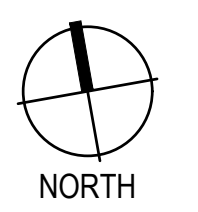
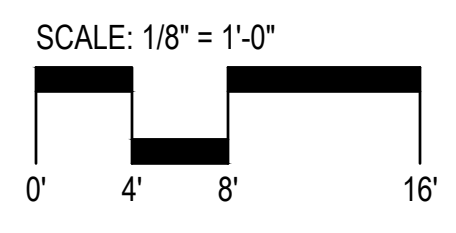
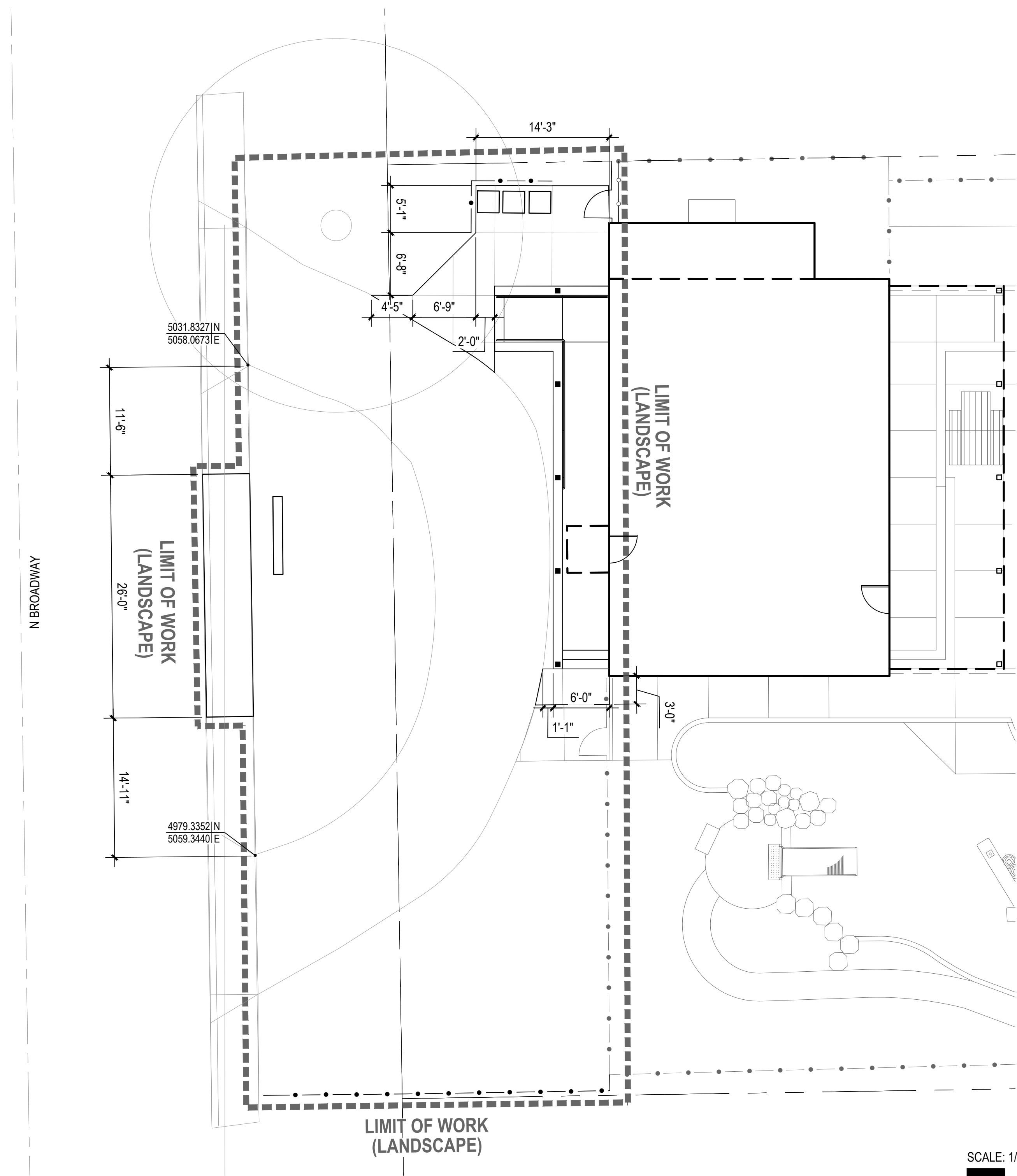
DATE:
10 MAY 2022

DRAWN BY:
CW

CHECKED BY:
RC

REVISIONS

NO.	DESCRIPTION



LAYOUT LEGEND

- CENTERLINE
- DIMENSION
- RADIUS DIMENSION
- ANGLE DIMENSION
- ALIGN
- CENTERPOINT or PRC

ABBREVIATIONS

- CP CENTER POINT
- PC POINT OF CURVATURE
- PRC POINT OF REVERSE CURVATURE

LAYOUT NOTES

1. VERIFY ALL DIMENSIONS AND PROJECT LAYOUT PRIOR TO ANY CONSTRUCTION OR INSTALLATION OF MATERIALS. IF LAYOUT CONFLICTS ARISE, CONTACT THE OWNER'S REPRESENTATIVE.
2. DIMENSIONS ARE TO FACE OF BUILDING, PAVING, WALLS, AND CURBS, ETC. UNLESS INDICATED OTHERWISE.
3. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALE OF PLANS.
4. ALL CURVED WALLS AND WALKS SHALL HAVE SMOOTH, CONTINUOUS CURVES AS INDICATED.
5. INSTALL INTERSECTING ELEMENTS AT 90° ANGLES TO EACH OTHER UNLESS INDICATED OTHERWISE.
6. OWNER'S REPRESENTATIVE TO APPROVE FORMWORK FOR WATER CHANNEL PRIOR TO CONTRACTOR PLACING CONCRETE.

JTRA ARCHITECTURE + design

J TIMOTHY RICHARD ARCHITECT
 4543 NE 23RD AVENUE
 PORTLAND - OREGON - 97211
 c: 503-449-7326
 e: tjrichard@houseoftyee.com

GREEN WORKS

LANDSCAPE ARCHITECTURE
 ENVIRONMENTAL DESIGN
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 Portland, OR 97214
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 Email: info@greenworkspc.com

Clackamas County Children's Commission

HEAD START

16518 SE RIVER ROAD
 MILWAUKIE - OREGON - 97267

ESTACADA HEAD START IMPROVEMENTS PROJECT
 264 N. BROADWAY
 ESTACADA, OREGON

CONTRACT DOCUMENTS

LAYOUT PLAN

DATE:
10 MAY 2022

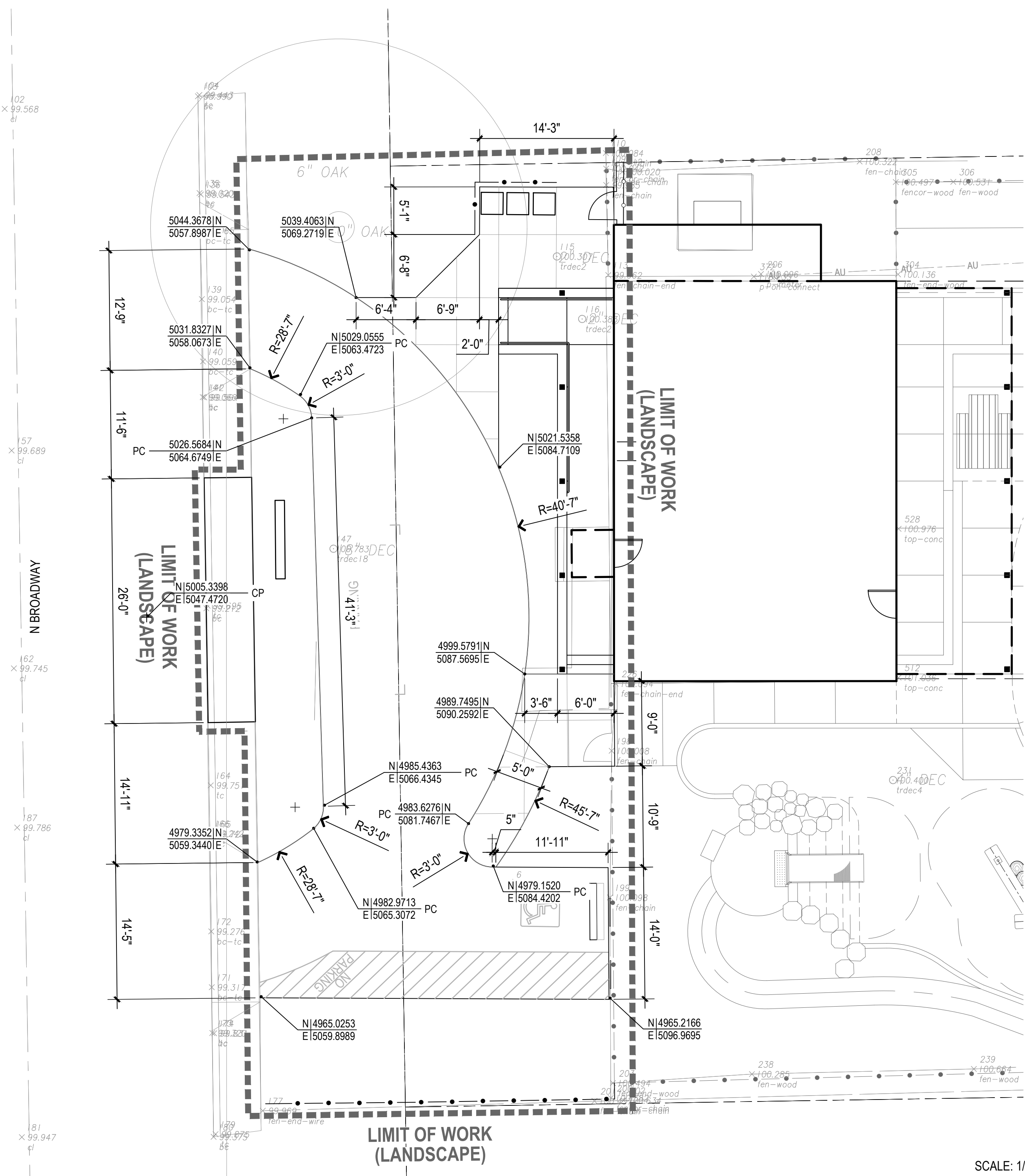
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CW

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RC


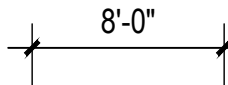
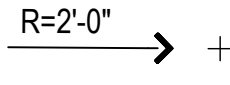
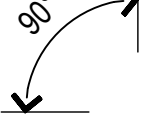


REVISIONS

NO.	DESCRIPTION

L2.0



LAYOUT LEGEND

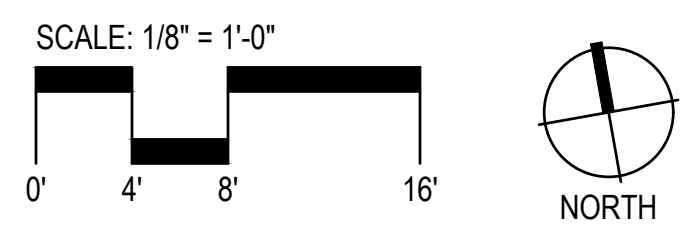
-  CENTERLINE
-  DIMENSION
-  RADIUS DIMENSION
-  ANGLE DIMENSION
-  ALIGN
-  CENTERPOINT or PRC

ABBREVIATIONS

- CP CENTER POINT
- PC POINT OF CURVATURE
- PRC POINT OF REVERSE CURVATURE

LAYOUT NOTES

1. VERIFY ALL DIMENSIONS AND PROJECT LAYOUT PRIOR TO ANY CONSTRUCTION OR INSTALLATION OF MATERIALS. IF LAYOUT CONFLICTS ARISE, CONTACT THE OWNER'S REPRESENTATIVE.
2. DIMENSIONS ARE TO FACE OF BUILDING, PAVING, WALLS, AND CURBS, ETC. UNLESS INDICATED OTHERWISE.
3. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALE OF PLANS.
4. ALL CURVED WALLS AND WALKS SHALL HAVE SMOOTH, CONTINUOUS CURVES AS INDICATED.
5. INSTALL INTERSECTING ELEMENTS AT 90° ANGLES TO EACH OTHER UNLESS INDICATED OTHERWISE.
6. OWNER'S REPRESENTATIVE TO APPROVE FORMWORK FOR WATER CHANNEL PRIOR TO CONTRACTOR PLACING CONCRETE.



JTRA ARCHITECTURE + design

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 e: tjr@houseoftyee.com

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 Email: info@greenworkspc.com

Clackamas County Children's Commission HEAD START

16518 SE RIVER ROAD
 MILWAUKIE - OREGON - 97267

ESTACADA HEAD START IMPROVEMENTS PROJECT
 264 N. BROADWAY
 ESTACADA, OREGON

CONTRACT DOCUMENTS

LAYOUT PLAN - ALT S1

DATE:
10 MAY 2022

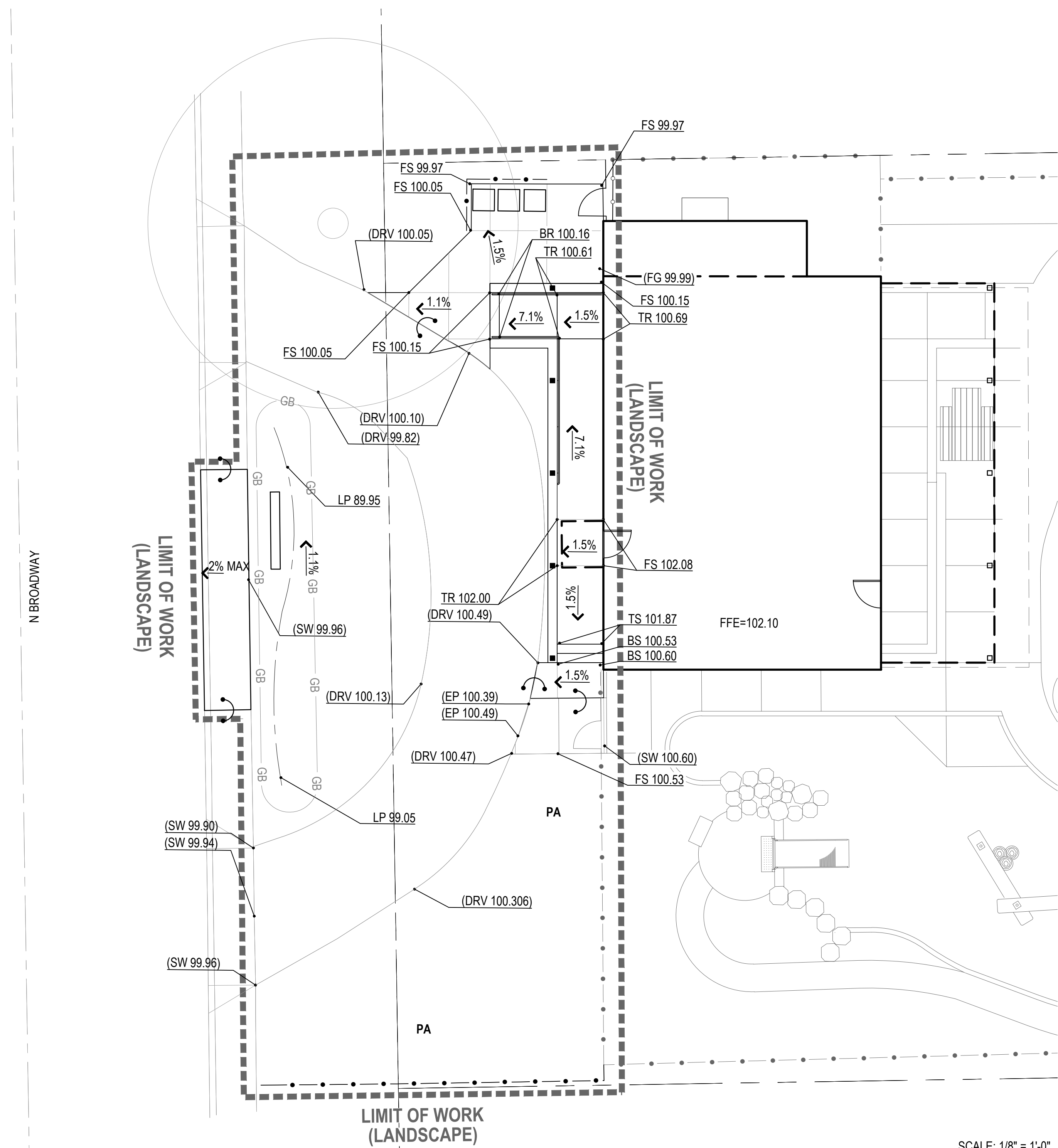
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CW

CHECKED BY:
RC

REVISIONS

NO.	DESCRIPTION

L2.1



LEGEND

XXX.XX	PROPOSED SPOT ELEVATION	AD	AREA DRAIN	IE	INVERT ELEVATION
(XXX.XX)	EXISTING SPOT ELEVATION	BC	BOTTOM OF CURB	LP	LOW POINT
GB	GRADE BREAK	BR	BOTTOM OF RAMP	RIM	RIM ELEVATION
↪	MATCH EXISTING ELEVATION	BS	BOTTOM OF STEP	PB	PLANTER BOTTOM
2% ↪	DIRECTION AND PERCENTAGE OR H:V RATIO OF SLOPE	BSW	BOTTOM OF SEATWALL (AT PAVING FG)	SB	SWALE BOTTOM
▲	CURB CUTS AT STORMWATER PLANTER	BW	BOTTOM WALL (AT PAVING FG)	SW	SIDEWALK
○	CATCH BASIN	CB	CATCH BASIN	T	TREAD
		CO	CLEAN-OUT	TC	TOP OF CURB
		DRV	DRIVEWAY	TD	TRENCH DRAIN
		EA	EACH	TR	TOP OF RAMP
		FC	FLUSH CURB	TS	TOP OF STEP
		FFE	FINISH FLOOR ELEVATION	TSW	TOP OF SEATWALL
		FG	FINISH GRADE	TW	TOP OF WALL
		FL	FLOWLINE	VIF	VERIFY IN FIELD
		FS	FINISH SURFACE	WI	WIER INLET
		HP	HIGH POINT		

GRADING NOTES

1. VERIFY ACCURACY OF EXISTING GRADES AND INTERPOLATED ELEVATIONS PRIOR TO BEGINNING WORK. NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCY PRIOR TO BEGINNING WORK.
2. PROTECT ALL TREES INDICATED TO REMAIN; SEE SHEET L1.0.
3. ALL PROPOSED GRADES ARE TO MEET AND BLEND IN WITH EXISTING GRADING AT PROJECT LIMIT, PROPERTY LINES, BUILDING LINES AND EXISTING CURBS.
4. 'ROUND OFF' ALL SHARP RIDGES EXISTING ON SITE WHETHER OR NOT SUCH CONDITIONS ARE INDICATED ON PLANS.
5. NOTIFY THE OWNER'S REPRESENTATIVE TO REVIEW ROUGH GRADES PRIOR TO PLACEMENT OF TOPSOIL; AND FINE GRADING PRIOR TO PLANTING.
6. ALL AREAS SHALL HAVE POSITIVE DRAINAGE TO APPROVED DRAINAGE STRUCTURES OR CONVEYANCES.
7. ALL WALKWAYS AND PAVED AREAS SHALL HAVE SMOOTH AND CONTINUOUS ELEVATION CHANGES.
8. SET STRAIGHT GRADES BETWEEN GIVEN ELEVATIONS. UNLESS OTHERWISE INDICATED.
9. PROVIDE 2% MAX. SLOPE, PERPENDICULAR TO DIRECTION OF TRAVEL, ON ALL PAVED PEDESTRIAN SURFACES, UNLESS NOTED OTHERWISE.
10. GRADE BREAK LINES ARE SHOWN GRAPHICALLY TO ILLUSTRATE DRAINAGE PATTERNS AND ARE NOT TO BE INSTALLED AS ACTUAL JOINT LINES, EXCEPT WHERE THEY COINCIDE WITH PAVING JOINTS.
11. VERIFY IN FIELD THAT AS-BUILT CONDITIONS MATCH PRECISE ELEVATIONS INDICATED ON PLANS.
12. SITE SURVEY WAS PREPARED BY RON BUSH SURVEYING ON 5/3/2018. ALL GRADES SHOWN ON THE DRAWINGS ARE BASED UPON THE DATUM ESTABLISHED BY THE SURVEYOR. GREENWORKS ASSUMES NO RESPONSIBILITY FOR ACCURACY OF SURVEYED CONDITIONS AS SHOWN. SURVEY INFORMATION IS PROVIDED FOR REFERENCE ONLY. NOT ALL SURVEYED SPOT ELEVATIONS ARE SHOWN.

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Clackamas County
Children's Commission

HEAD START

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ESTACADA HEAD START IMPROVEMENTS PROJECT
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ESTACADA, OREGON

CONTRACT DOCUMENTS

GRADING PLAN

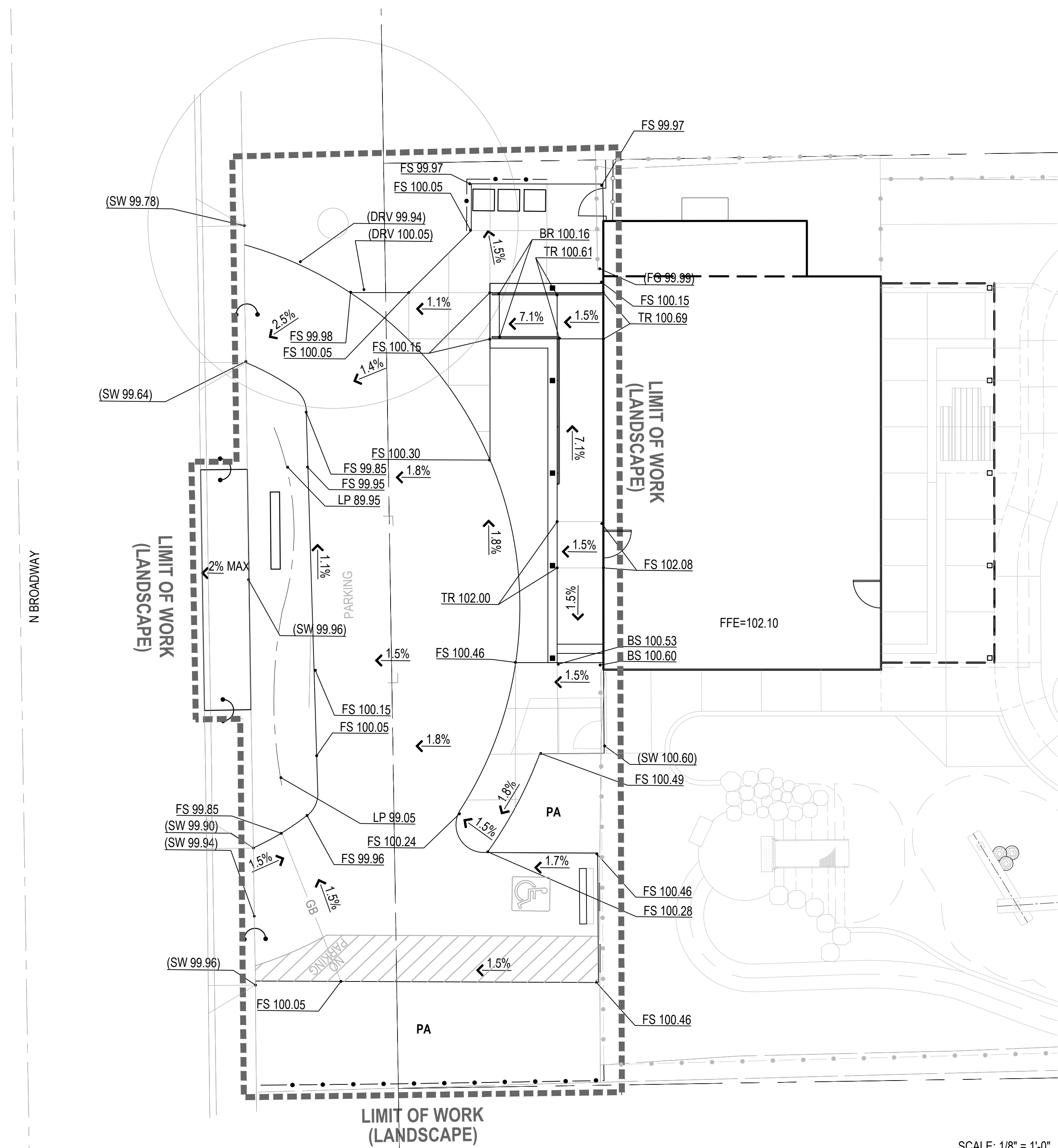
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DRAWN BY:
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CHECKED BY:
RC

REVISIONS

L3.0

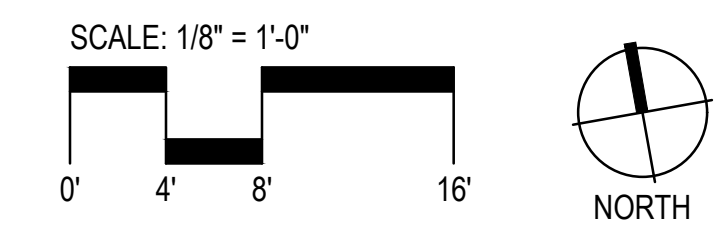


LEGEND

XXX.XX	PROPOSED SPOT ELEVATION	AD	AREA DRAIN	IE	INVERT ELEVATION
(XXX.XX)	EXISTING SPOT ELEVATION	BC	BOTTOM OF CURB	LP	LOW POINT
GB	GRADE BREAK	BR	BOTTOM OF RAMP	RIM	RIM ELEVATION
↷	MATCH EXISTING ELEVATION	BS	BOTTOM OF STEP	PB	PLANTER BOTTOM
2% →	DIRECTION AND PERCENTAGE OR H:V RATIO OF SLOPE	BSW	BOTTOM OF SEATWALL (AT PAVING FG)	SB	SWALE BOTTOM
▲	CURB CUTS AT STORMWATER PLANTER	BW	BOTTOM WALL (AT PAVING FG)	SW	SIDEWALK
○	CATCH BASIN	CB	CATCH BASIN	T	TREAD
		CO	CLEAN-OUT	TC	TOP OF CURB
		DRV	DRIVEWAY	TD	TRENCH DRAIN
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		FFE	FINISH FLOOR ELEVATION	TSW	TOP OF SEATWALL
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GRADING PLAN - ALT S1

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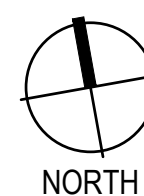
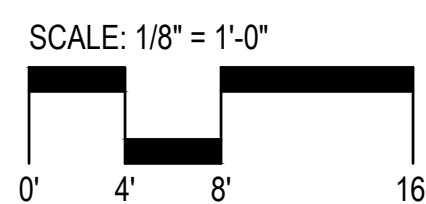
L3.1

N BROADWAY

LIMIT OF WORK
(LANDSCAPE)

LIMIT OF WORK
(LANDSCAPE)

LIMIT OF WORK
(LANDSCAPE)



PLANTING NOTES

1. CONTRACTOR TO VERIFY LOCATION OF EXISTING TREES INDICATED TO REMAIN PRIOR TO SOIL PREPARATION. PROTECT ALL TREES AND SHRUBS INDICATED TO REMAIN. COORDINATE WITH THE OWNER'S REPRESENTATIVE.
2. PLANTING AREAS TO BE SUFFICIENTLY CLEANED OF ALL CONSTRUCTION MATERIALS, INCLUDING IMPORTED ROCK, TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE BEFORE BEGINNING ANY LANDSCAPE WORK.
3. IDENTIFY ALL PLANTING AREAS IN FIELD WITH WHITE FIELD-MARKING CHALK OR APPROVED EQUAL. PLANTING BEDS TO BE ADJUSTED AND APPROVED BY OWNER'S REPRESENTATIVE PRIOR TO PLANT LOCATION.
4. THE OWNER'S REPRESENTATIVE WILL APPROVE INDIVIDUAL PLANT MATERIAL AND LOCATION OF PLANT MATERIAL PRIOR TO INSTALLATION. REFER TO SPECIFICATIONS FOR PROCEDURE.
5. SHRUBS AND GROUND COVER TO BE PLANTED A MINIMUM OF ONE HALF THEIR ON CENTER SPACING AWAY FROM PAVEMENT EDGES UNLESS OTHERWISE NOTED.
6. PROVIDE ROOT BARRIER AROUND ALL TREES WITHIN 5' OF PAVING, CURBS, WALLS, BUILDINGS, UTILITY DUCTS AND OTHER APPURTENANCES.
7. PLANT QUANTITIES INDICATED ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. CONTRACTOR IS RESPONSIBLE FOR PROVIDING PLANTS IN QUANTITIES AND LOCATIONS SHOWN ON DRAWINGS.
8. CONTRACTOR TO INSTALL TEMPORARY DRIP IRRIGATION SYSTEM TO SUFFICIENTLY SUPPLY WATER TO ALL NEW PLANTINGS FOR PLANT ESTABLISHMENT.

PLANTING SCHEDULE

TREES

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE & TYPE	SPACING	QTY
	ACER GRISEUM	PAPER BARK MAPLE	1-1/2' CAL, B&B	AS SHOWN	3

SHRUBS / GROUNDCOVERS

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE & TYPE	SPACING	QTY
	MAHONIA AQUIFOLIUM	OREGON GRAPE	5 GAL CONT	AS SHOWN	11
	GAULTHERIA SHALLON	SALAL	1 GAL CONT	3' O.C.	7
	MAHONIA REPENS	CREeping OREGON GRAPE	1 GAL CONT	2' O.C.	10
	CORNUS STOLONIFERA	RED TWIG DOGWOOD	5 GAL CONT	AS SHOWN	6
	DESCHAMPSIA CESPITOSA	TUFTED HAIRGRASS	1 GAL CONT	3' O.C.	43
	POLYSTICHUM MUNITUM	SWORD FERN	1 GAL CONT	3' O.C.	4
	RIBES SANGUINEUM	RED-FLOWERING CURRANT	5 GAL CONT	AS SHOWN	5
	VACCINIUM OVATUM	EVERGREEN HUCKLEBERRY	3 GAL CONT	3' O.C.	3
	SPIREA BETULIFOLIA	BIRCHLEAF SPIREA	3 GAL CONT	30" O.C.	19

PLANT MIXES

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE & TYPE	PERCENT	QTY
	STORMWATER MIX				
INSTALL THE FOLLOWING PLANTS IN GROUPS OF 3 AND 5 AT 12" ON CENTER - GROUPS TO BE EVENLY DISTRIBUTED THROUGHOUT PLANTING ZONE:					
	1. CAREX DENSE	DENSE SEDGE	4" POT 12" OC	25%	60
	2. CAREX OBNUPTA	SLOUGH SEDGE	4" POT 12" OC	25%	60
	3. JUNCUS EFFUSUS VAR PACIFICA	SOFT RUSH	4" POT 12" OC	25%	60
	4. JUNCUS PATENS	SPREADING RUSH	4" POT 12" OC	25%	60

BARK MULCH - 4" DEPTH

LAWN 935 SF

SHOVEL CUT EDGE

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10 MAY 2022

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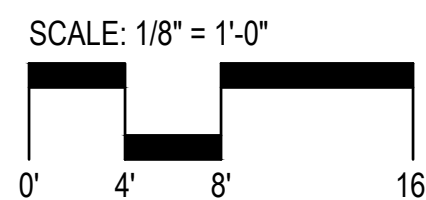
N BROADWAY

LIMIT OF WORK
(LANDSCAPE)

PARKING

LIMIT OF WORK
(LANDSCAPE)

LIMIT OF WORK
(LANDSCAPE)



PLANTING NOTES

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PLANTING SCHEDULE

TREES

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE & TYPE	SPACING	QTY
	ACER GRISEUM	PAPER BARK MAPLE	1-1/2' CAL, B&B	AS SHOWN	3

SHRUBS / GROUNDCOVERS

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE & TYPE	SPACING	QTY
	MAHONIA AQUIFOLIUM	OREGON GRAPE	5 GAL CONT	AS SHOWN	13
	GAULTHERIA SHALLON	SALAL	1 GAL CONT	3' O.C.	12
	MAHONIA REPENS	CREeping OREGON GRAPE	1 GAL CONT	2' O.C.	15
	CORNUS STOLONIFERA	RED TWIG DOGWOOD	5 GAL CONT	AS SHOWN	6
	DESCHAMPSIA CESPITOSA	TUFTED HAIRGRASS	1 GAL CONT	3' O.C.	47
	POLYSTICHUM MUNITUM	SWORD FERN	1 GAL CONT	3' O.C.	4
	RIBES SANGUINEUM	RED-FLOWERING CURRANT	5 GAL CONT	AS SHOWN	5
	VACCINIUM OVATUM	EVERGREEN HUCKLEBERRY	3 GAL CONT	3' O.C.	7
	SPIREA BETULIFOLIA	BIRCHLEAF SPIREA	3 GAL CONT	30" O.C.	29

PLANT MIXES

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE & TYPE	PERCENT	QTY
	STORMWATER MIX				
INSTALL THE FOLLOWING PLANTS IN GROUPS OF 3 AND 5 AT 12" ON CENTER - GROUPS TO BE EVENLY DISTRIBUTED THROUGHOUT PLANTING ZONE:					
	1. CAREX DENSE	DENSE SEDGE	4" POT 12" OC	25%	60
	2. CAREX OBNUPTA	SLOUGH SEDGE	4" POT 12" OC	25%	60
	3. JUNCUS EFFUSUS VAR PACIFICA	SOFT RUSH	4" POT 12" OC	25%	60
	4. JUNCUS PATENS	SPREADING RUSH	4" POT 12" OC	25%	60

	BARK MULCH - 4" DEPTH
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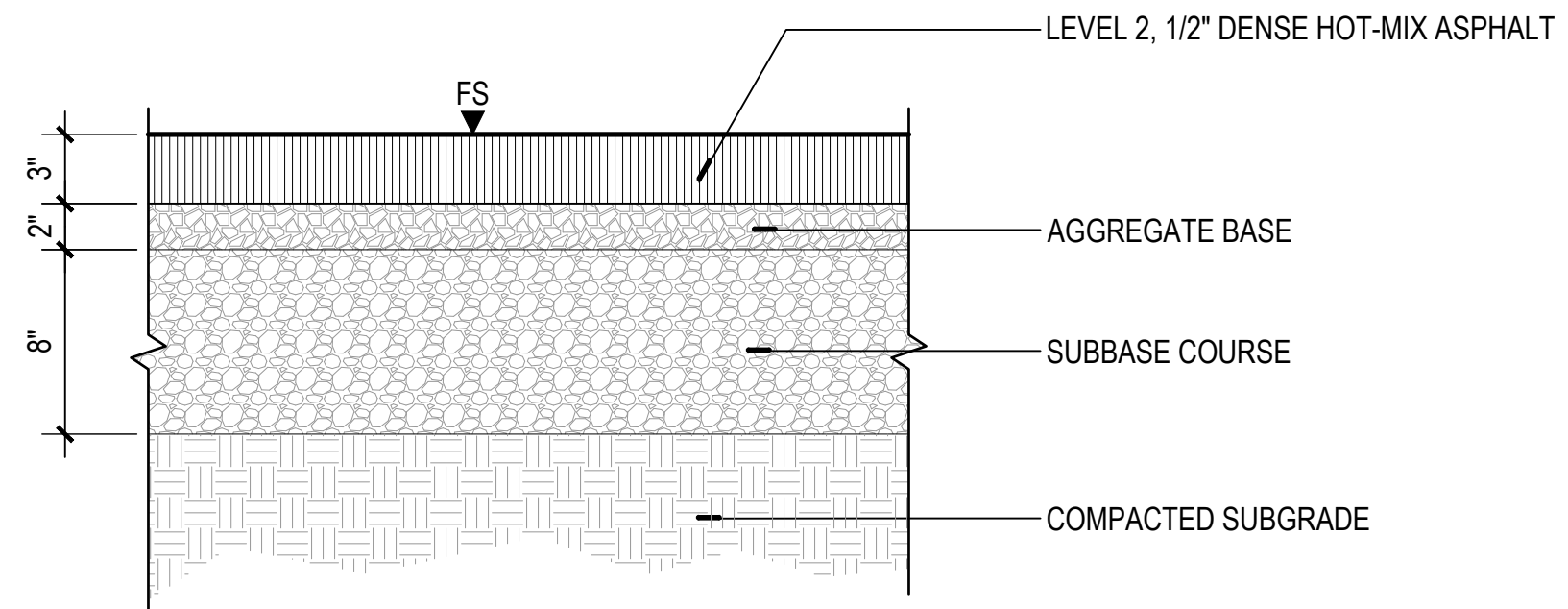
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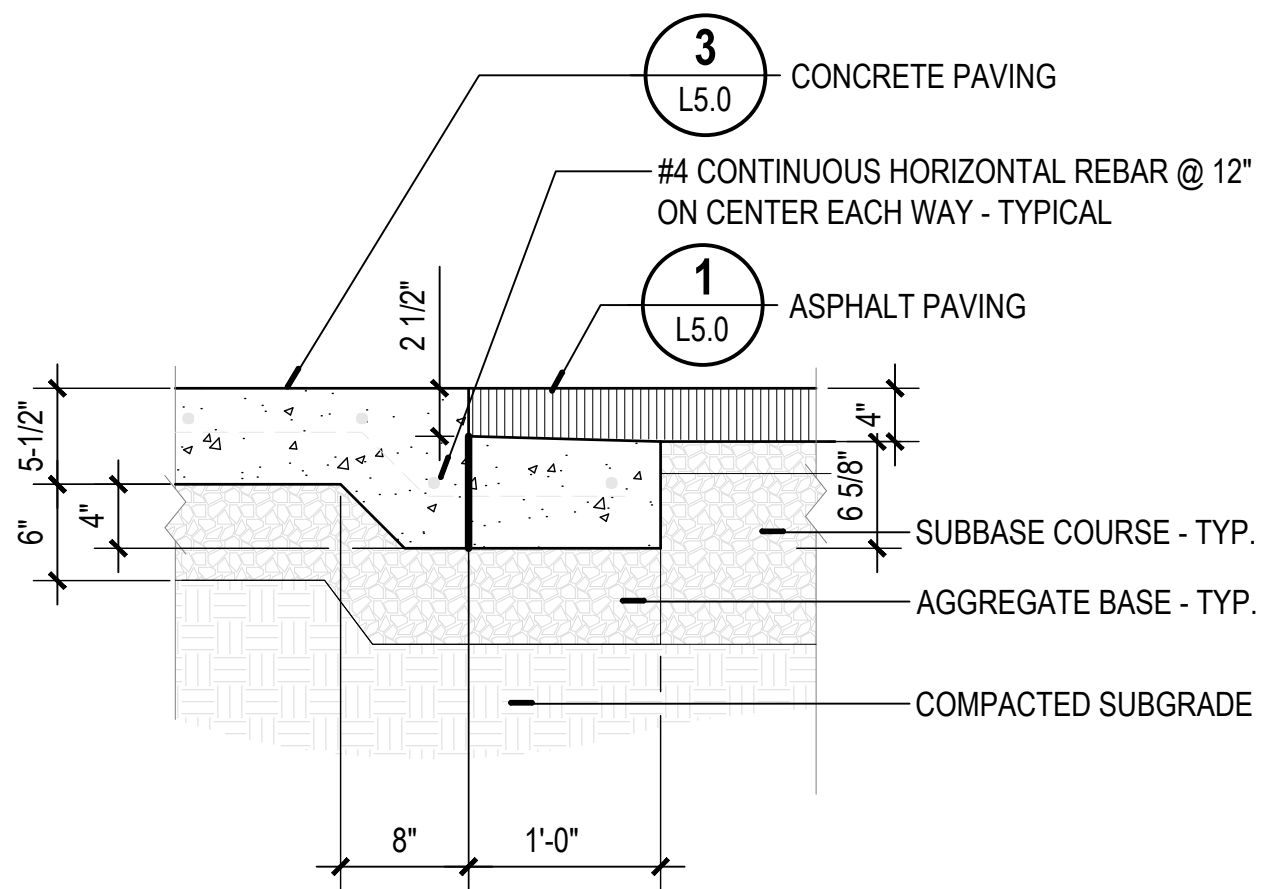
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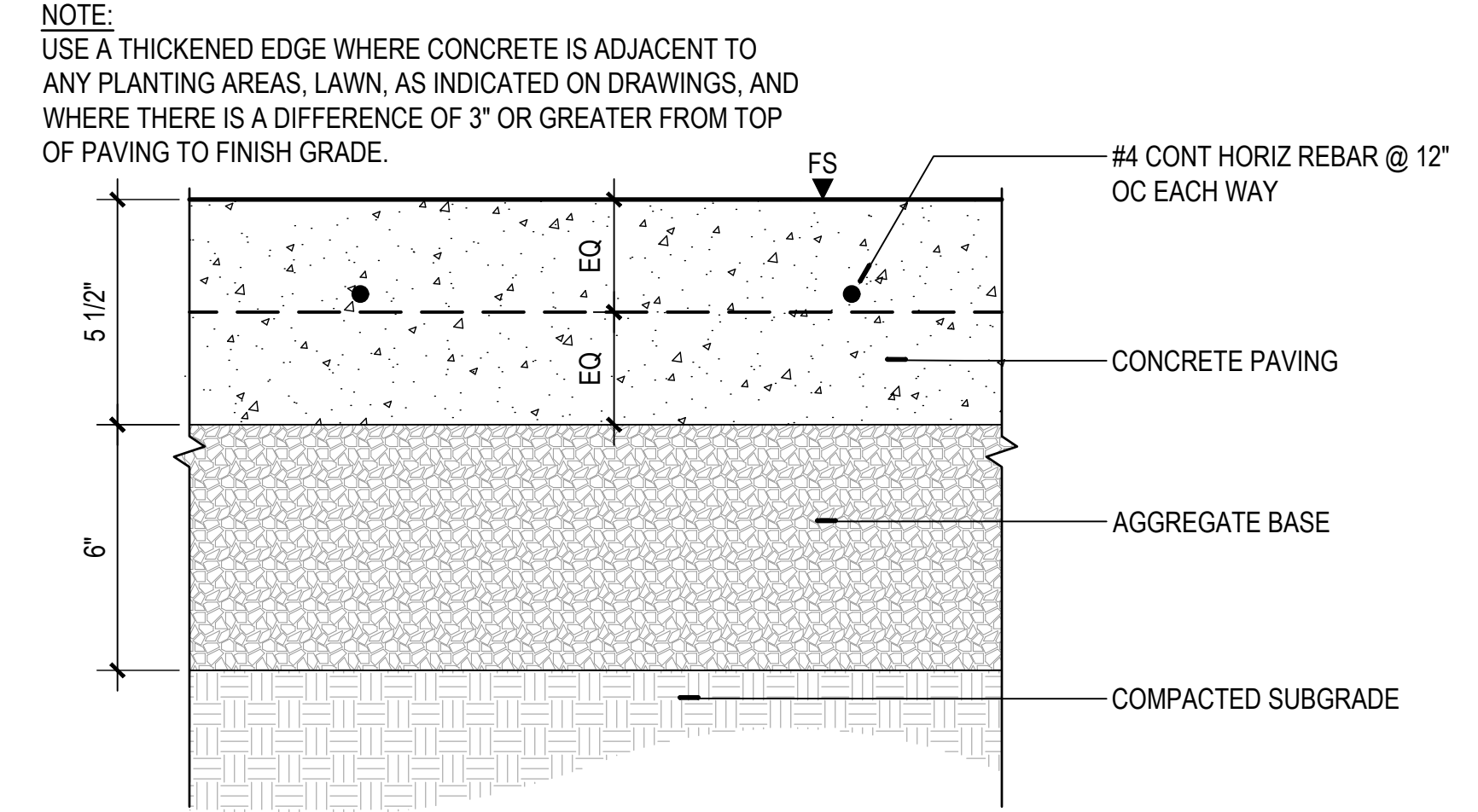
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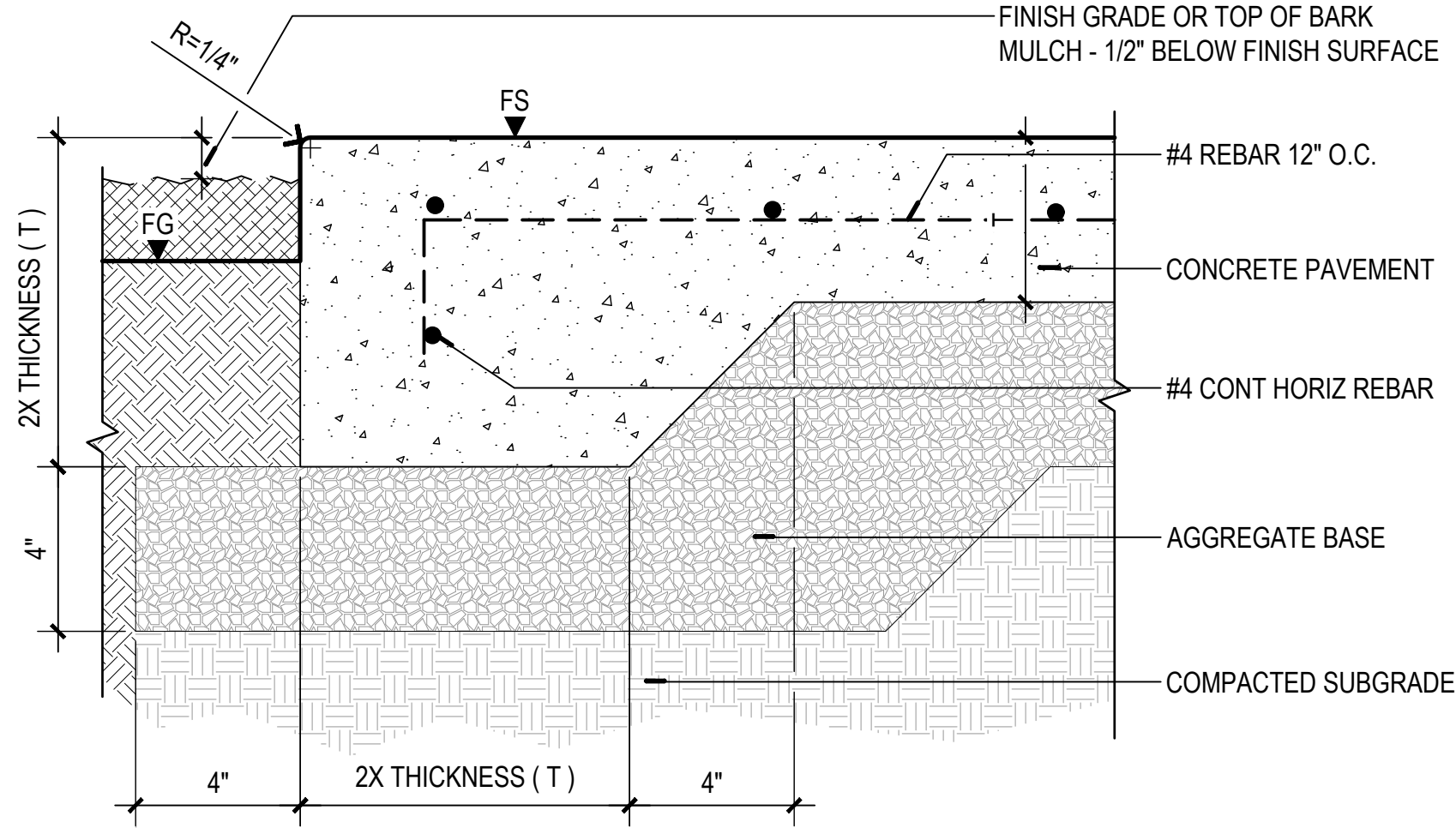
1 ASPHALT PAVING (PART OF ALTERNATE S1) SECTION SCALE: 1 1/2" = 1'-0"
0" 2" 4" 8"



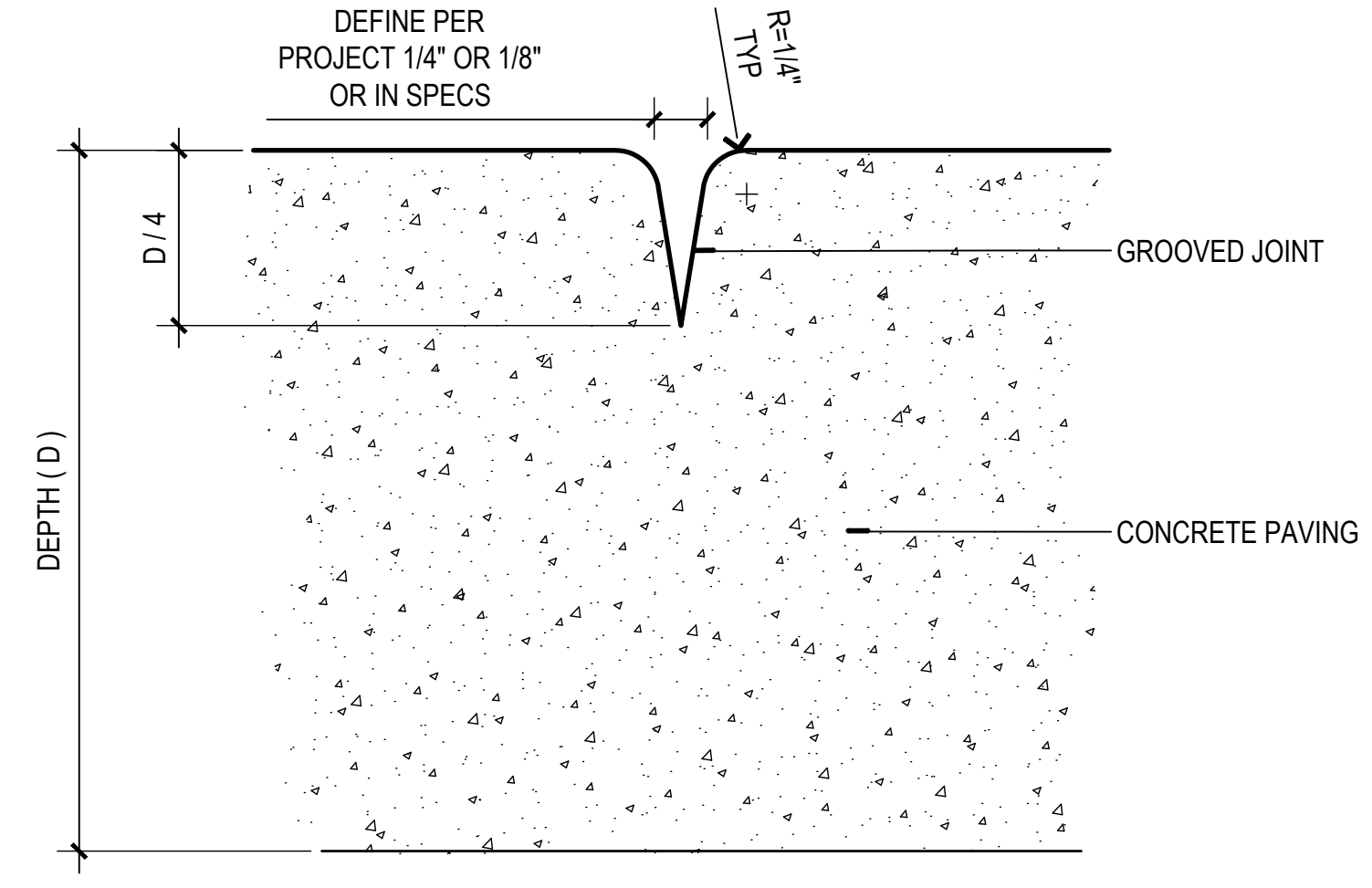
2 ASPHALT PAVING TRANSITION TO CONCRETE PAVING (PART OF ALTERNATE S1) SECTION SCALE: 1" = 1'-0"
0" 3" 6" 12"



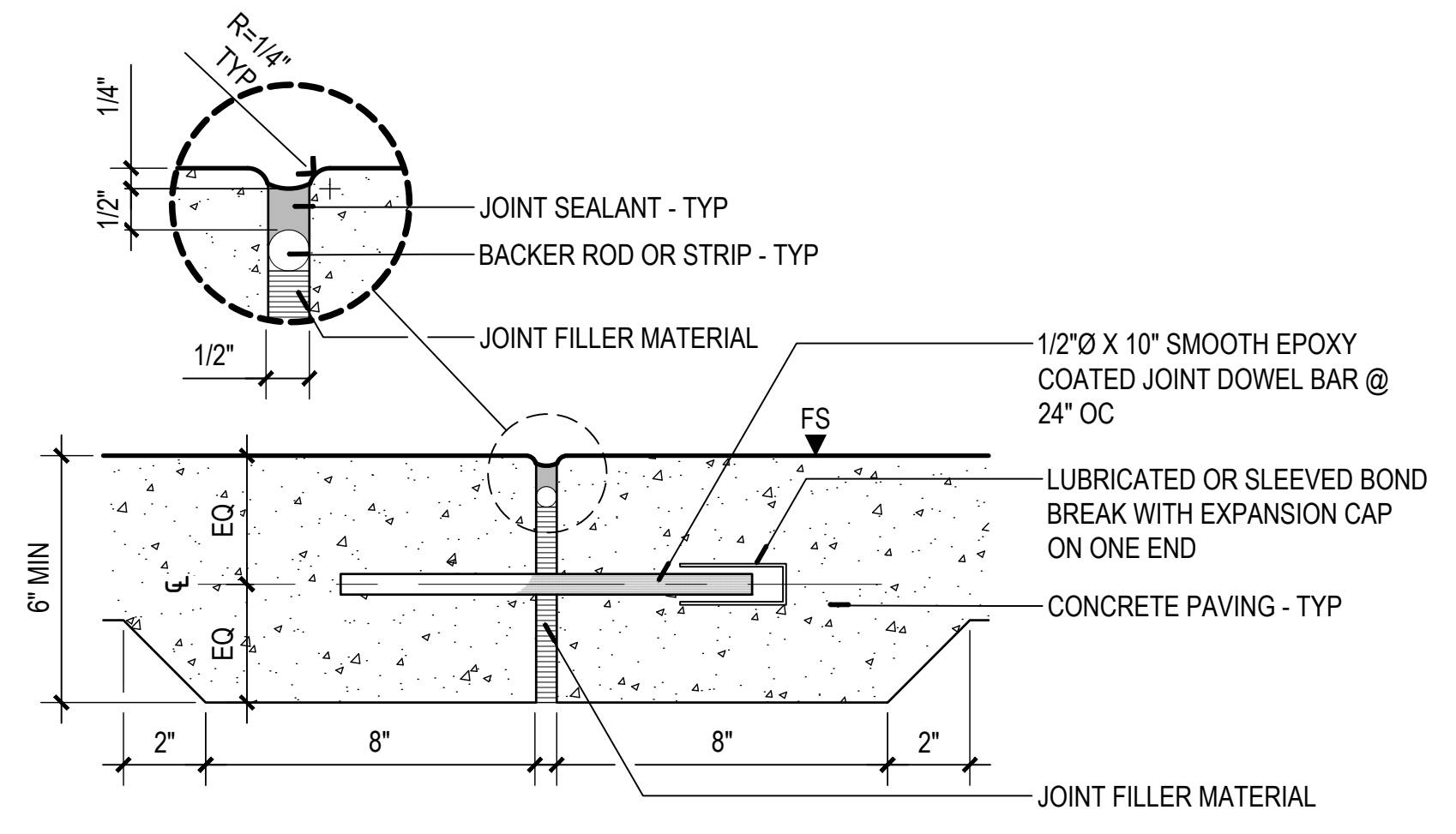
3 CONCRETE PAVING SECTION SCALE: 3" = 1'-0"
0" 1" 2" 4"



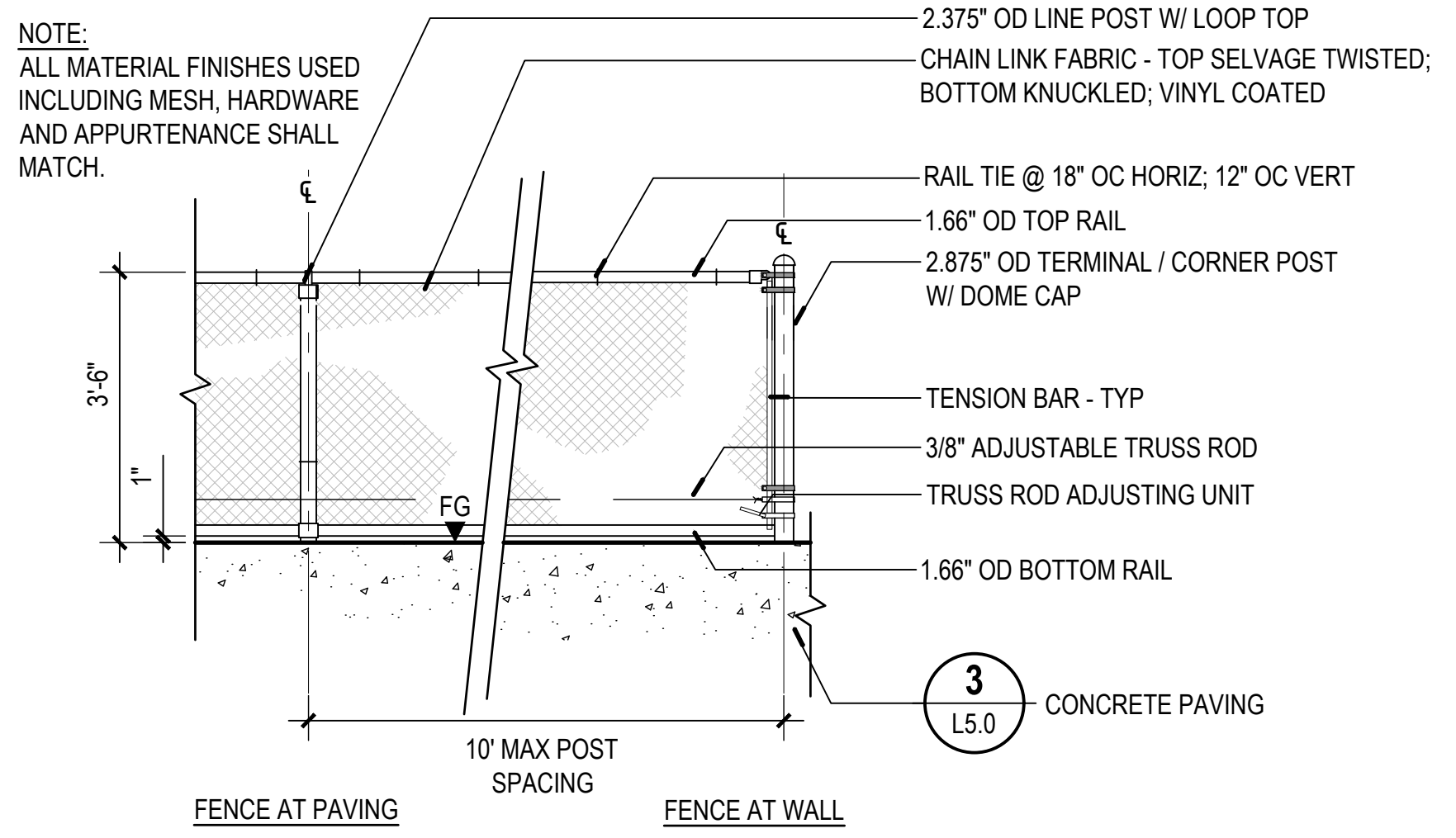
4 THICKENED CONCRETE PAVING EDGE SECTION SCALE: 3" = 1'-0"
0" 1" 2" 4"



5 CONTRACTION JOINT SECTION NOT TO SCALE



6 DOWELED EXPANSION JOINT SECTION NOT TO SCALE



7 CHAIN LINK FENCE SECTION SCALE: 1/2" = 1'-0"
0" 6" 12" 24"

NOTE:
USE A THICKENED EDGE WHERE CONCRETE IS ADJACENT TO ANY PLANTING AREAS, LAWN, AS INDICATED ON DRAWINGS, AND WHERE THERE IS A DIFFERENCE OF 3" OR GREATER FROM TOP OF PAVING TO FINISH GRADE.

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SITE DETAILS

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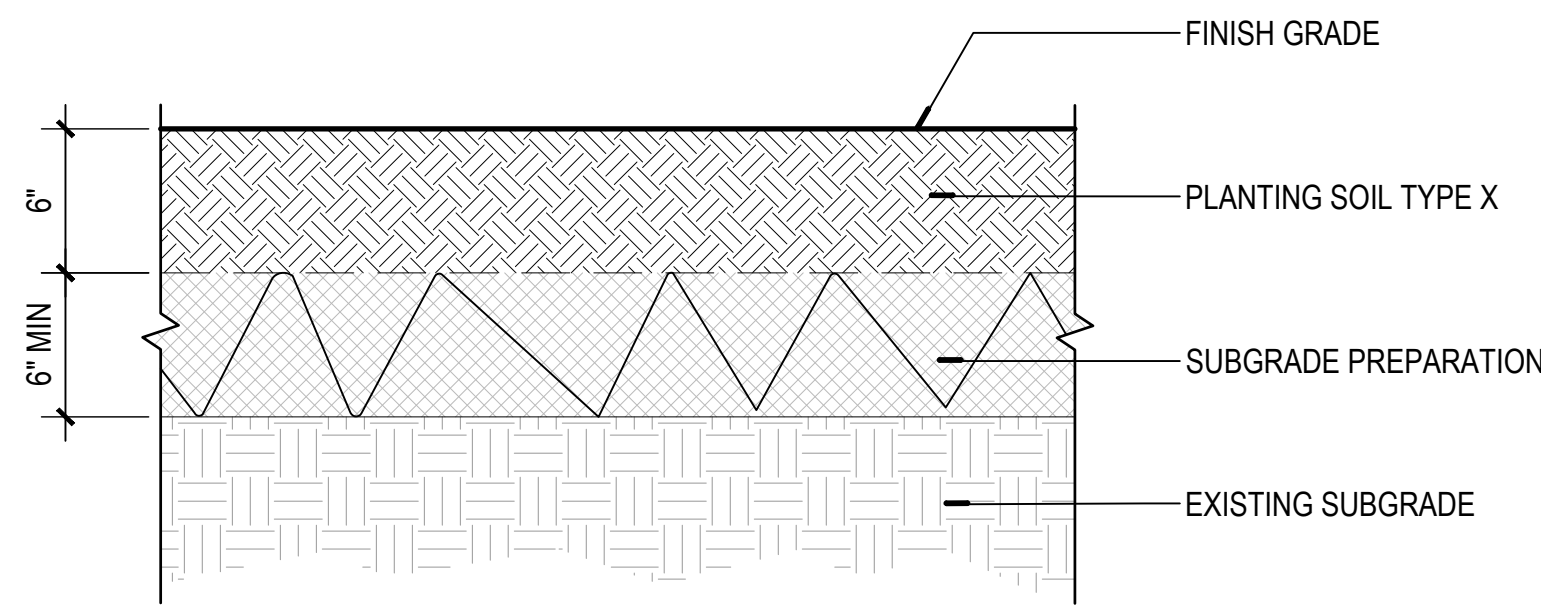
REVISIONS

NO.	DESCRIPTION

L5.0

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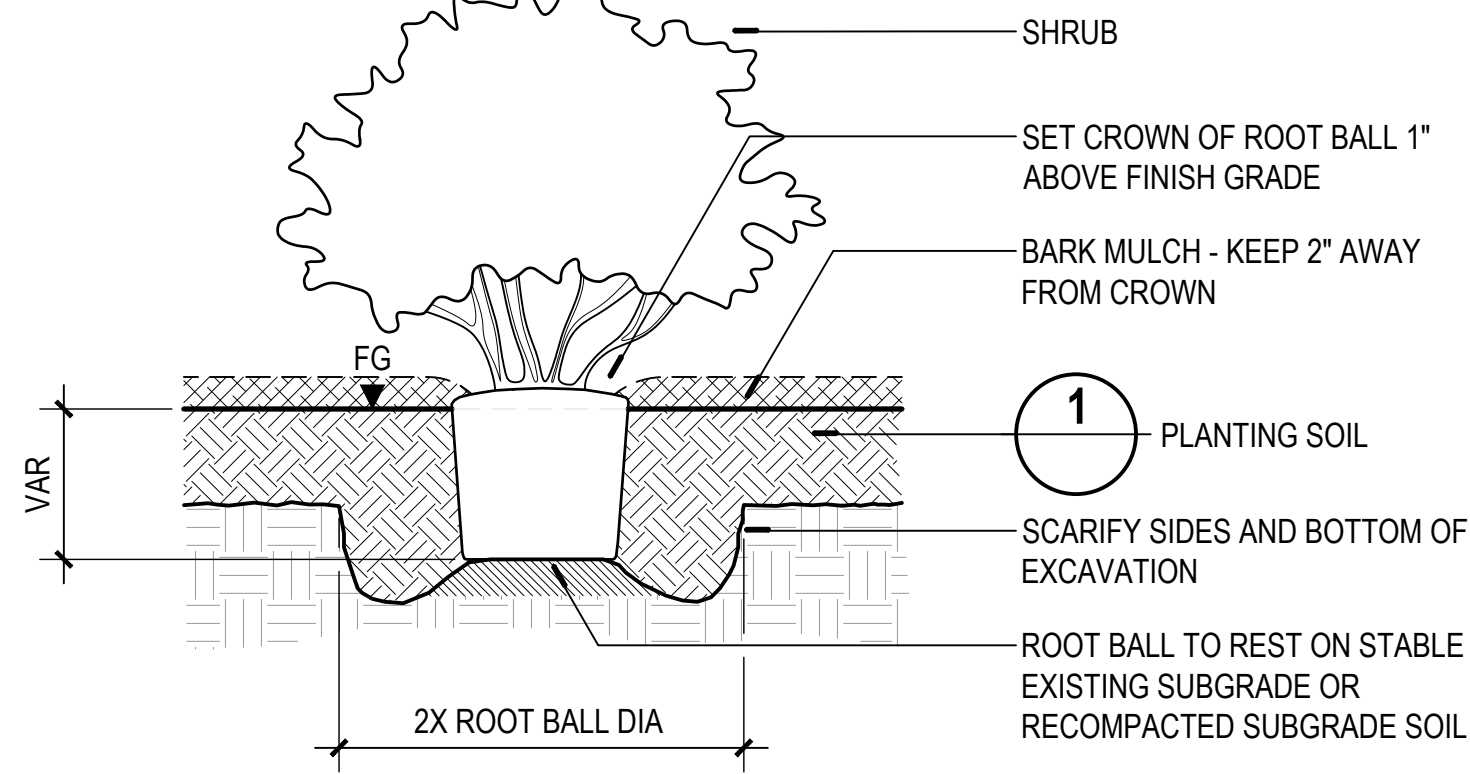
1. BARK MULCH LAYER IS AN ADDITION TO THE PLANTING SOIL AND IS NOT THE FINISH GRADE.
2. CONFIRM THE SUBGRADE IS AT THE PROPER ELEVATION PRIOR TO FINAL PLANTING SOIL INSTALLATION.
3. SUBGRADE TO SLOPE TO SUBSURFACE DRAINAGE LINES AND AWAY FROM STRUCTURES IF PRESENT.



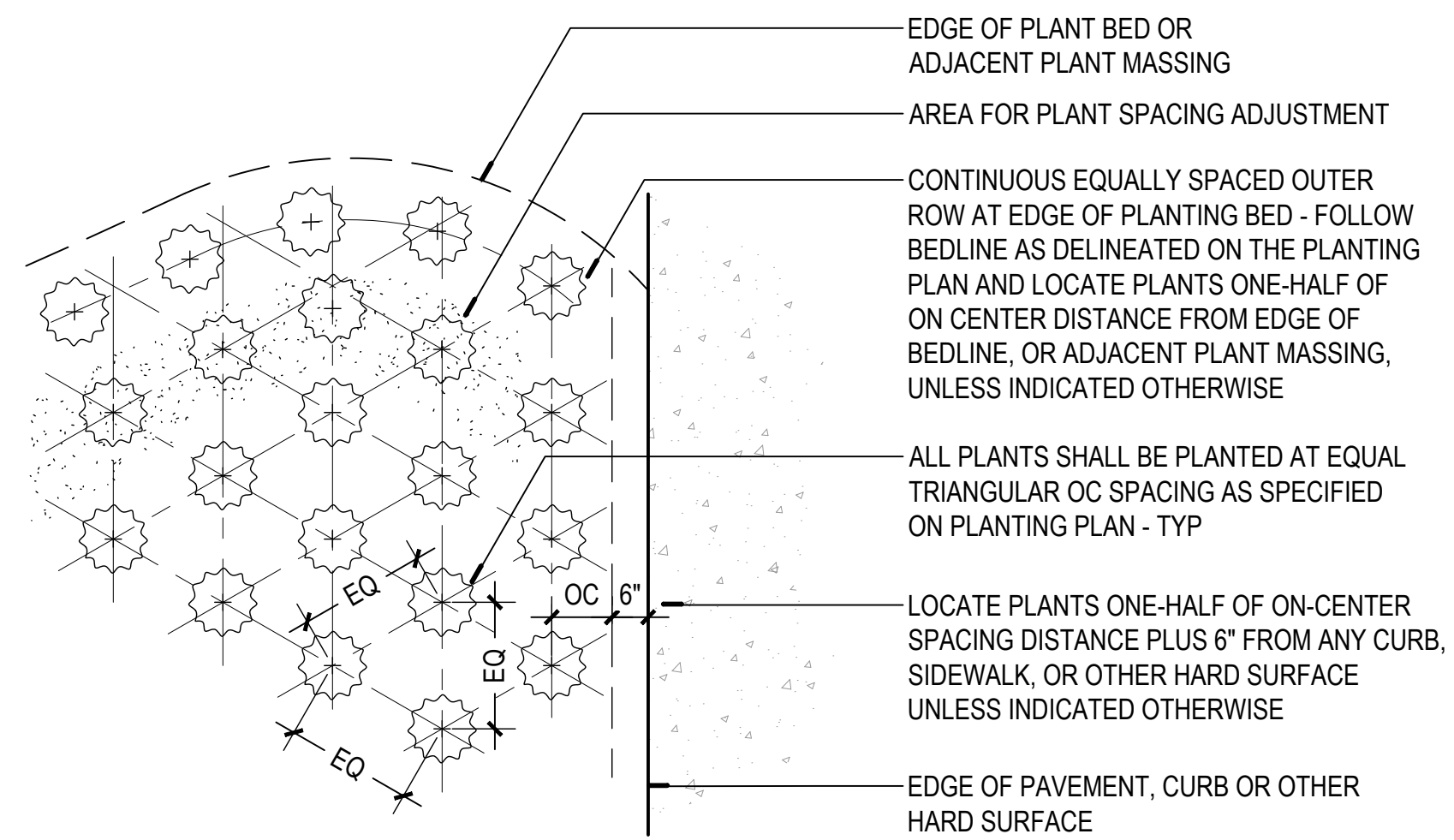
1 PLANTING SOIL
SECTION NOT TO SCALE

NOTE:

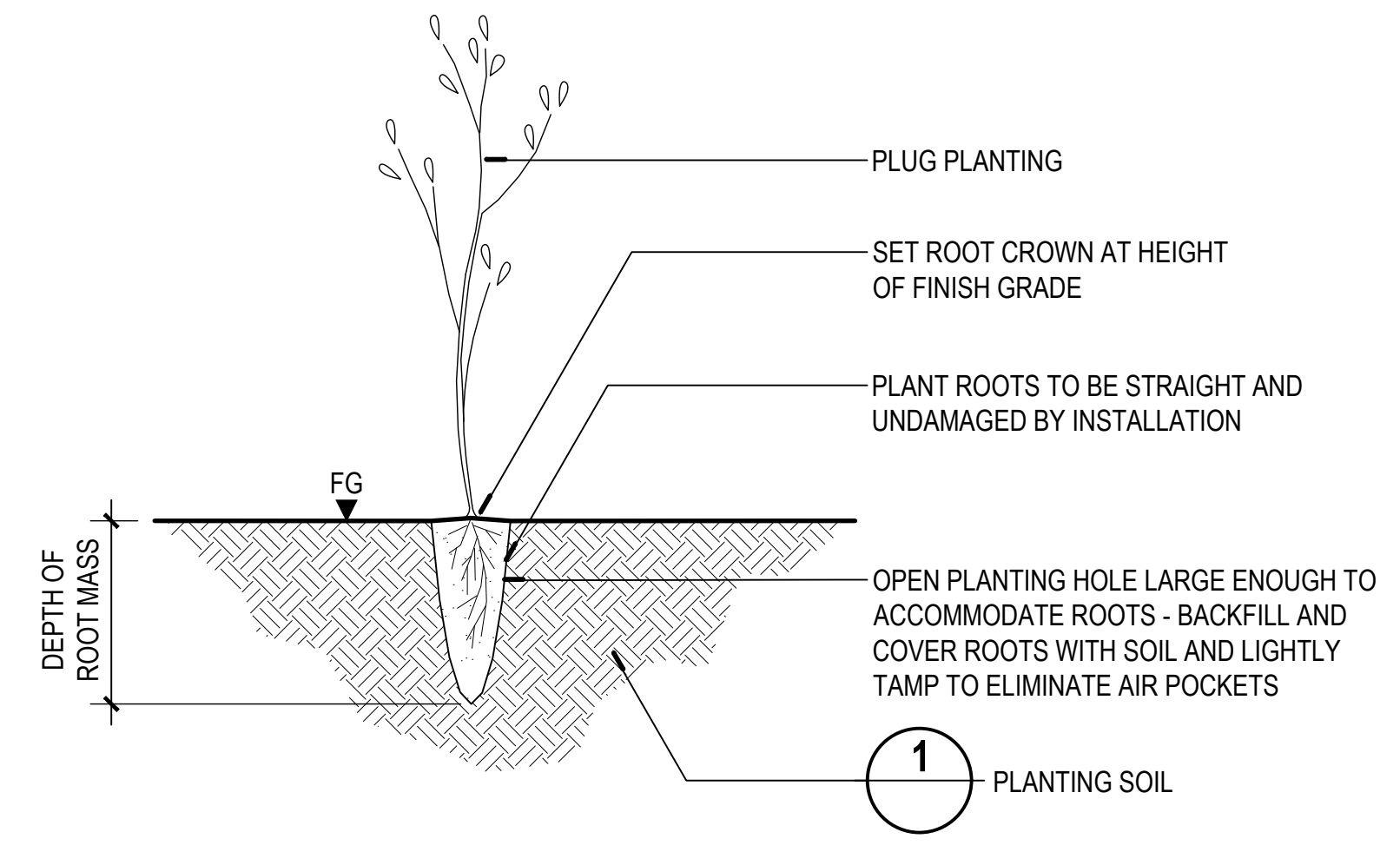
PRIOR TO PLANTING, REMOVE PLANT FROM CONTAINER AND LOOSEN SIDES BY LIGHTLY TEASING OR SCRATCHING ROOT MASS.



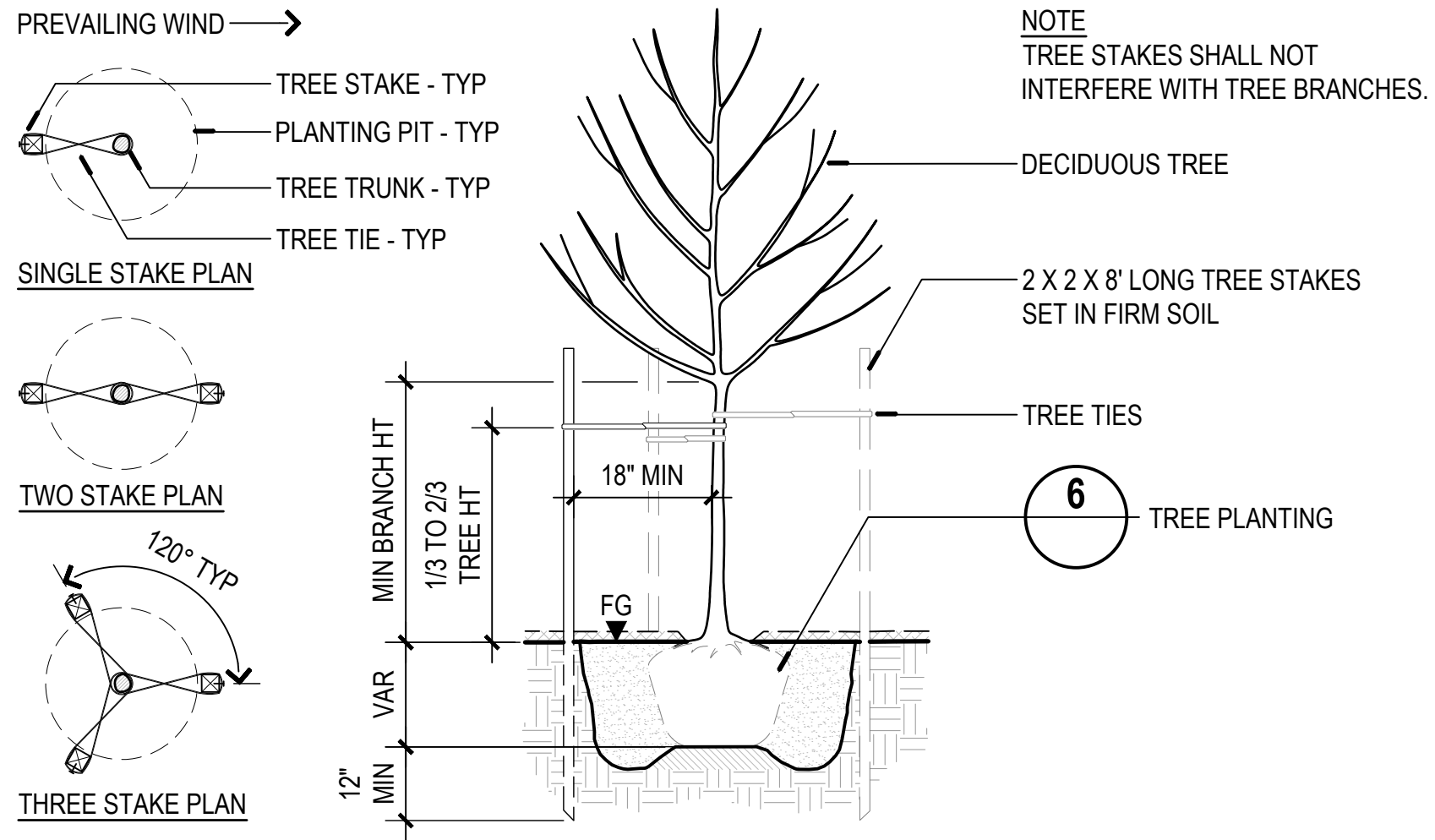
4 SHRUB CONTAINER PLANTING W/ PLANTING SOIL
SECTION NOT TO SCALE



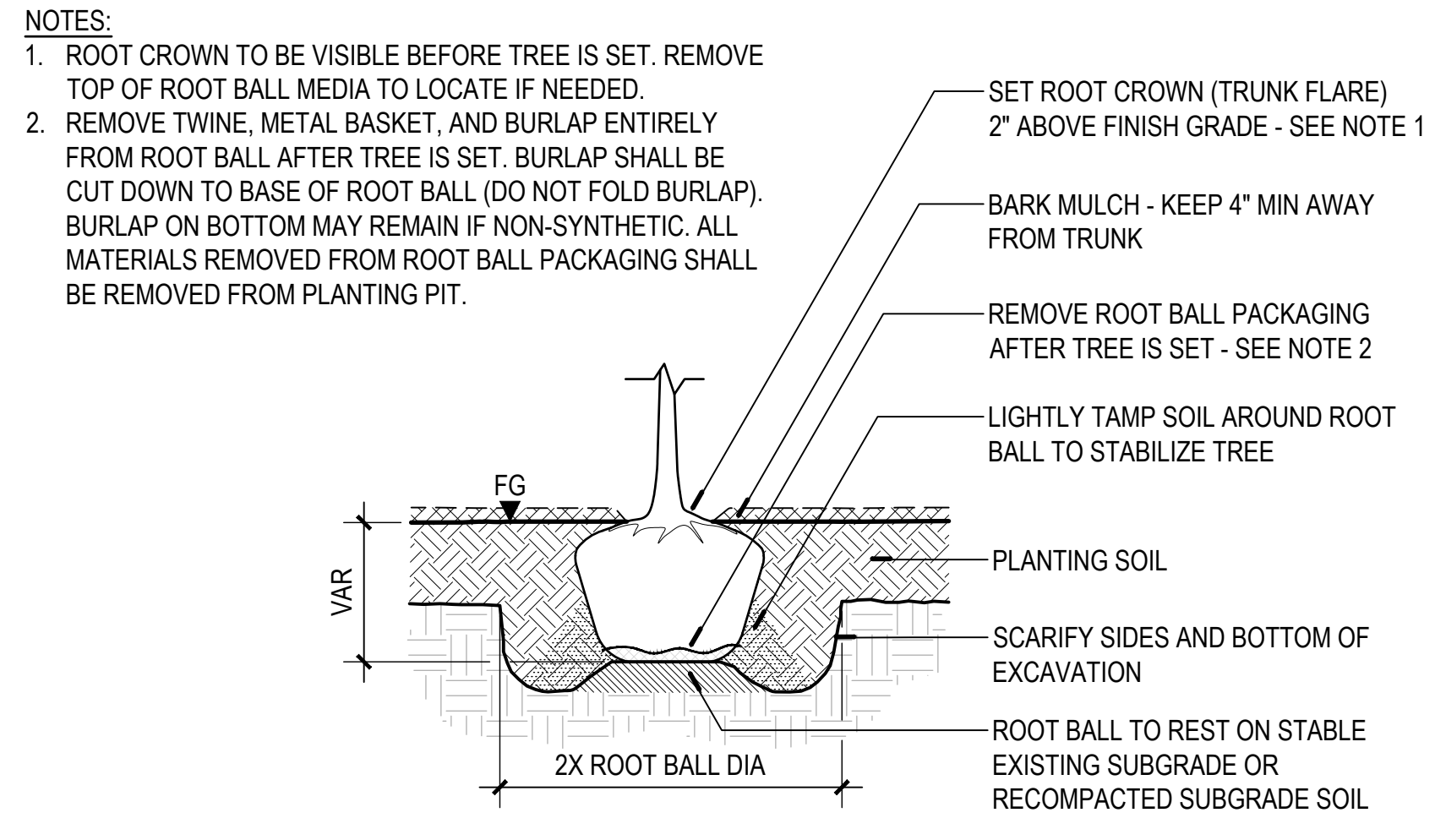
2 PLANT SPACING DIAGRAM
PLAN NOT TO SCALE



3 PLUG PLANTING
SECTION NOT TO SCALE



5 DECIDUOUS TREE - STAKING
SECTION / PLAN NOT TO SCALE



6 TREE PLANTING - B&B W/ PLANTING SOIL
SECTION NOT TO SCALE

DATE:
10 MAY 2022

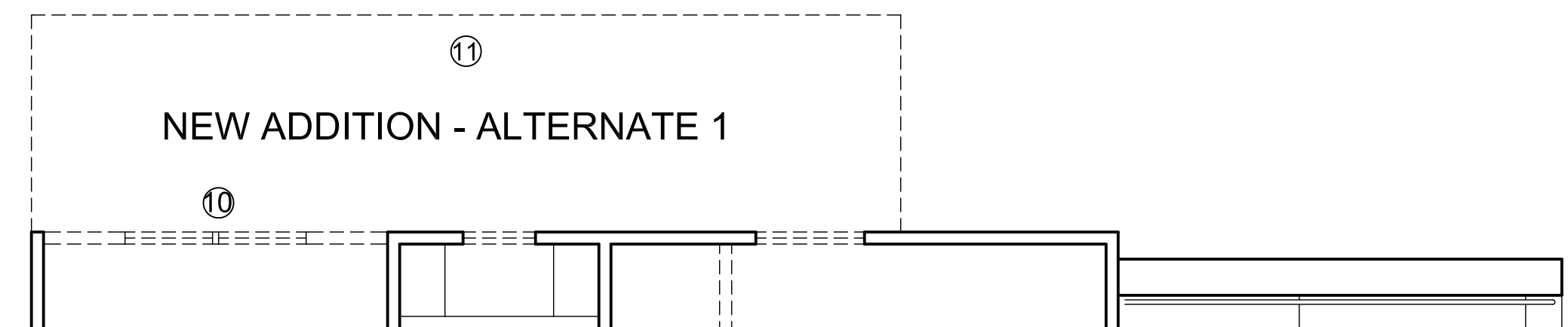
DRAWN BY:
CW

CHECKED BY:
RC

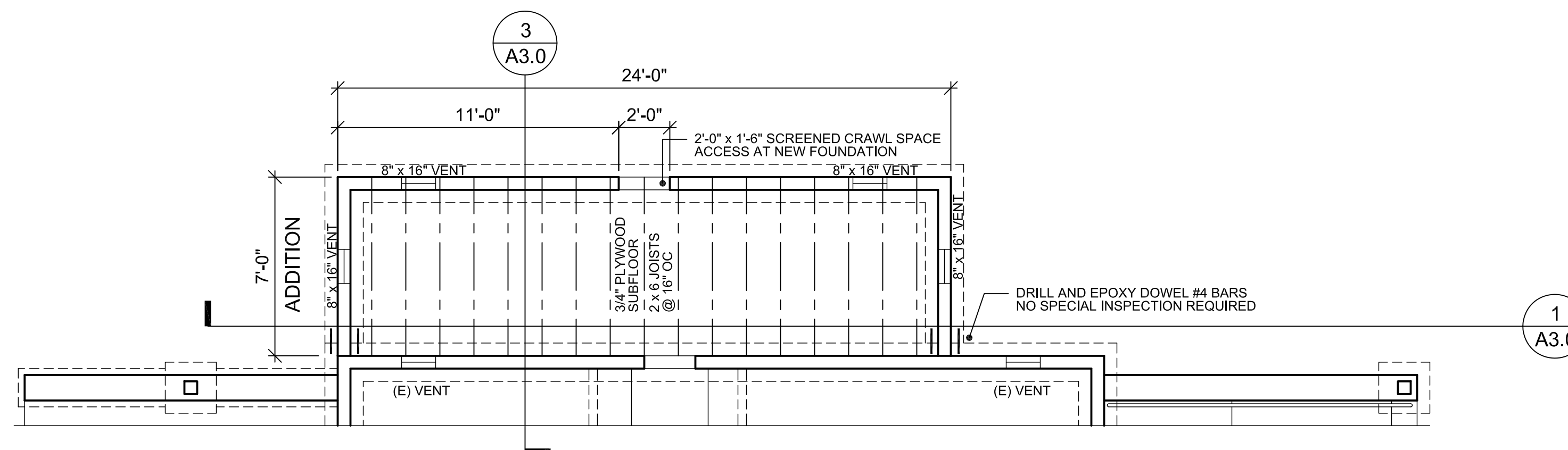
REVISIONS

BUILDING DEMOLITION NOTES

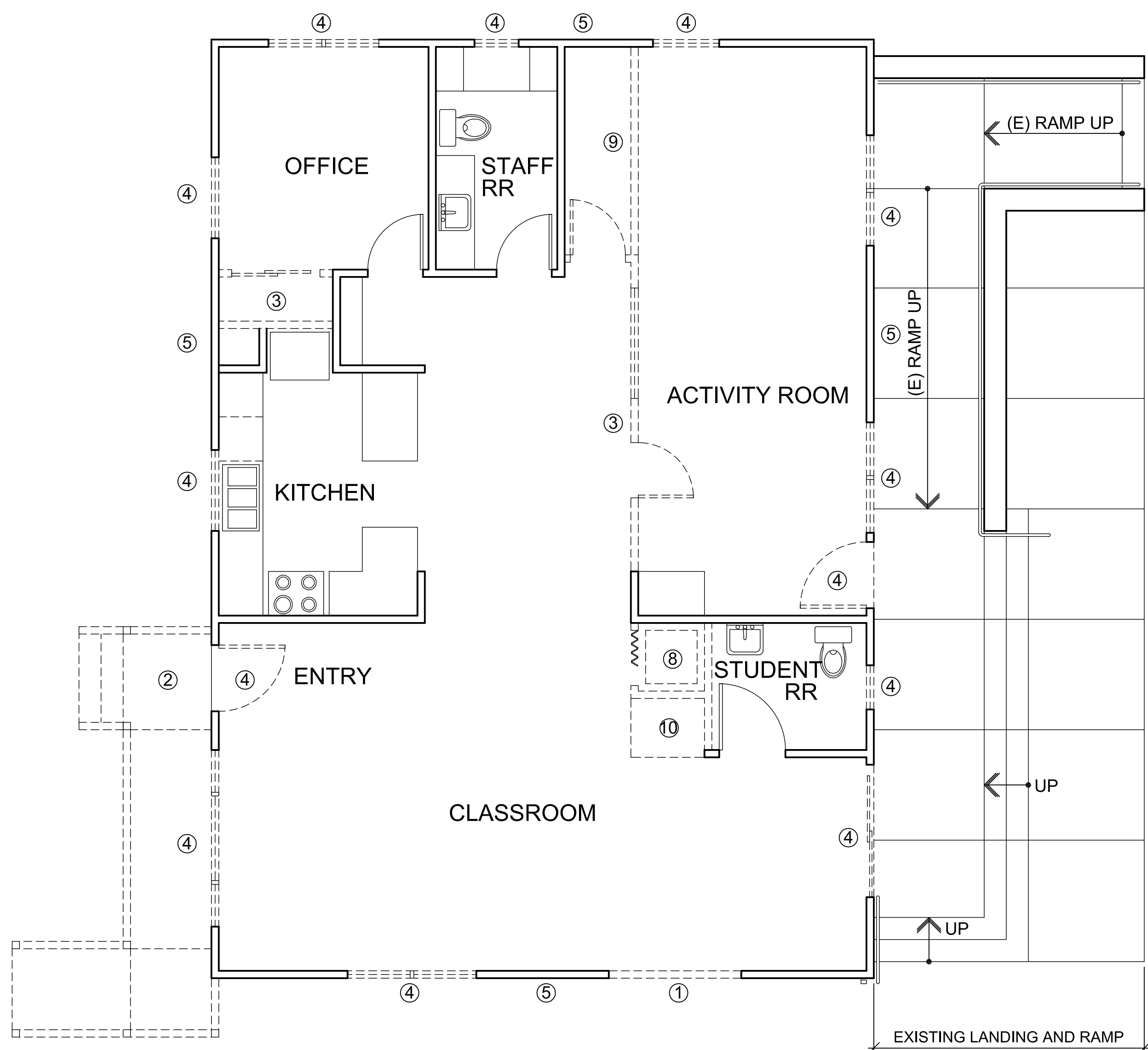
- ① REMOVE EXISTING FRONT PORCH, PORCH ROOF, RAMP AND CONCRETE STOOP BELOW PORCH
- ② REMOVE INTERIOR WALLS FOR NEW WORK - SHORE AS REQUIRED UNTIL NEW STRUCTURE IS IN PLACE
- ③ REMOVE EXISTING WINDOWS AND DOORS
- ④ REMOVE EXISTING SIDING
- ⑤ REMOVE EXISTING ROOFING
- ⑥ REMOVE EXISTING WINDOWS AND DOORS
- ⑦ REPAIR FLOOR FRAMING AND INFILL CRAWL SPACE ACCESS HATCH
- ⑧ REMOVE BEAM AFTER INSTALLATION OF NEW STRUCTURE ABOVE CEILING
- ⑨ REMOVE FLOORING
- ⑩ REMOVE EXTERIOR WALL FOR NEW CONSTRUCTION - ALTERNATE NO. B1
- ⑪ EXCAVATE FOR NEW ADDITION - ALTERNATE NO. B1



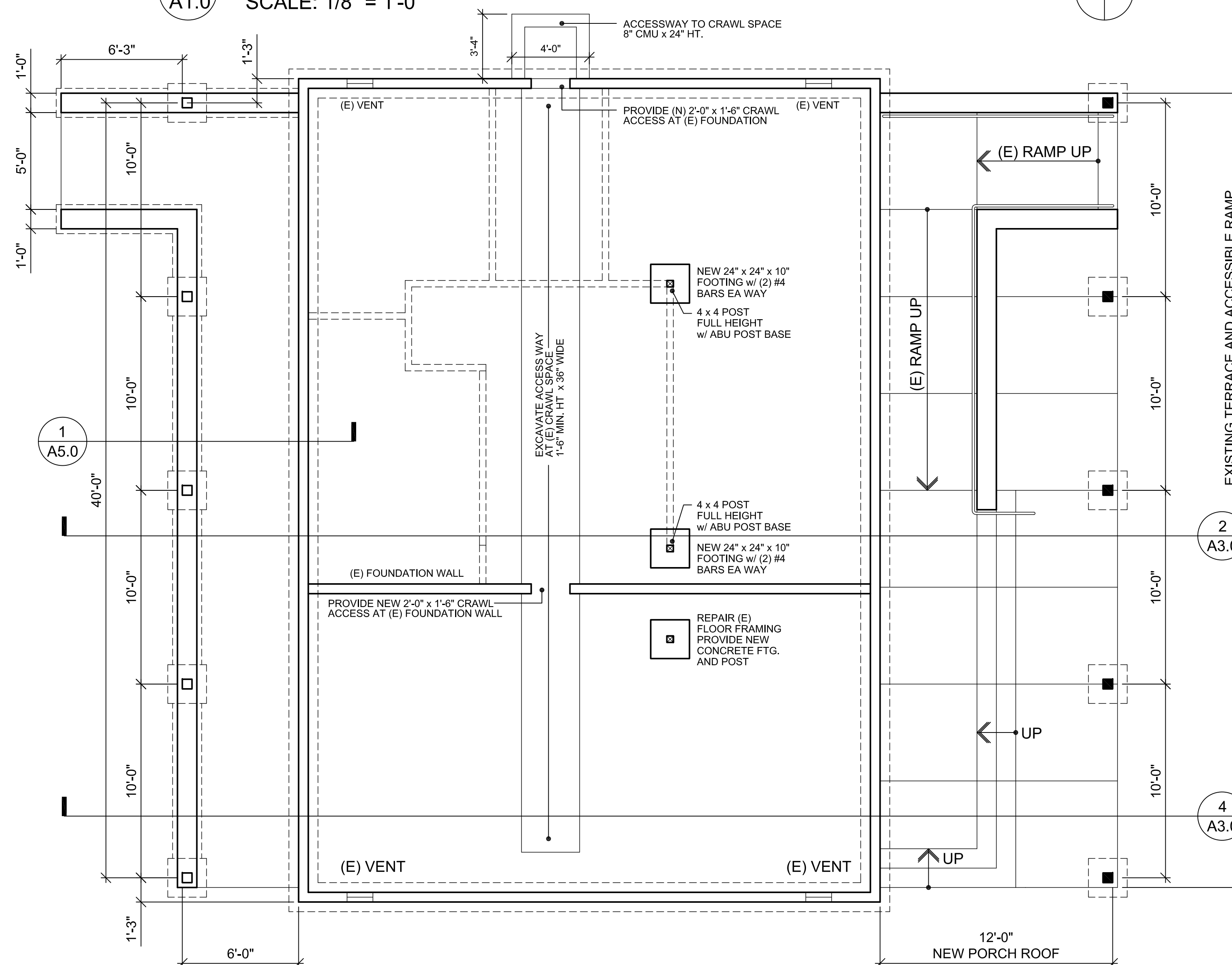
3 ALTERNATE NO. B1 - DEMOLITION PLAN
A1.0 SCALE: 1/8" = 1'-0" NORTH



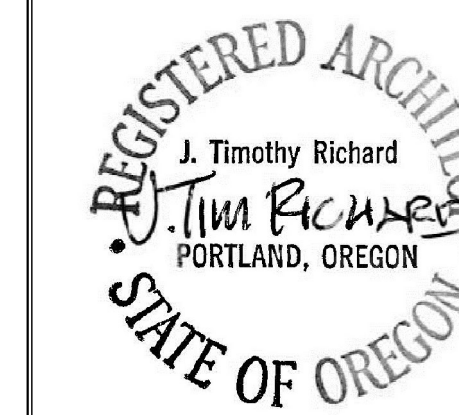
4 ALTERNATE NO. B1 - FOUNDATION PLAN
A1.0 SCALE: 1/8" = 1'-0" NORTH



1 EXISTING FLOOR PLAN / DEMOLITION PLAN
A1.0 SCALE: 1/8" = 1'-0" NORTH



2 FOUNDATION PLAN
A1.0 SCALE: 1/8" = 1'-0" NORTH



HEAD START

ESTACADA HEAD START IMPROVEMENTS PROJECT
264 N. BROADWAY
ESTACADA, OREGON

CONTRACT DOCUMENTS

EXISTING FLOOR PLAN / DEMOLITION PLAN
FOUNDATION PLAN

DATE:
10 MAY 2022

DRAWN BY:
JTR

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RC

REVISIONS



HEAD START

ESTACADA HEAD START IMPROVEMENTS PROJECT

264 N. BROADWAY
ESTACADA, OREGON

CONTRACT DOCUMENTS

FLOOR PLAN

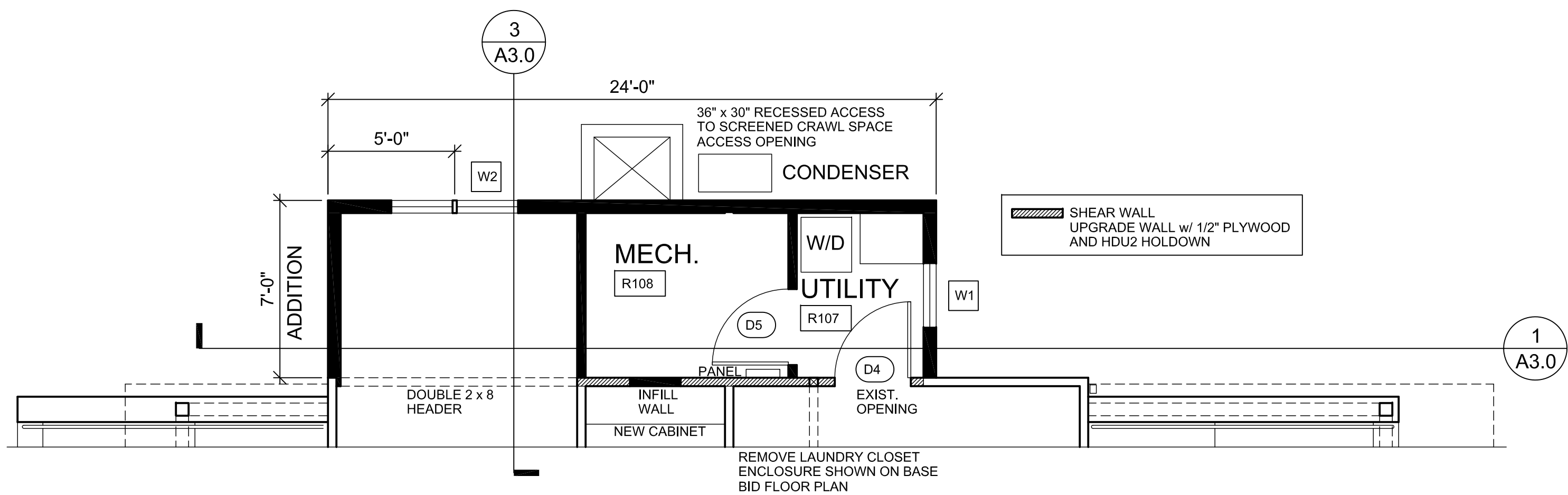
DATE:
10 MAY 2022

DRAWN BY:
JTR

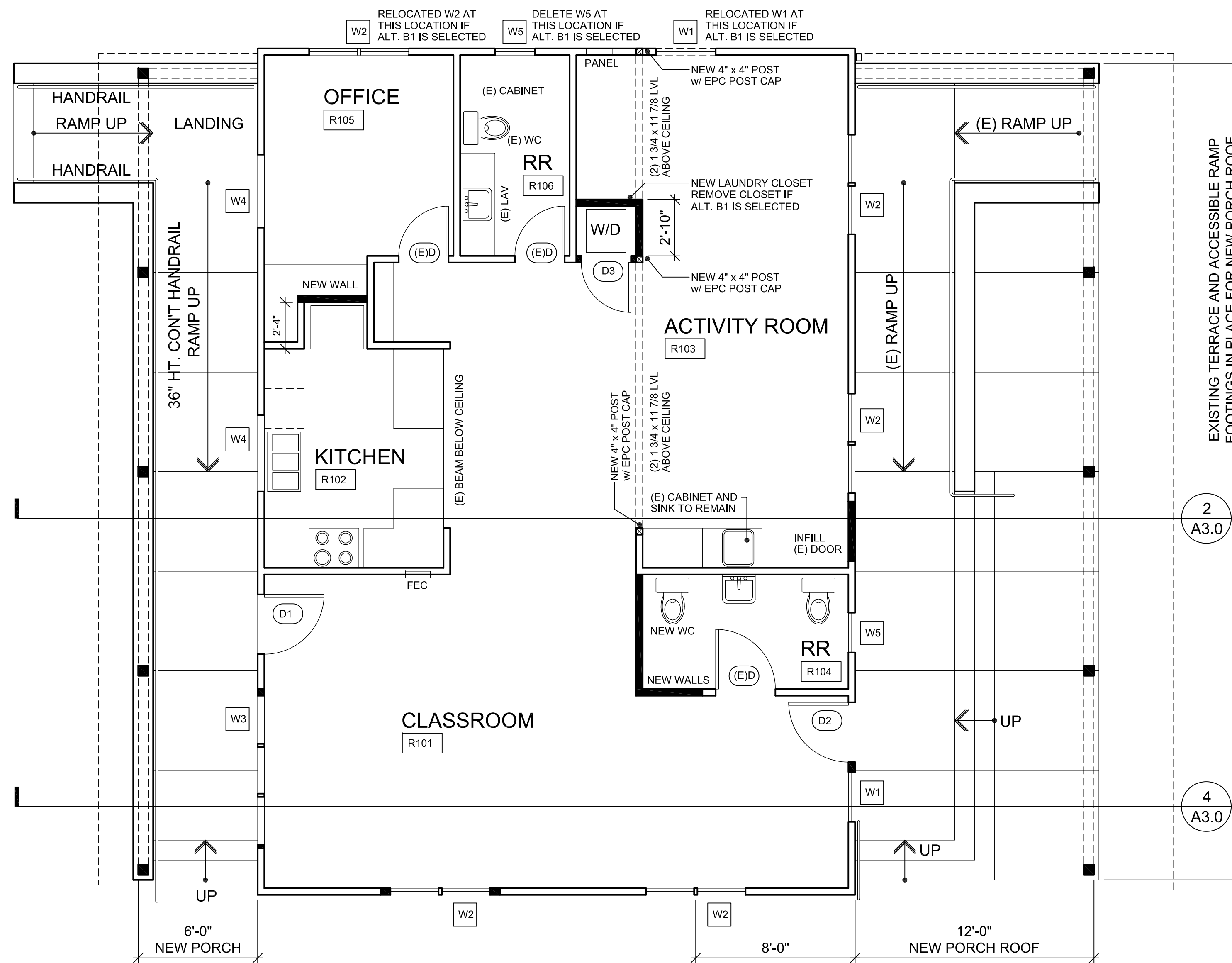
CHECKED BY:
RC

REVISIONS

A1.1



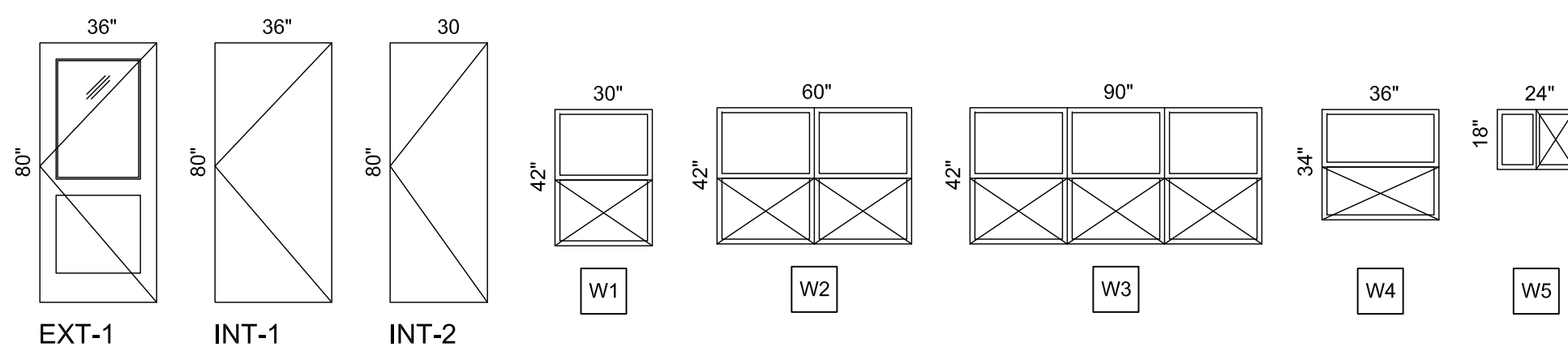
2 ALTERNATE NO. B1 - FLOOR PLAN
SCALE: 1/8" = 1'-0" NORTH



1 FLOOR PLAN
SCALE: 1/8" = 1'-0" NORTH

DOOR SCHEDULE

D#	ROOM #	TYPE	SIZE	FRAME	HDW SETS	NOTES
D1	ENTRY	EX-1	3068	COMP.	HDW-1	
D2	BACK TERRACE	EX-1	3068	COMP.	HDW-1	
D3	UTILITY CLOSET	INT-2	2668	WD	HDW-2	DELETE IF ALTERNATE NO. B1 IS SELECTED
D4	UTILITY ROOM	INT-1	3068	WD	HDW-2	ALTERNATE NO. B1
D5	MECHANICAL ROOM	INT-1	3068	WD	HDW-3	ALTERNATE NO. B1



NOTE:
SEE SHEET L3.1
FOR PORCH AND
RAMP SLOPES AND
FINISH ELEVATIONS

3 DOOR AND WINDOW TYPES
SCALE: 1/8" = 1'-0"

FINISH SCHEDULE:

ROOM #	ROOM	FLOOR*	WALLS**	BASE***	CEILING****
R101	CLASSROOM	(E) LAMINATE PLANK	GWB	1 x 4 WD	1/4" GWB
R102	KITCHEN	(E) LAMINATE PLANK	GWB	NA	1/4" GWB
R103	ACTIVITY ROOM	(E) LAMINATE PLANK	GWB	1 x 4 WD	1/4" GWB
R104	STUDENT RESTROOM	(N) & (E) LAMINATE PLANK	WR-GWB	1 x 4 WD	1/4" GWB
R105	OFFICE	(N) & (E) LAMINATE PLANK	GWB	1 x 4 WD	1/2" GWB - 1/4" GWB
R106	STAFF RESTROOM	(E) TO REMAIN	NA	NA	NA
R107	LAUNDRY ROOM	(N) LAMINATE PLANK	WR-GWB	1 x 4 WD	1/2" WR-GWB
R108	MECHANICAL ROOM	(N) LAMINATE PLANK	TYPE-X GWB	1 x 4 WD	1/2" GWB

NOTE* MATCH (E) LAMINATE FLOORING AT STUDENT RR, OFFICE, LAUNDRY ROOM, AND MECHANICAL ROOM
PATCH / INFILL (E) LAMINATE FLOORING WHERE REQUIRED AT REMOVED WALLS
NOTE** REPAIR (E) GWB AT DOORS AND WINDOWS AND AS INDICATED ON PLANS
NOTE*** MATCH EXISTING 1 x 4 PAINTED WOOD BASE AT NEW WALLS, INFILL AT (E) AS REQUIRED
NOTE**** INSTALL 1/4" GWB OVER (E) CEILING GWB FOR UNIFORM SURFACE AND FINISH



**HEAD
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**CONTRACT
DOCUMENTS**

**REFLECTED
CEILING PLAN**

DATE:
10 MAY 2022

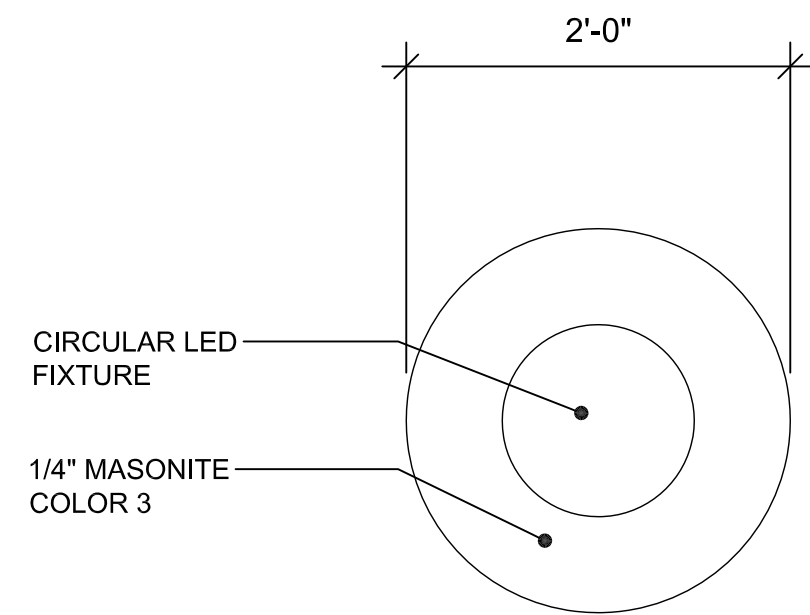
DRAWN BY:
JTR

CHECKED BY:
RC

REVISIONS

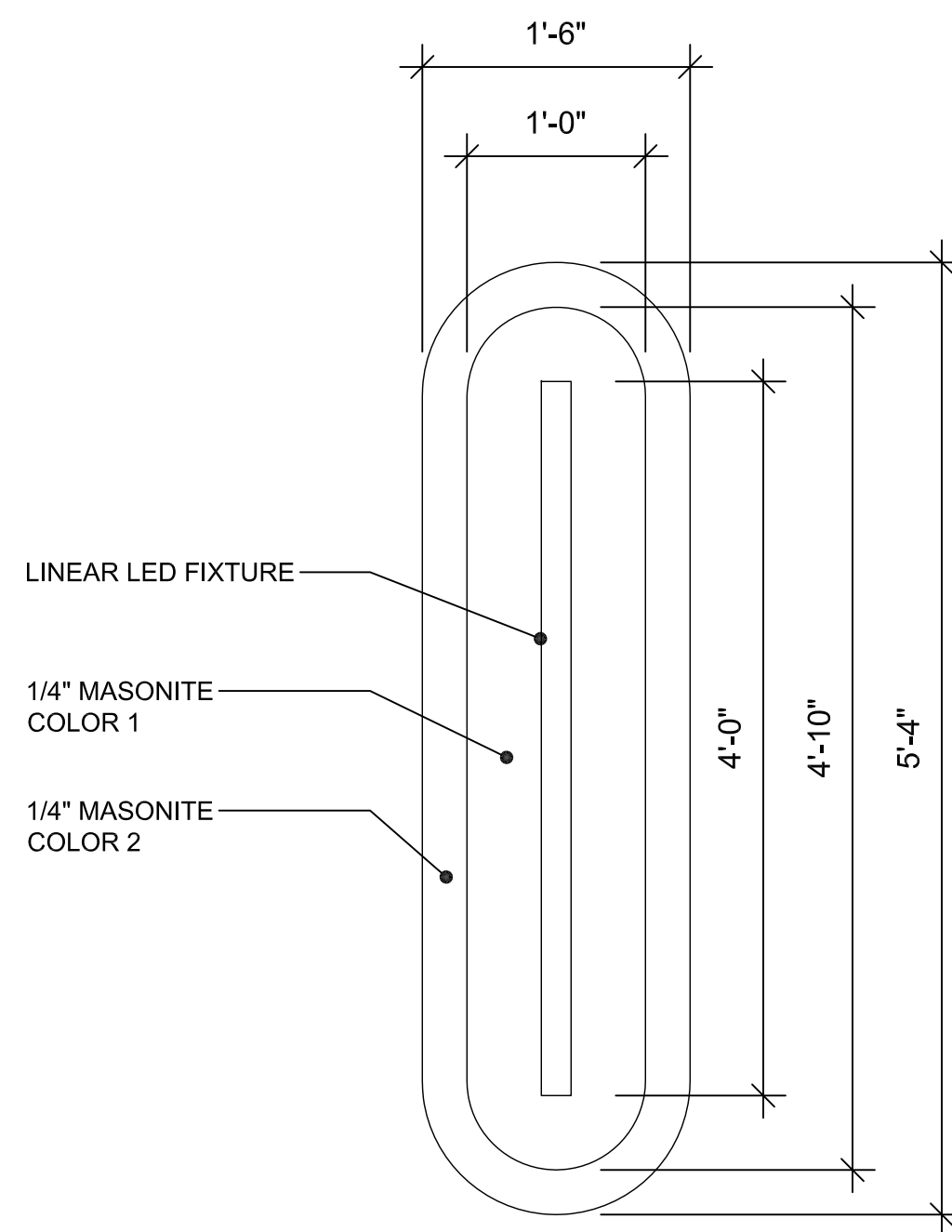
NO.	DESCRIPTION

A1.2



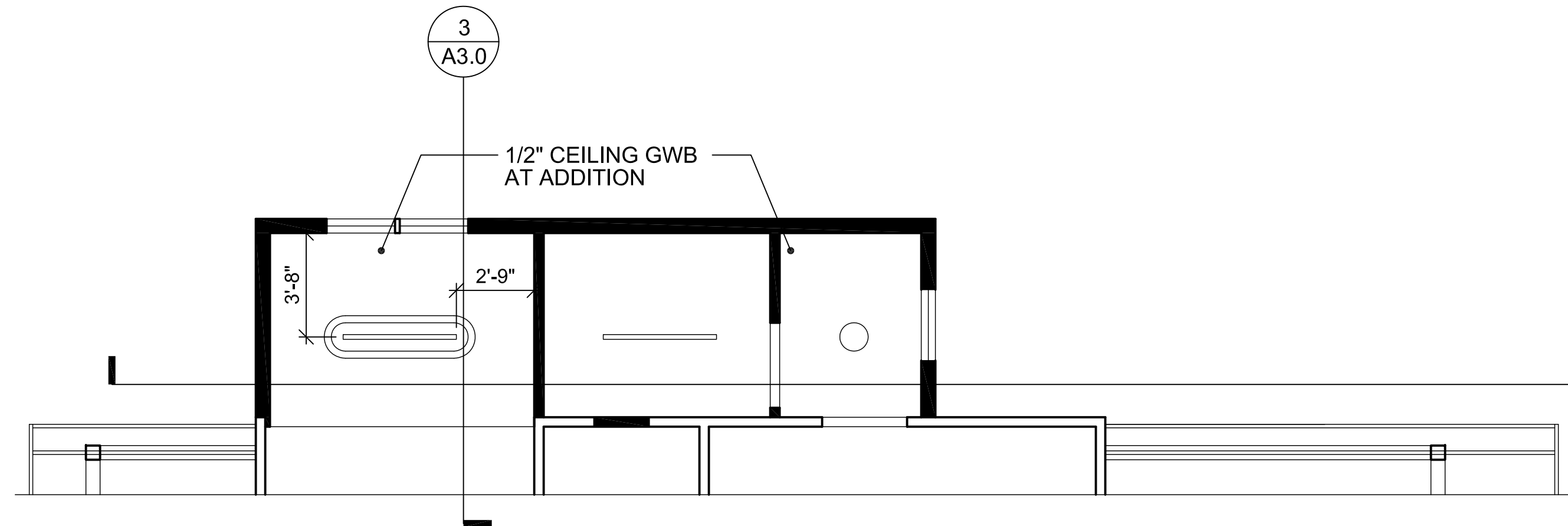
PROVIDE MASONITE MOUNTING PANELS WHERE INDICATED ON RCP. SAND EDGES AND PAINT EXPOSED SURFACE AND EDGES. FASTEN TO CEILING WITH ADHESIVE AND FINISH NAILS. PROVIDE EXTENSION RING FOR ELECTRICAL BOX.

3
A1.2 **MOUNTING DETAIL @ CIRCULAR FIXTURE**
SCALE: 1" = 1'-0"



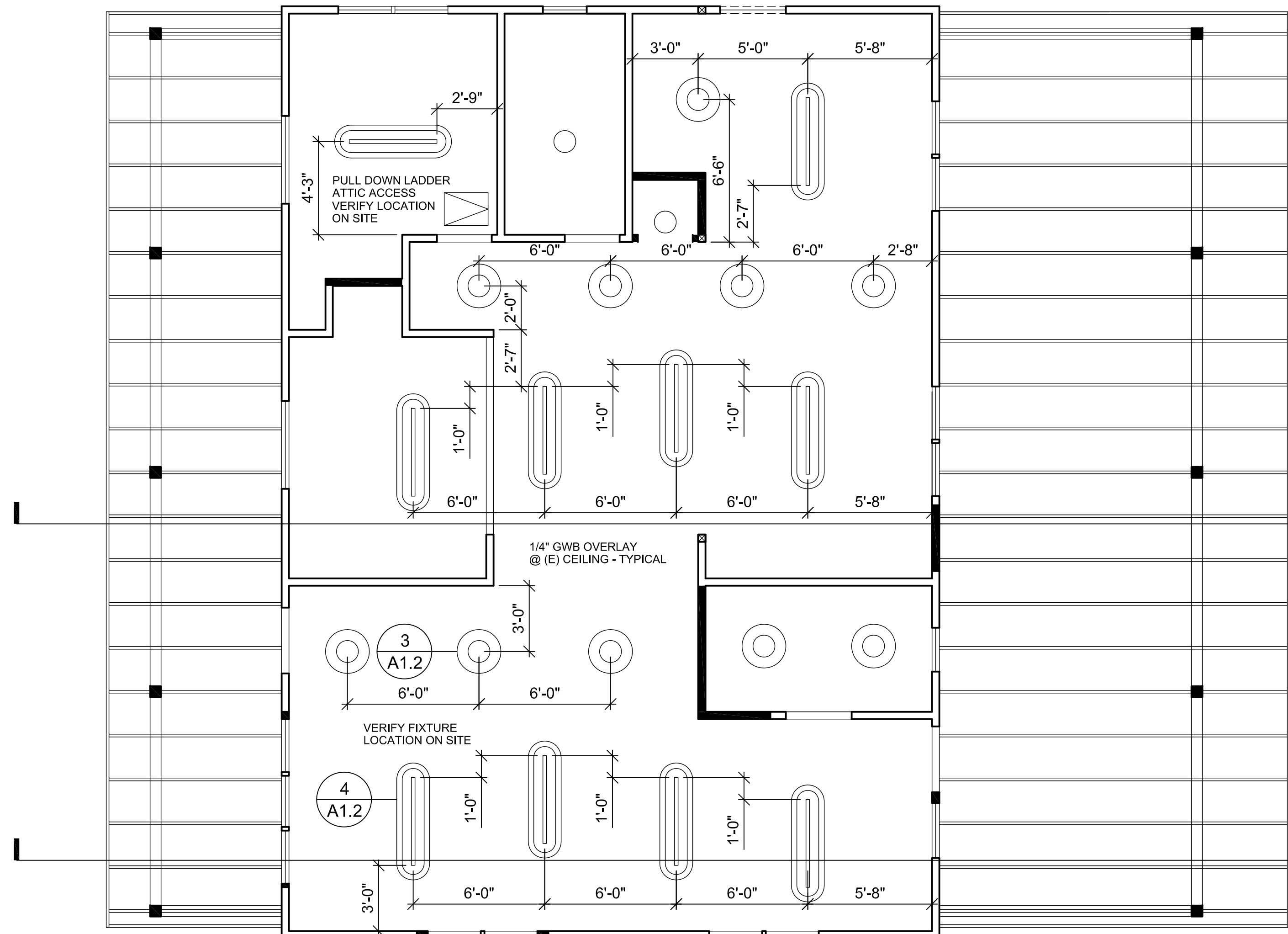
PROVIDE MASONITE MOUNTING PANELS WHERE INDICATED ON RCP. SAND EDGES AND PAINT EXPOSED SURFACE AND EDGES. FASTEN TO CEILING WITH ADHESIVE AND FINISH NAILS. PROVIDE EXTENSION RING FOR ELECTRICAL BOX.

4
A1.2 **MOUNTING DETAIL @ LINEAR FIXTURE**
SCALE: 1" = 1'-0"



2
A1.2 **ALTERNATE NO. B1 - REFLECTED CEILING PLAN**
SCALE: 1/8" = 1'-0"

NORTH



1
A1.2 **REFLECTED CEILING PLAN**
SCALE: 1/8" = 1'-0"

NORTH



Clackamas County
Children's Commission

HEAD START

16518 SE RIVER ROAD
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ESTACADA HEAD START IMPROVEMENTS PROJECT
264 N. BROADWAY
ESTACADA, OREGON

CONTRACT DOCUMENTS

ROOF FRAMING PLAN

DATE:
10 MAY 2022

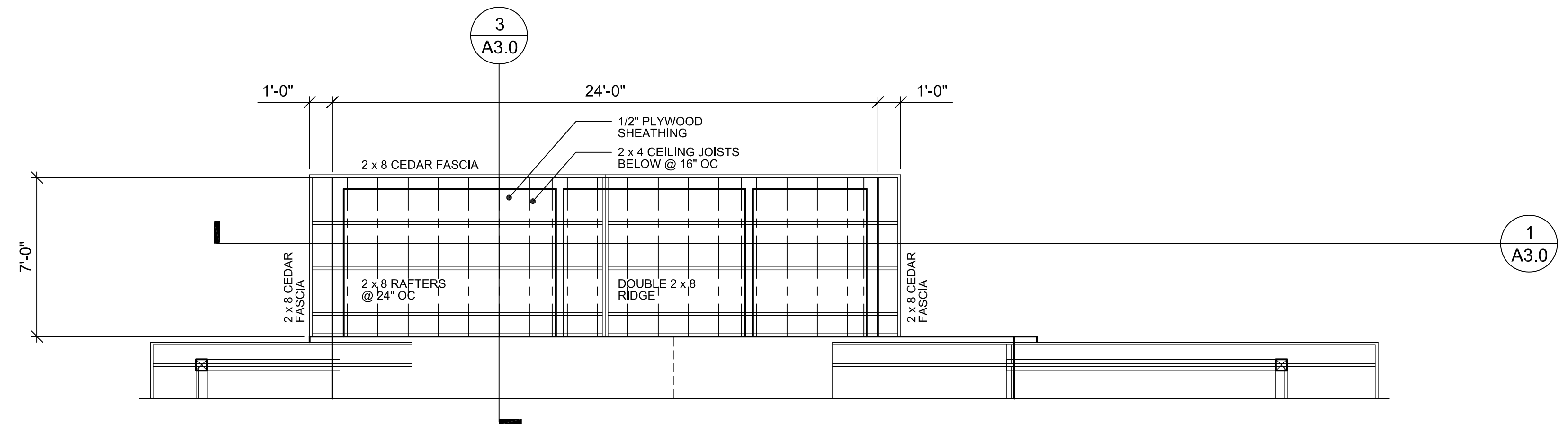
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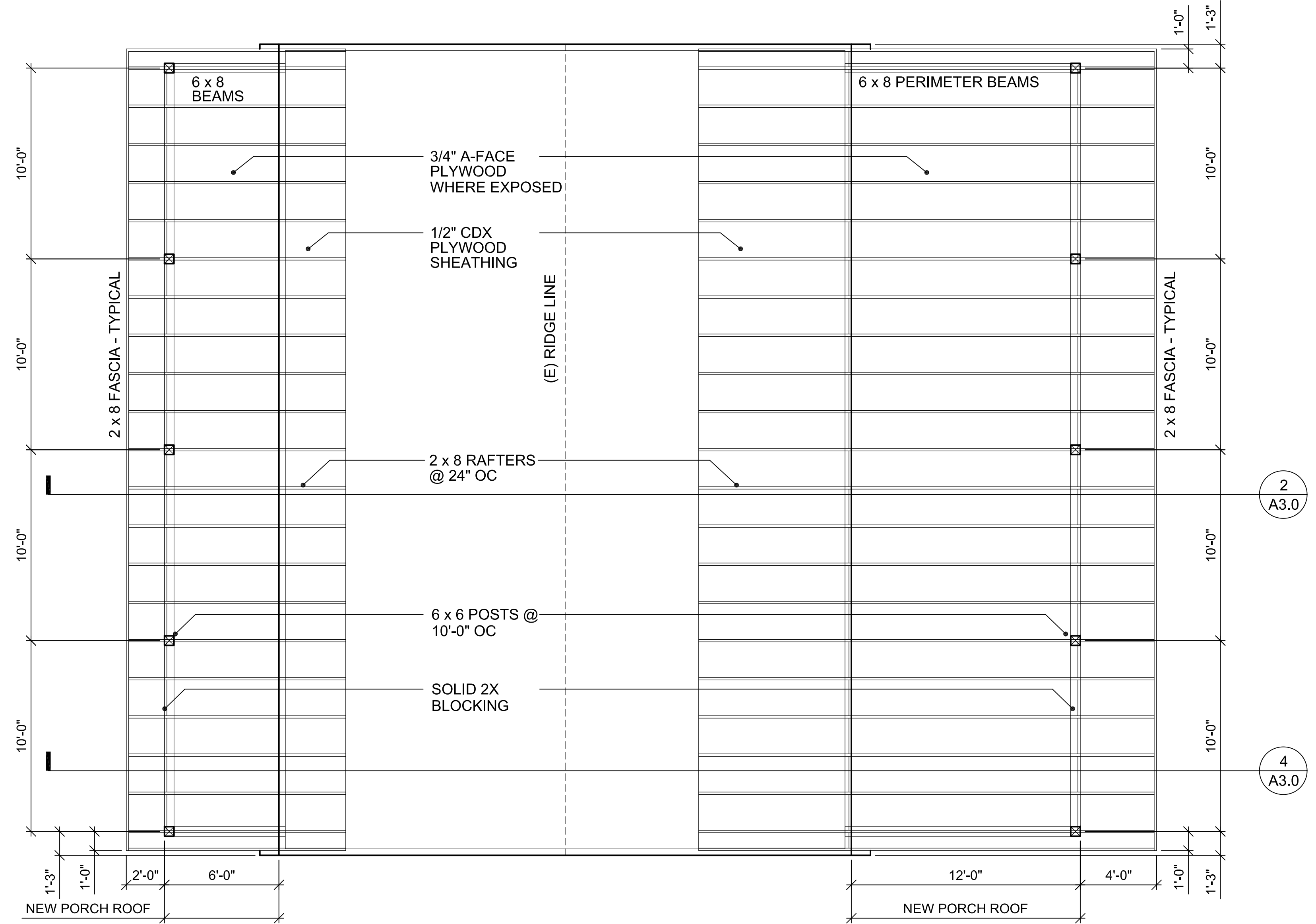
REVISIONS

NO.	DESCRIPTION

A1.3



2 ALTERNATE NO. B1 - ROOF FRAMING PLAN
SCALE: 1/8" = 1'-0" NORTH



1 ROOF FRAMING PLAN
SCALE: 1/8" = 1'-0" NORTH



Clackamas County
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**HEAD
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16518 SE RIVER ROAD
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**ESTACADA
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 PROJECT**
 264 N. BROADWAY
 ESTACADA, OREGON

**CONTRACT
 DOCUMENTS**

ROOF PLAN

DATE:
10 MAY 2022

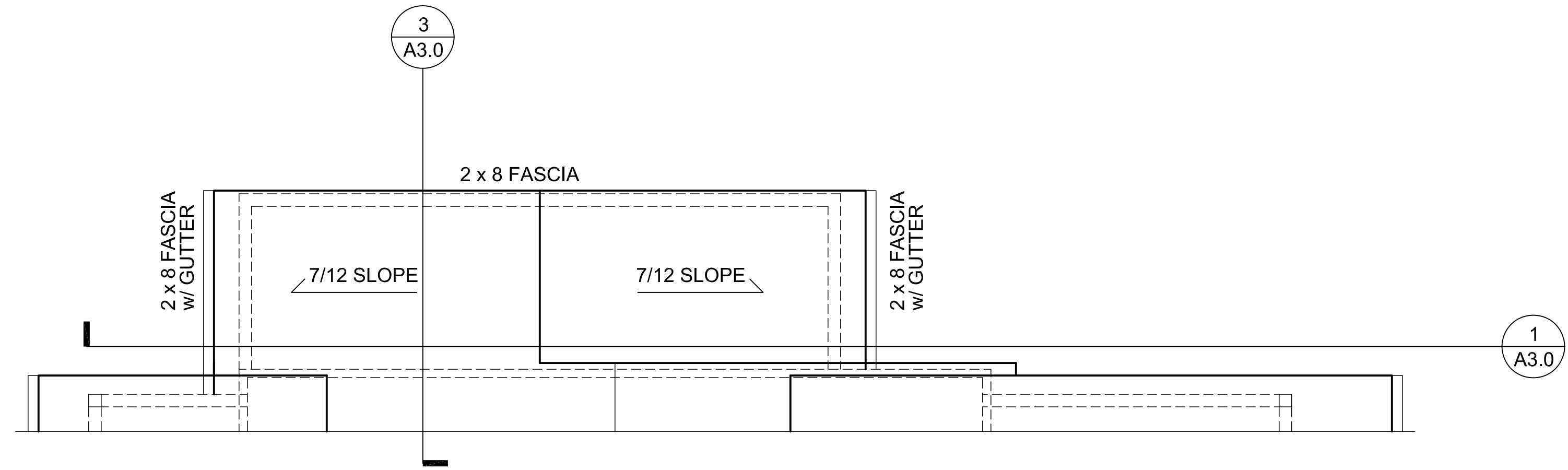
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JTR

CHECKED BY:
RC

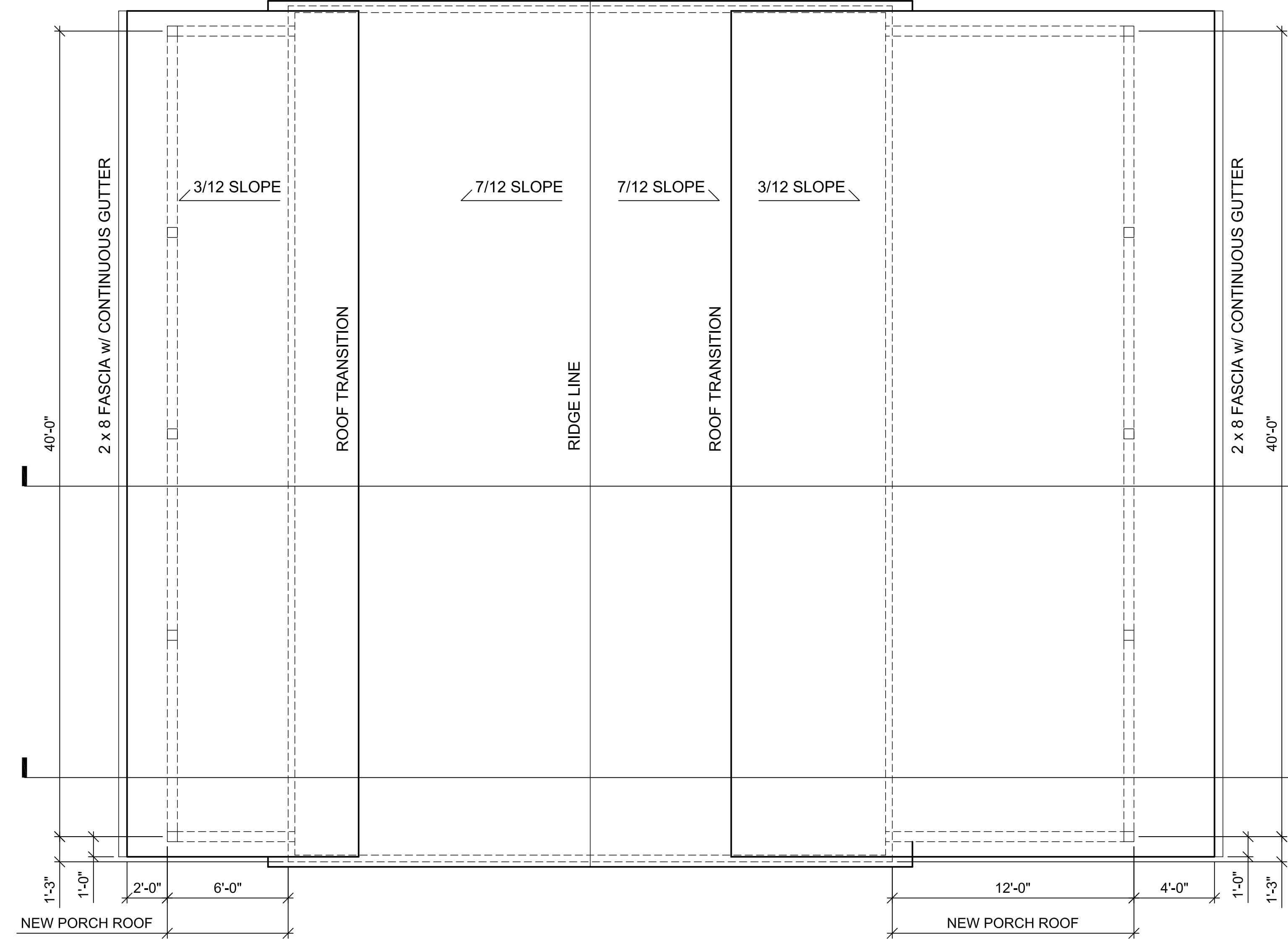
REVISIONS

NO.	DESCRIPTION

A1.4



1
 A1.4 **ROOF PLAN**
 SCALE: 1/8" = 1'-0"



1
 A1.4 **ROOF PLAN**
 SCALE: 1/8" = 1'-0"





Clackamas County
Children's Commission

**HEAD
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264 N. BROADWAY
ESTACADA, OREGON

**CONTRACT
DOCUMENTS**

**SOUTH
ELEVATION
WEST
ELEVATION**

DATE:
10 MAY 2022

DRAWN BY:
JTR

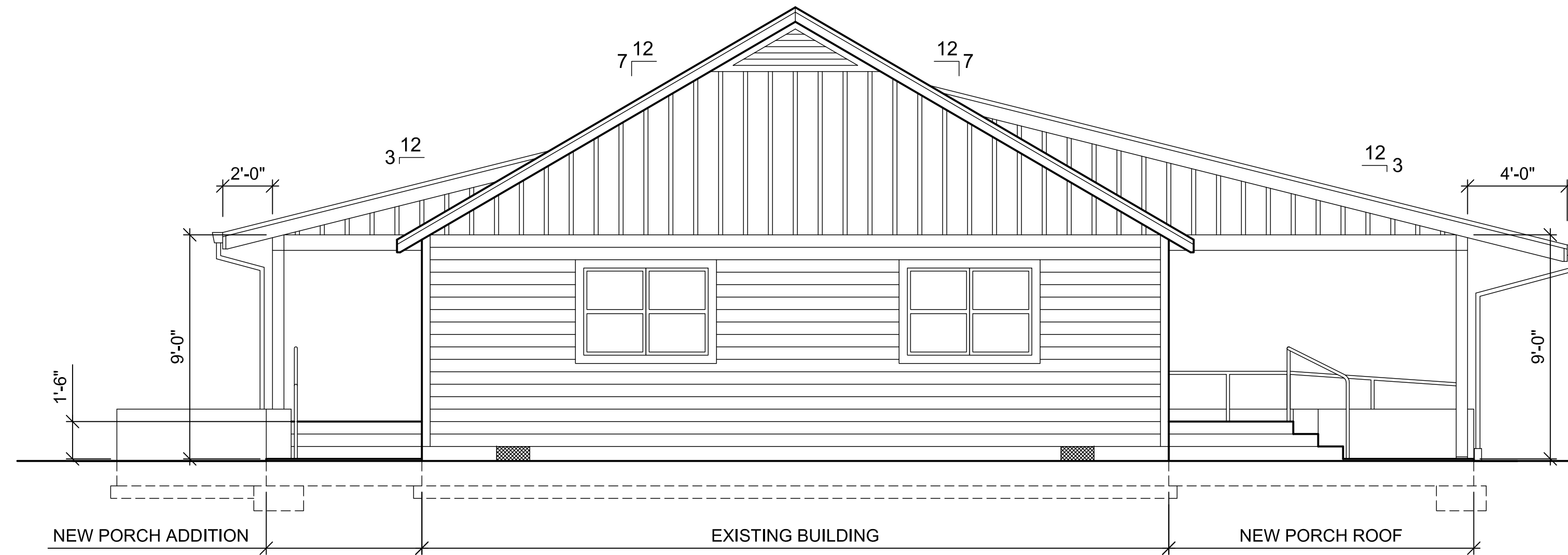
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RC

REVISIONS

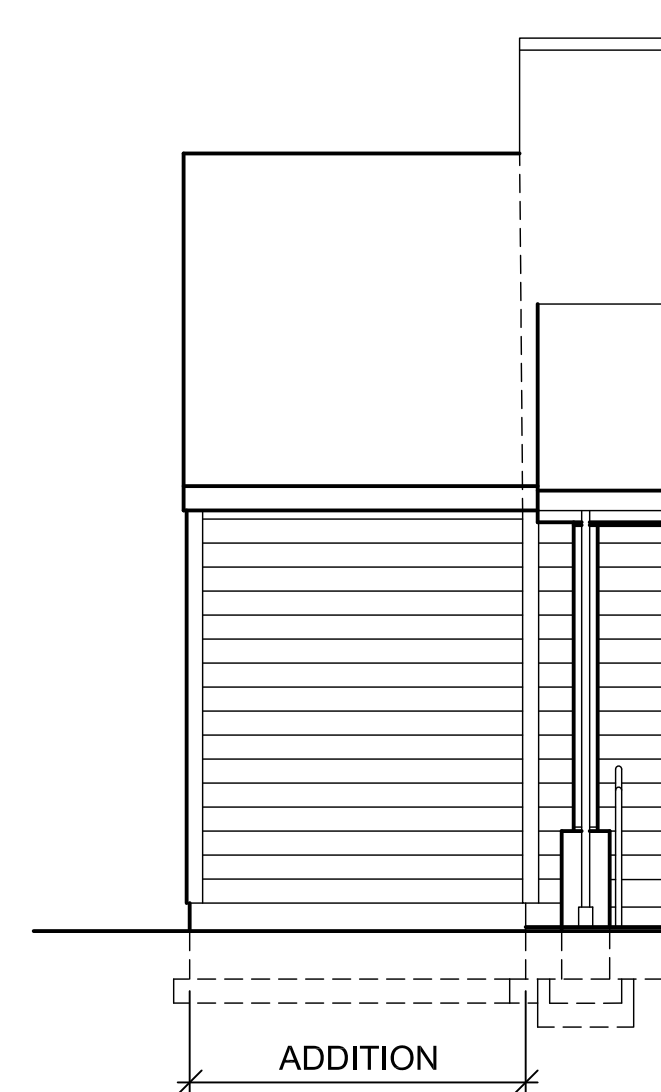
A2.0

EXTERIOR MATERIALS

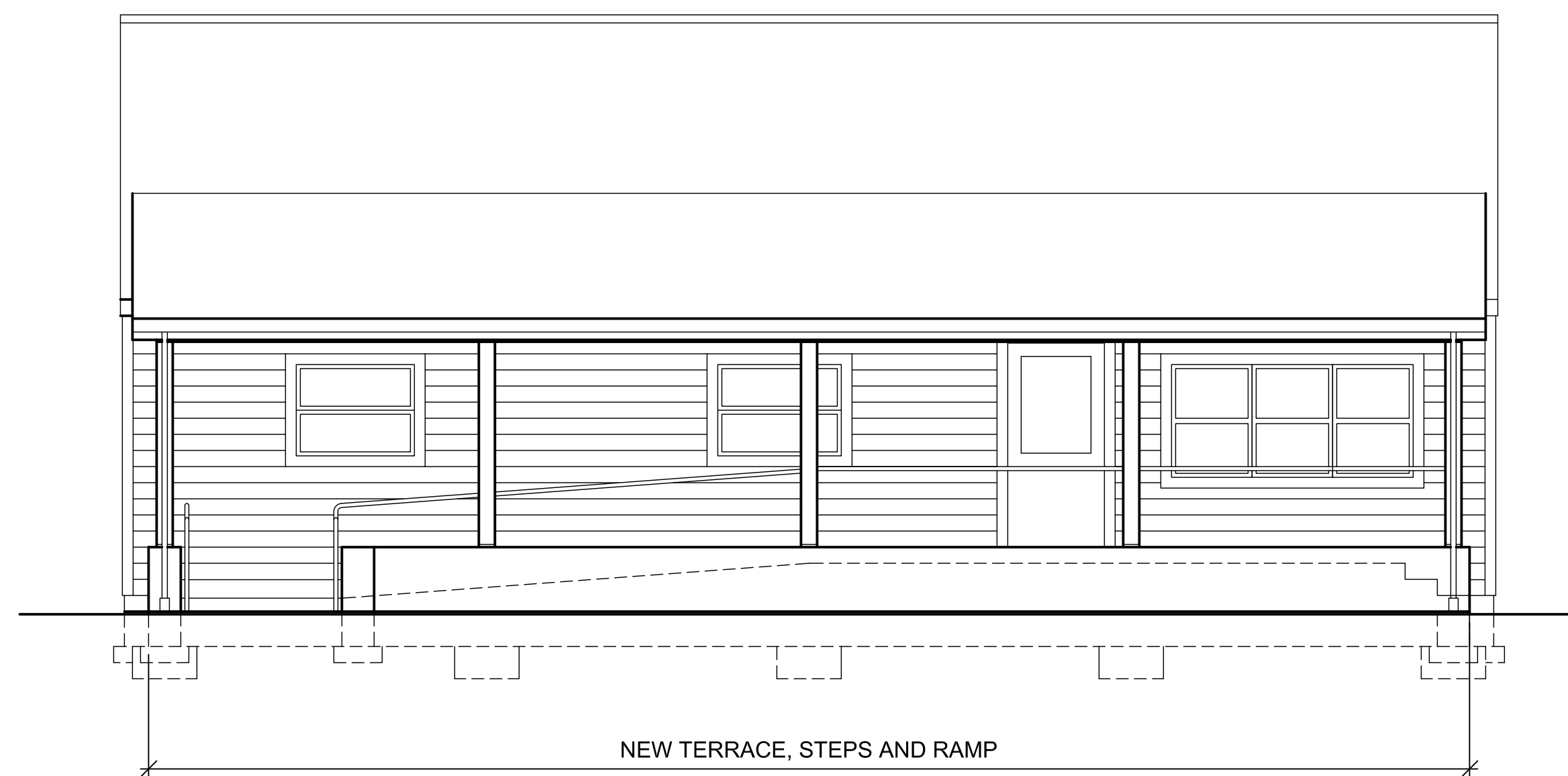
- COMPOSITION SHINGLE ROOFING
- CEDAR FASCIAS AND CONTINUOUS ALUMINUM GUTTERS
- EXTERIOR SIDING AND TRIM
 - 6-INCH LAP SIDING @ EXTERIOR WALLS
 - BOARD AND BATT @ GABLE ENDS
 - 1 x 4 CORNER AND TRIM BOARDS
- FIBERGLASS WINDOWS
- INSULATED METALS DOORS
- DOUGLAS FIR FRAMING, POSTS AND BEAMS - PAINTED
- EXPOSED CAST-IN-PLACE CONCRETE WALLS AND PAVING
- PAINTED STEEL HANDRAILS



1
A2.0 **SOUTH ELEVATION**
SCALE: 1/8" = 1'-0"



3
A2.0 **ALTERNATE NO. B1
WEST ELEVATION**
SCALE: 1/8" = 1'-0"



2
A2.0 **WEST ELEVATION**
SCALE: 1/8" = 1'-0"



Clackamas County
Children's Commission

**HEAD
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16518 SE RIVER ROAD
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**ESTACADA
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PROJECT**
264 N. BROADWAY
ESTACADA, OREGON

**CONTRACT
DOCUMENTS**

**NORTH
ELEVATION
EAST
ELEVATION**

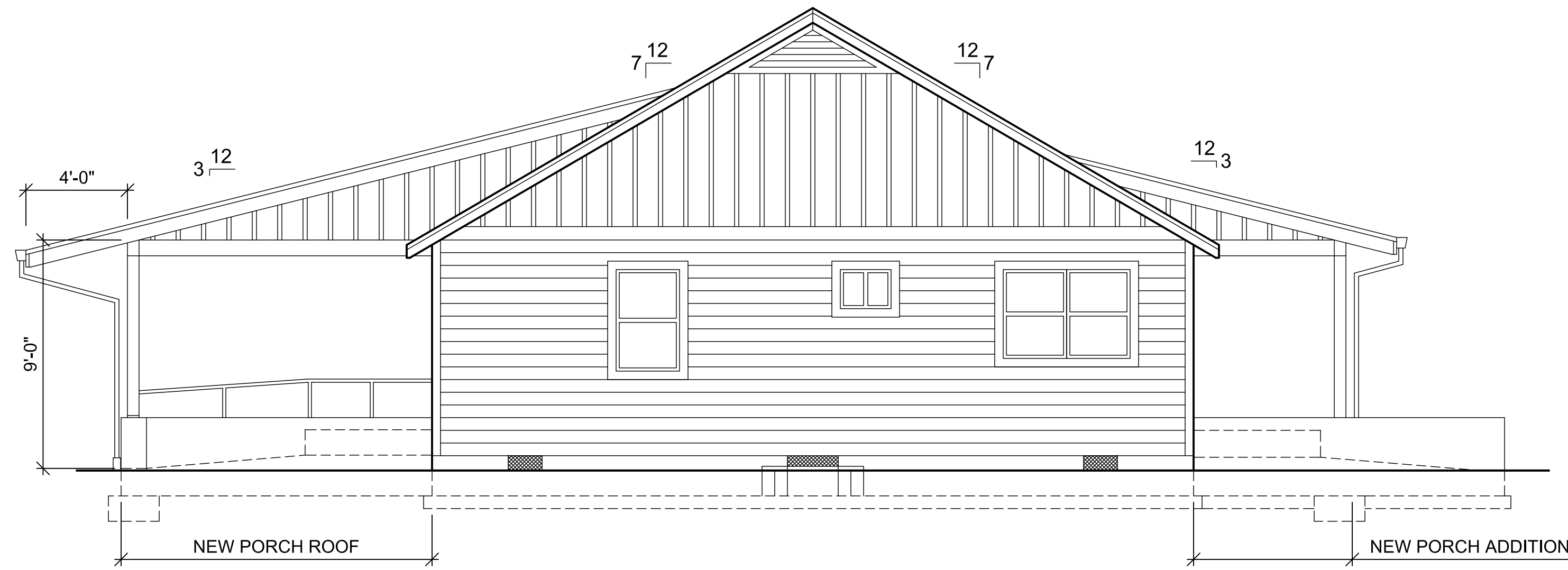
DATE:
10 MAY 2022

DRAWN BY:
JTR

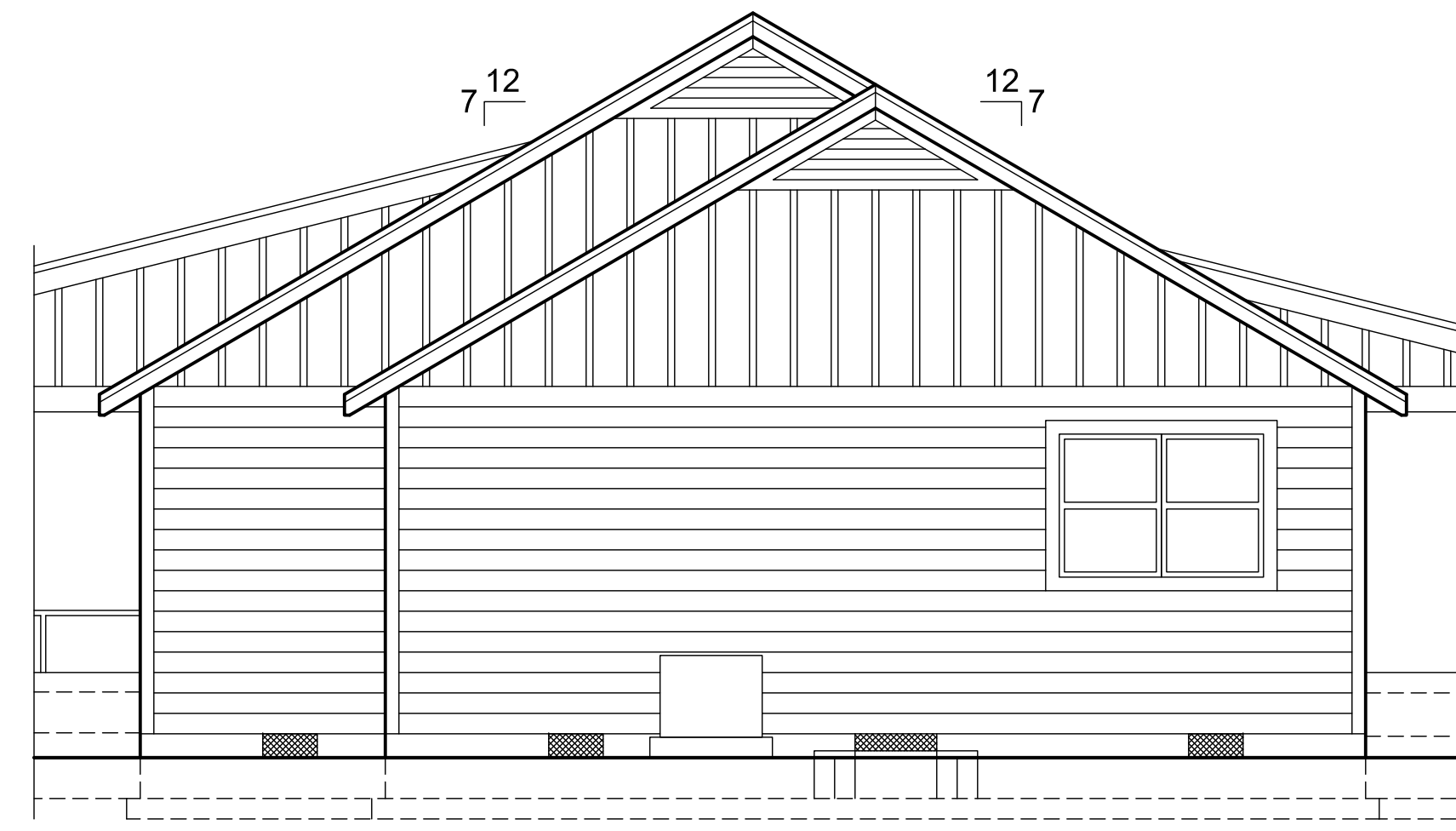
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RC

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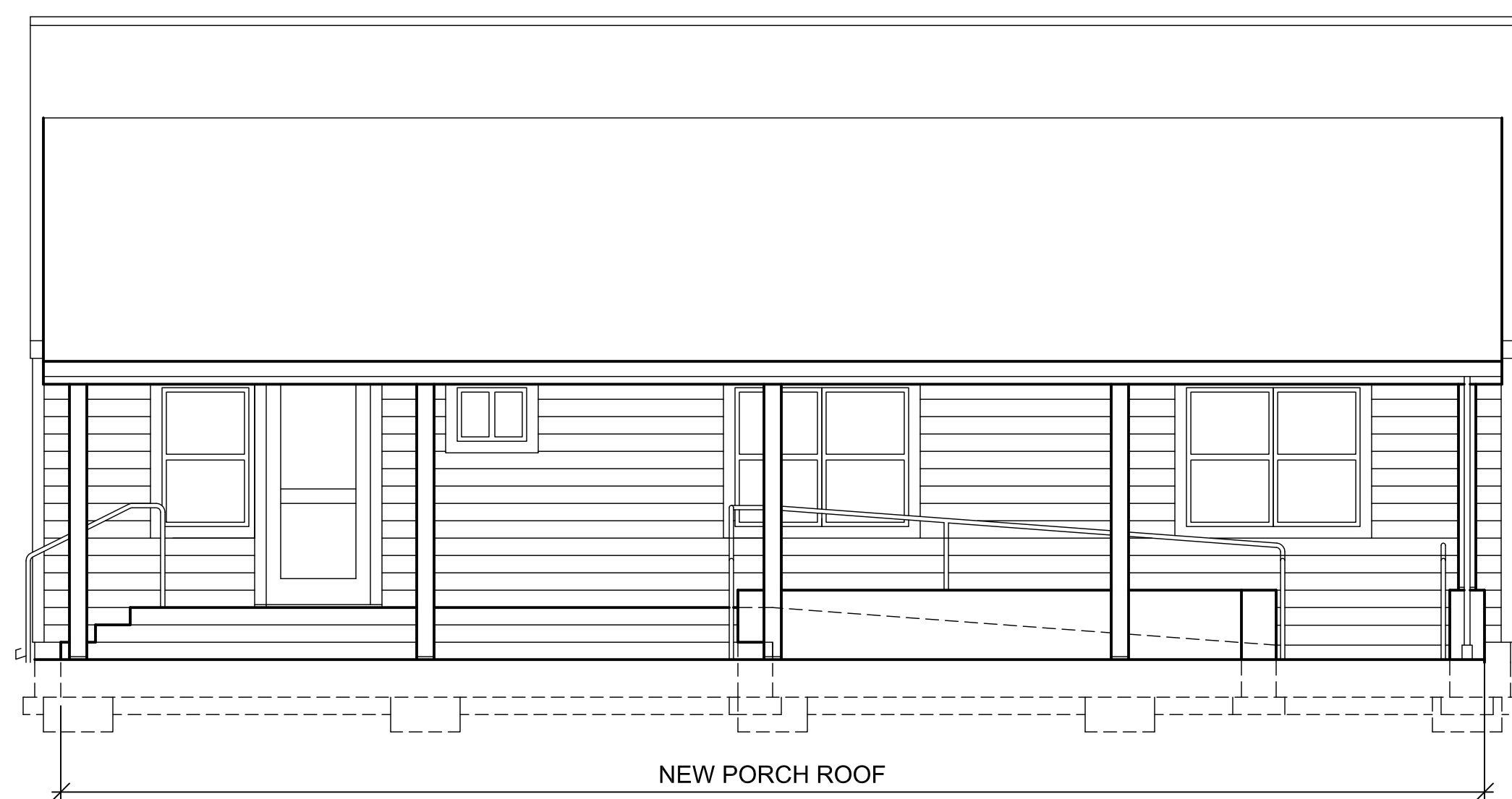
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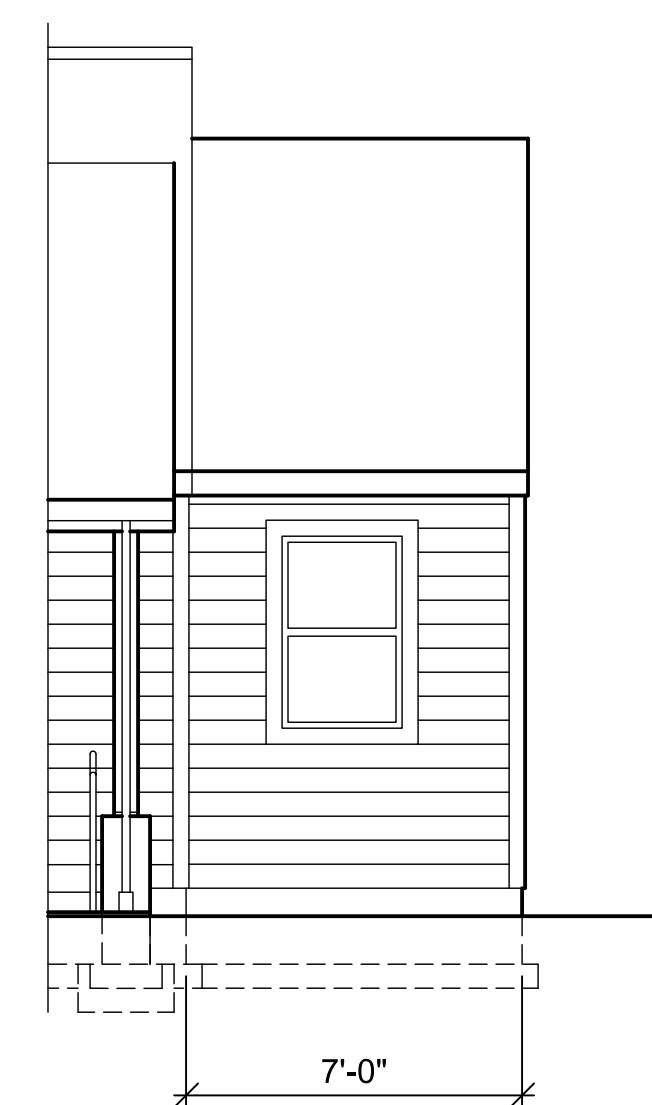
1
A2.1 **NORTH ELEVATION**
SCALE: 1/8" = 1'-0"



3
A2.1 **ALTERNATE NO. B1 - NORTH ELEVATION**
SCALE: 1/8" = 1'-0"



2
A2.1 **EAST ELEVATION**
SCALE: 1/8" = 1'-0"



4
A2.1 **ALTERNATE NO. B1
EAST ELEVATION**
SCALE: 1/8" = 1'-0"



HEAD START

ESTACADA HEAD START IMPROVEMENTS PROJECT
 264 N. BROADWAY
 ESTACADA, OREGON

CONTRACT DOCUMENTS

BUILDING SECTIONS

DATE:
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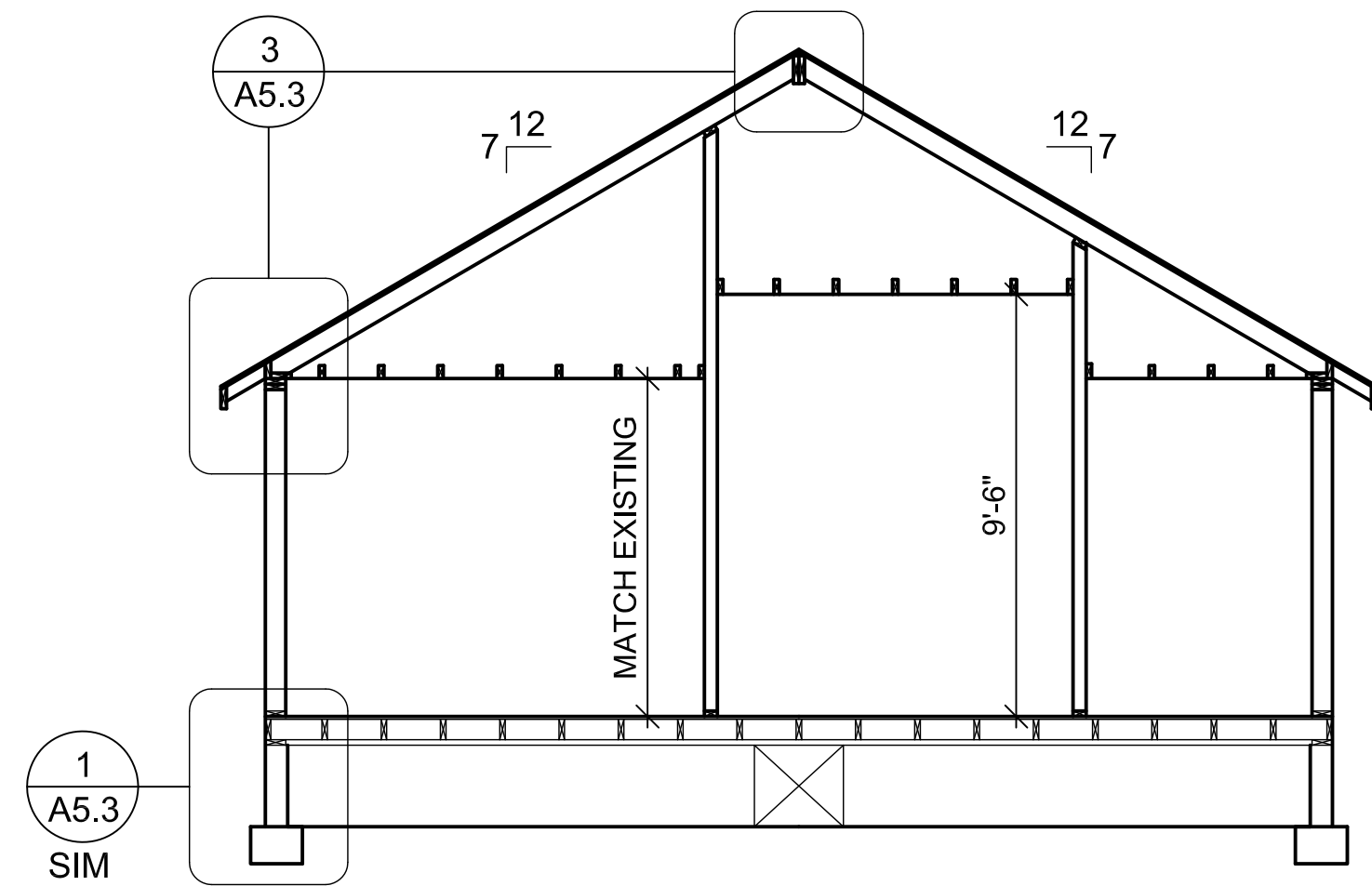
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RC

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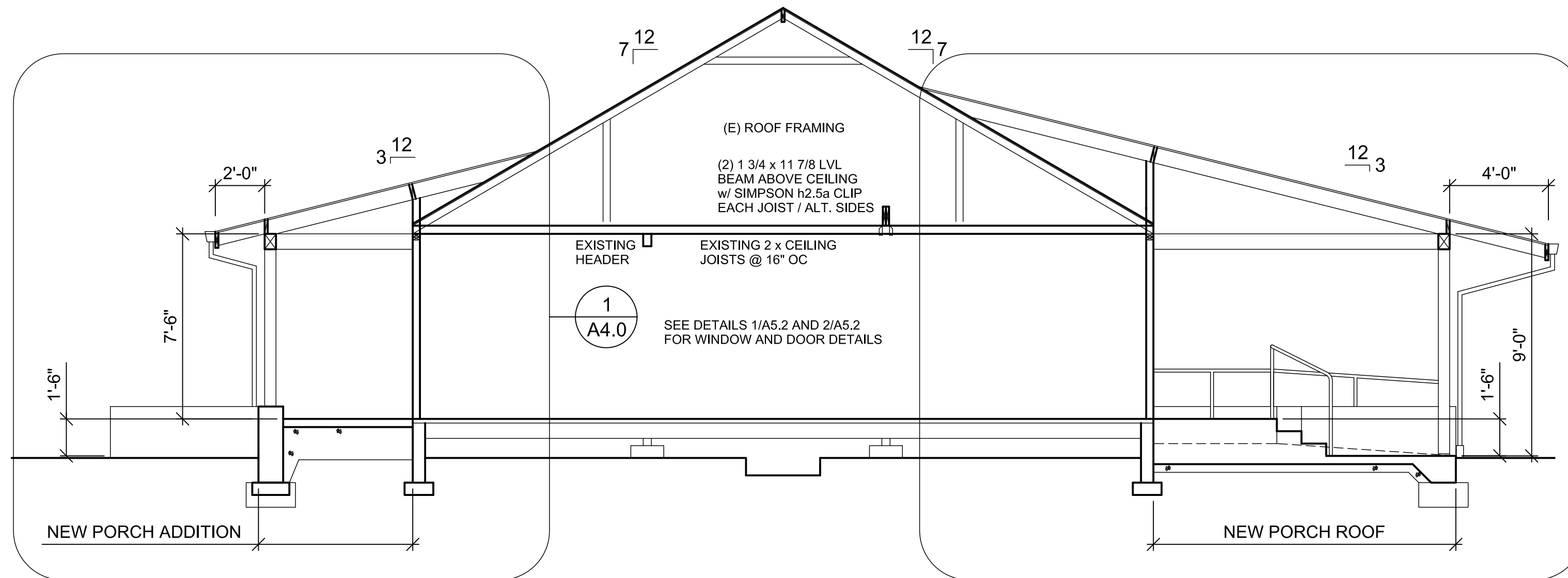
NO.	DESCRIPTION

A3.0

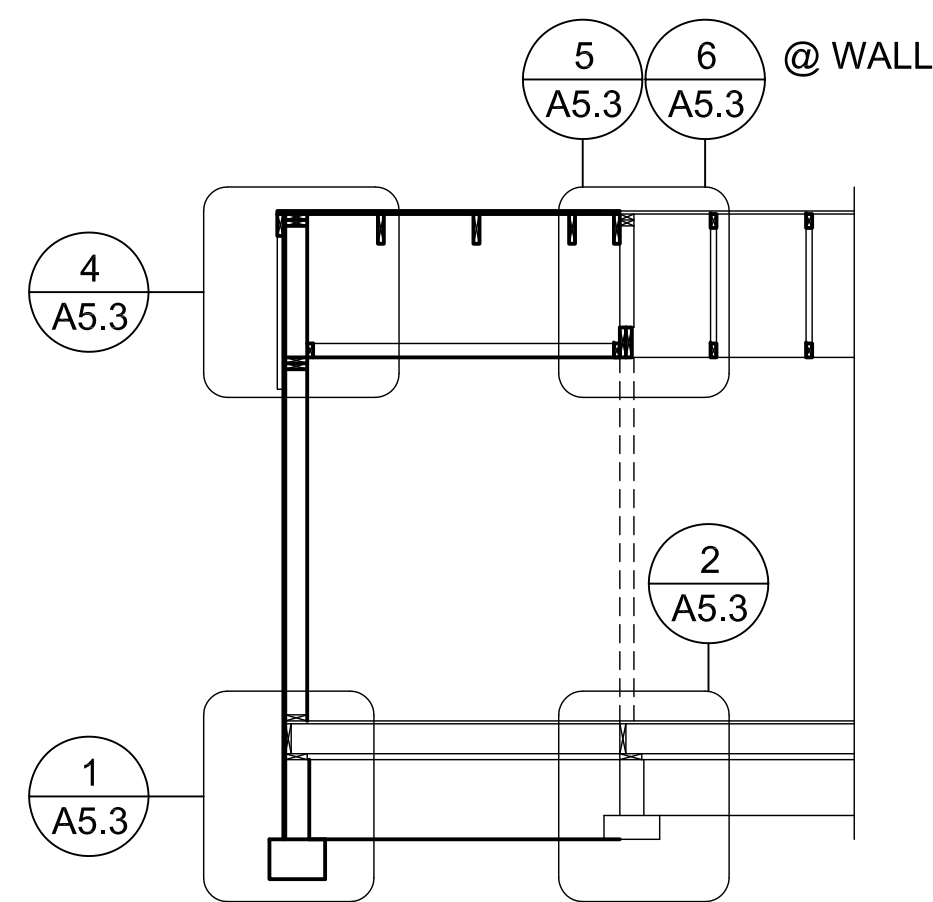
VERIFY ROOF SLOPE - MATCH EXISTING



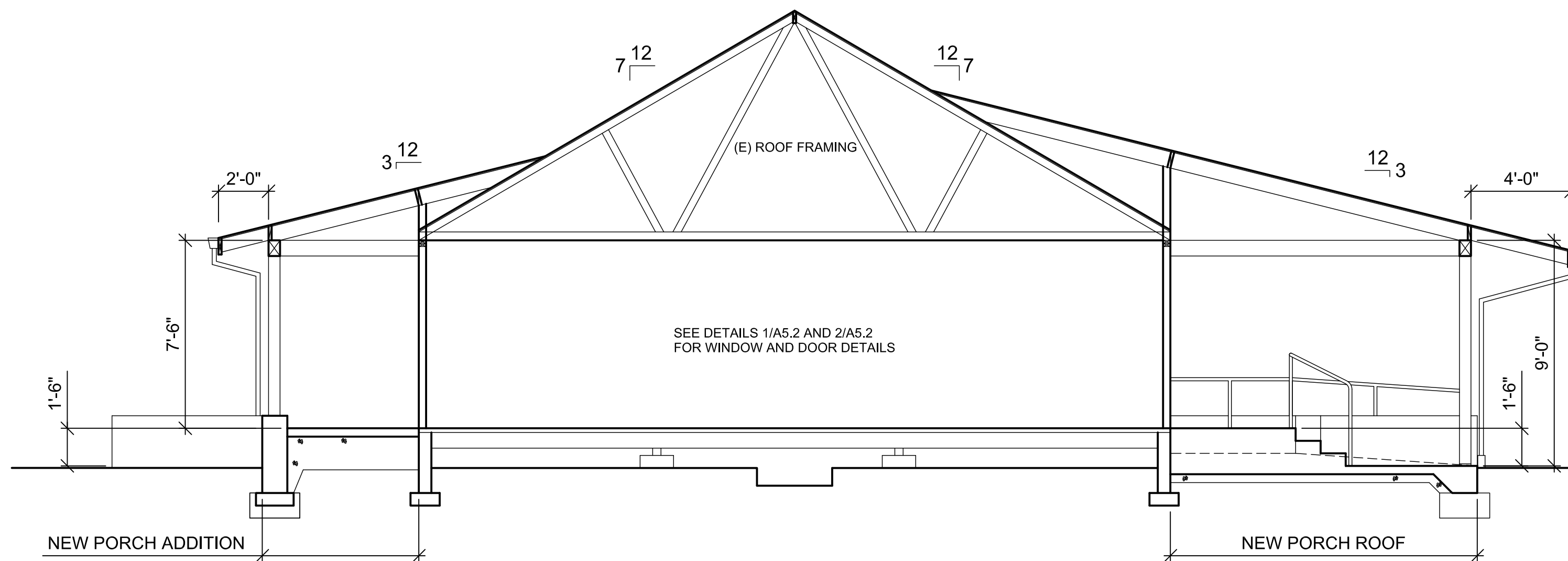
1 BUILDING SECTION @ ADDITION - ALTERNATE NO. B1
 SCALE: 1/8" = 1'-0"



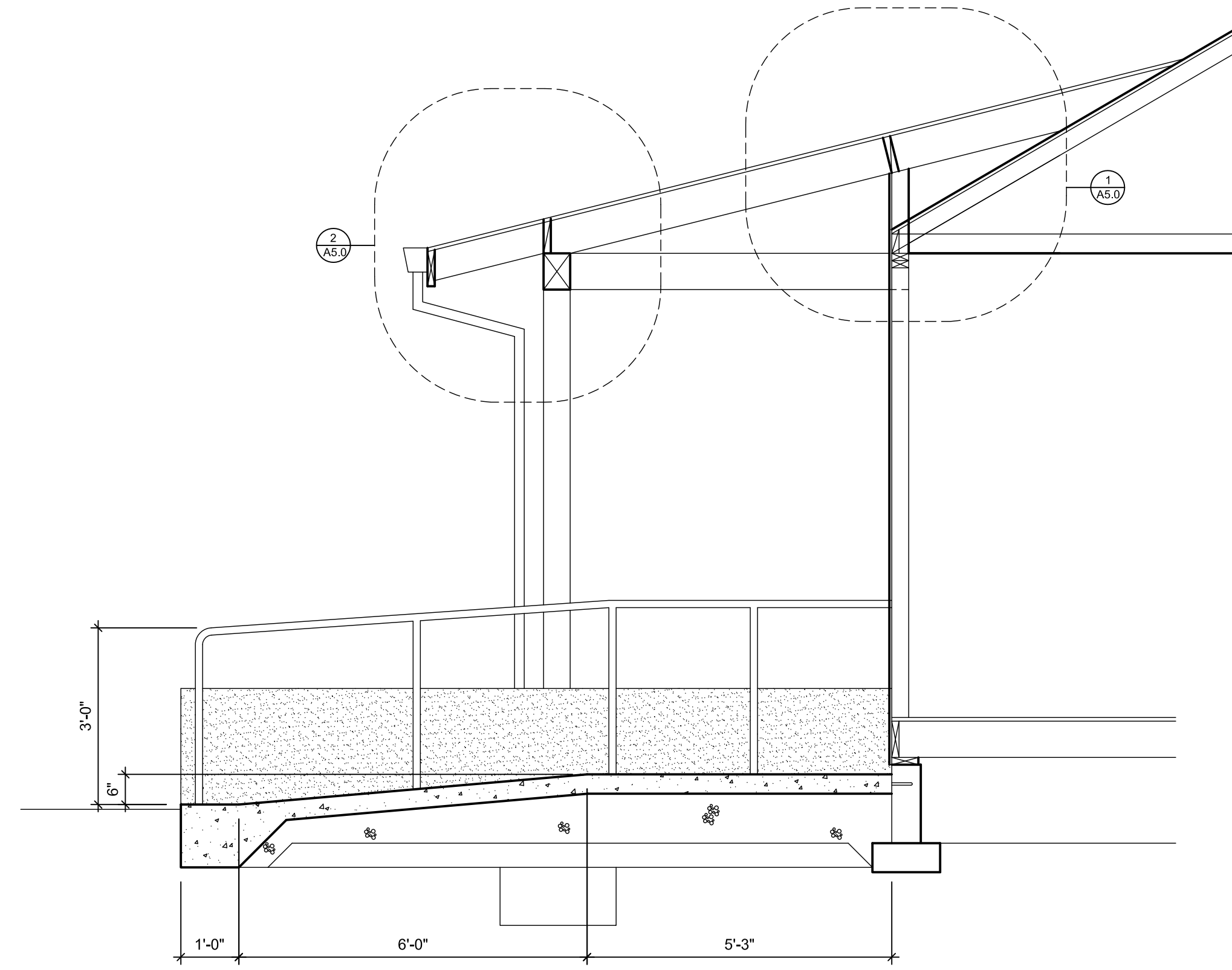
2 BUILDING SECTION
 SCALE: 1/8" = 1'-0"



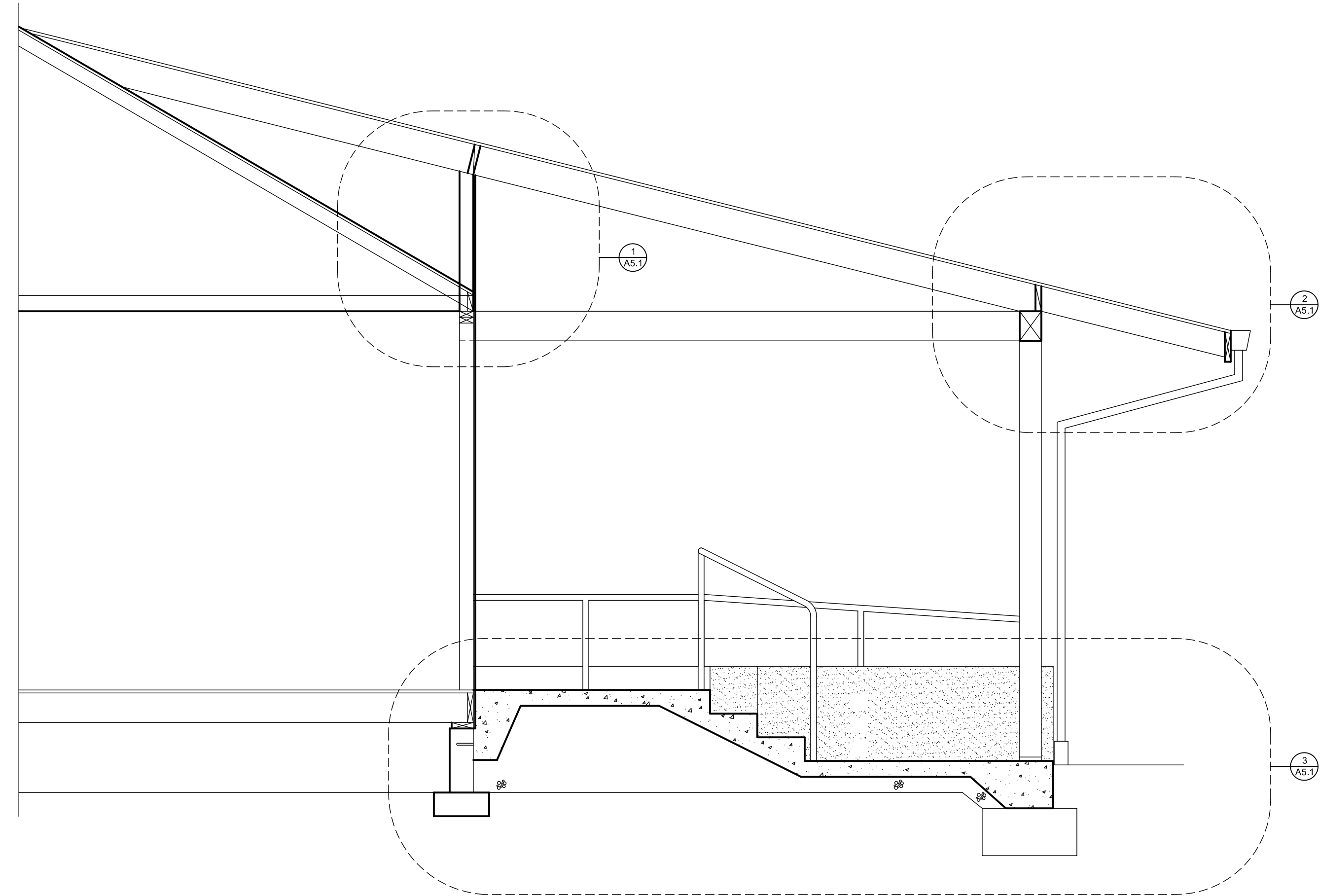
3 BUILDING SECTION @ OFFICE ADDITION - ALTERNATE NO. B1
 SCALE: 1/8" = 1'-0"



4 BUILDING SECTION
 SCALE: 1/8" = 1'-0"



1 SECTION @ LOWER RAMP TO FRONT PORCH
SCALE: 1/2" = 1'-0"



2 SECTION BACK PORCH ROOF
SCALE: 1/2" = 1'-0"

JTRA
ARCHITECTURE
+ design

J TIMOTHY RICHARD ARCHITECT
4543 NE 23RD AVENUE
PORTLAND - OREGON - 97211
c: 503-449-7326
e: tjrichard@houseoftyee.com



Clackamas County
Children's Commission

**HEAD
START**

16518 SE RIVER ROAD
MILWAUKIE - OREGON - 97267

**ESTACADA
HEAD START
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PROJECT**
264 N. BROADWAY
ESTACADA, OREGON

**CONTRACT
DOCUMENTS**

**PORCH
SECTIONS**

DATE:
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A4.0



HEAD START

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HEAD START
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PROJECT
 264 N. BROADWAY
 ESTACADA, OREGON

CONTRACT
DOCUMENTS

DETAILS

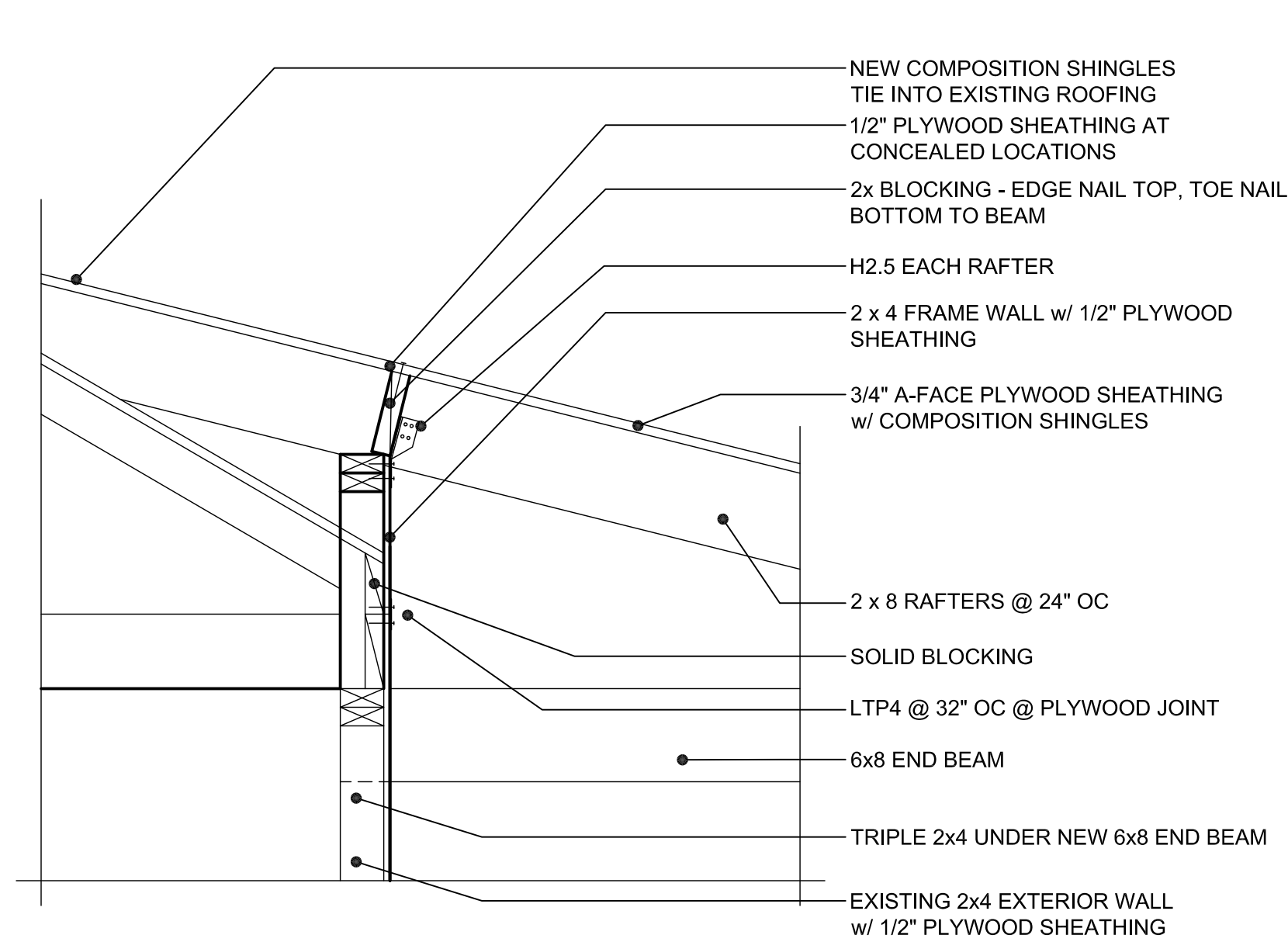
DATE:
10 MAY 2022

DRAWN BY:
JTR

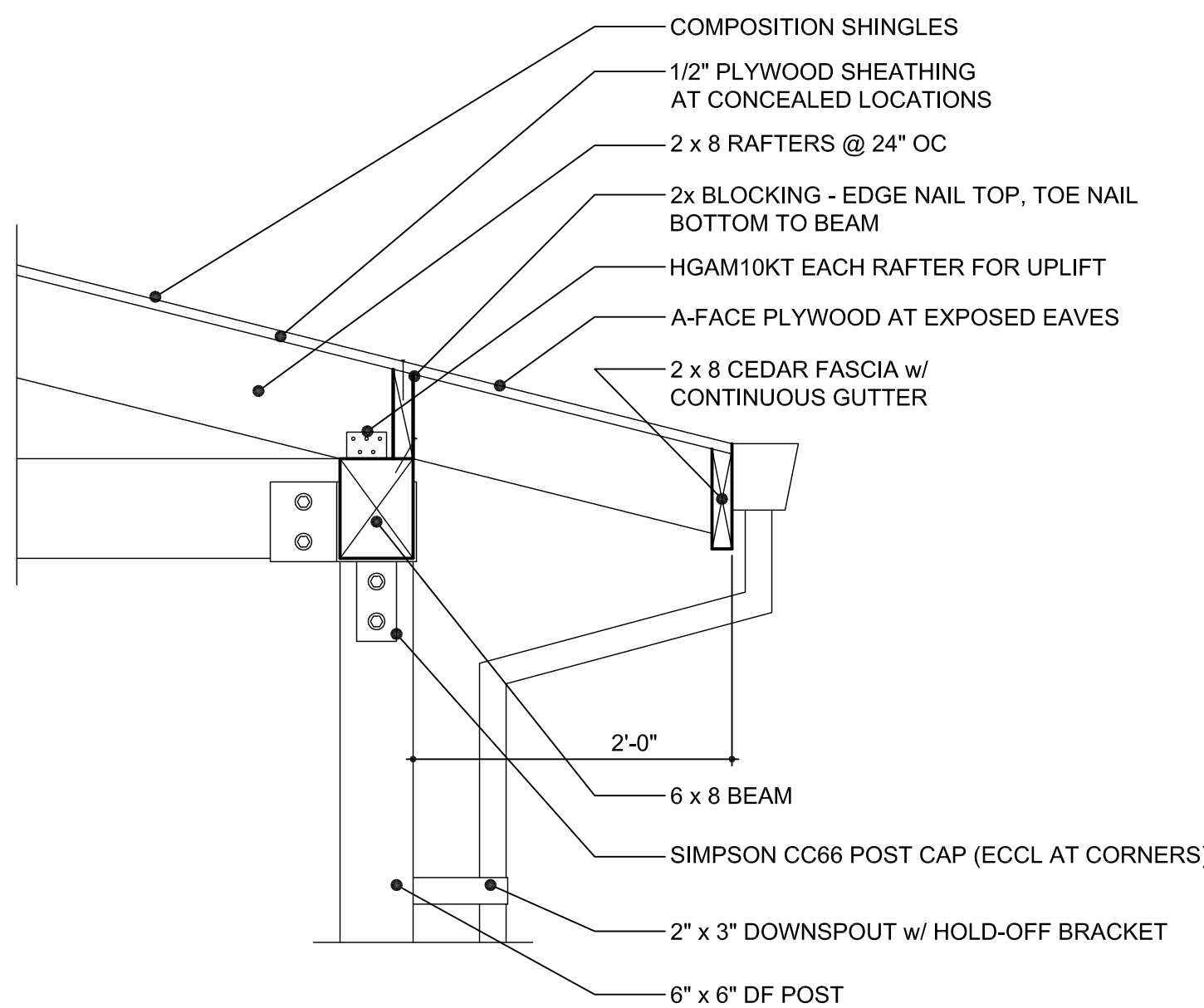
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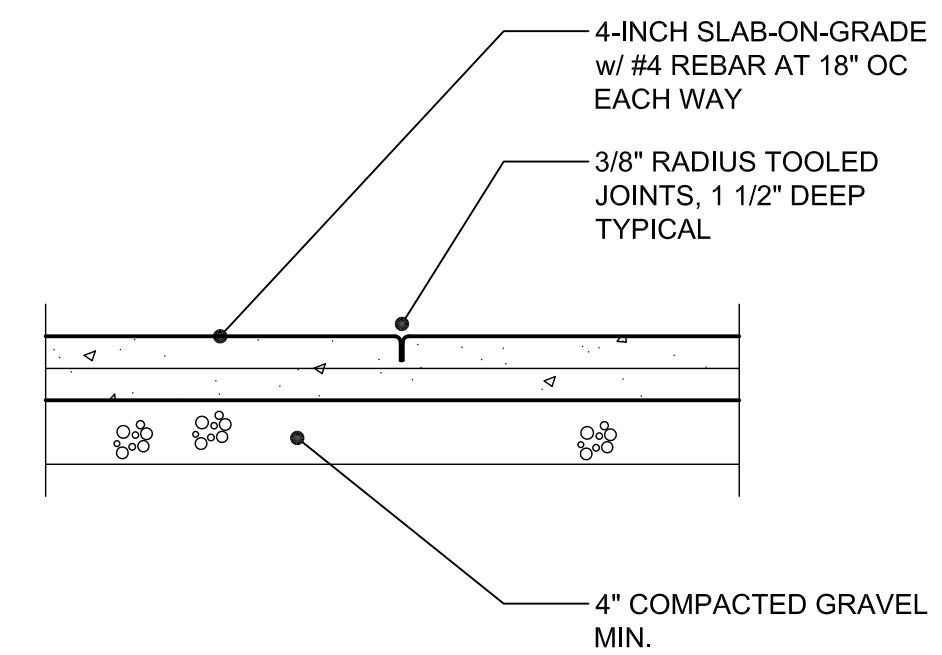
A5.0



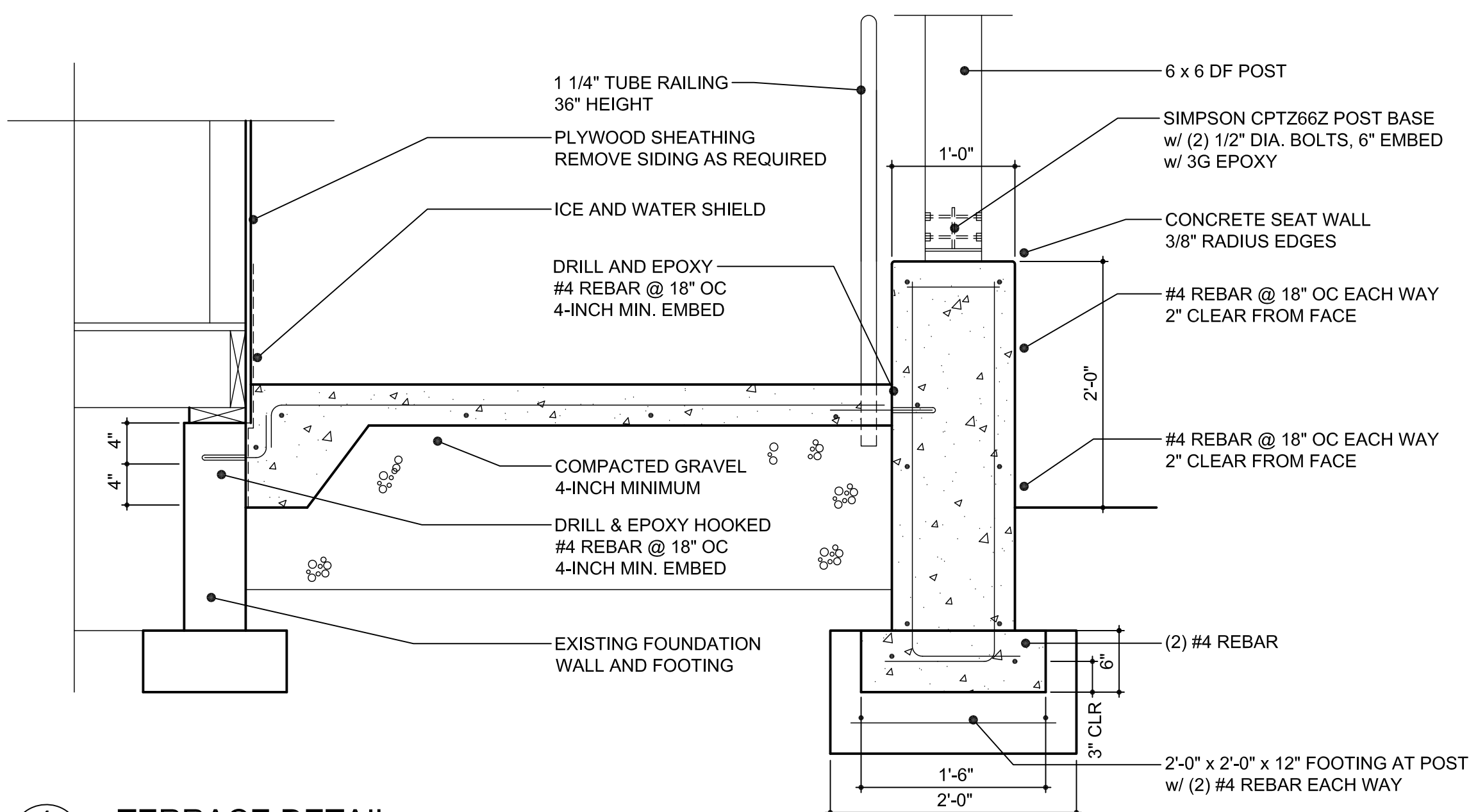
1
 A5.0
ROOF DETAIL
 SCALE: 1" = 1'-0"



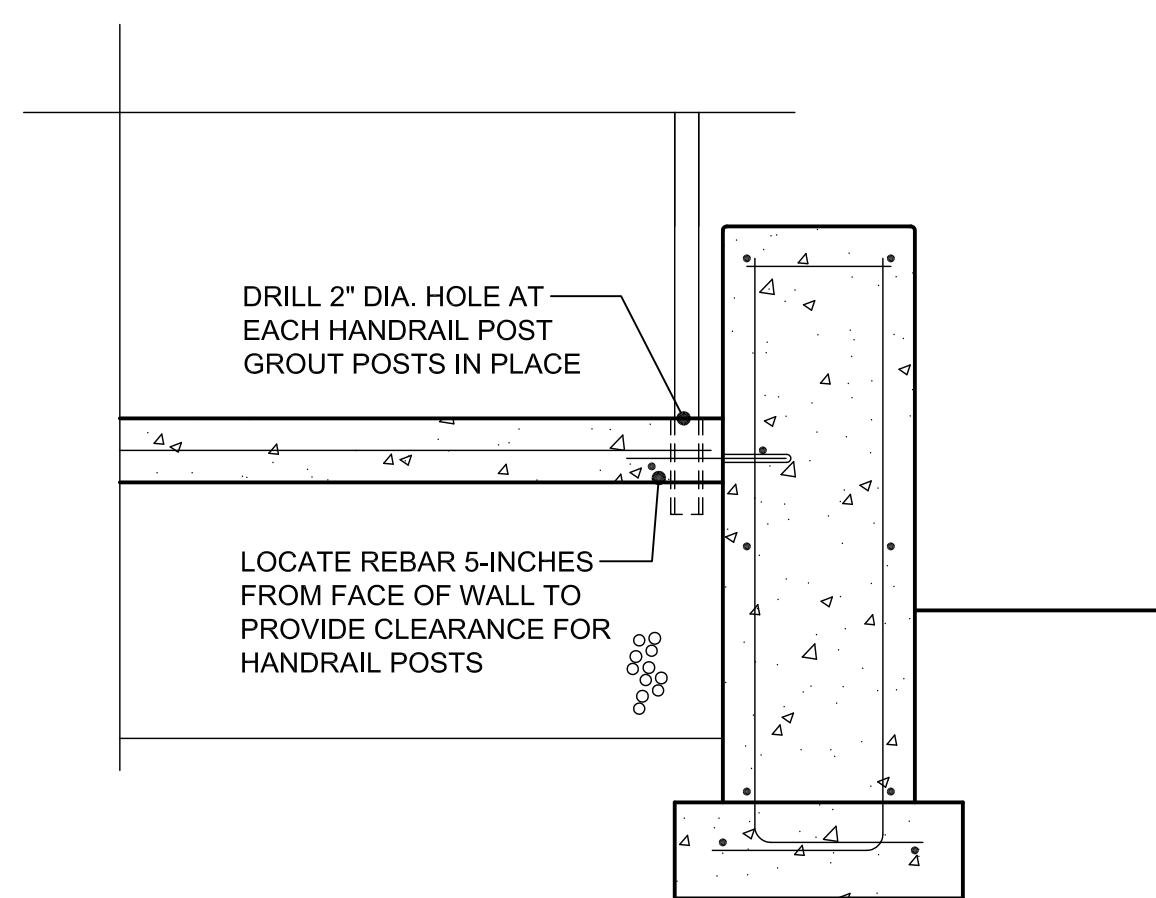
2
 A5.0
EAVE DETAIL
 SCALE: 1" = 1'-0"



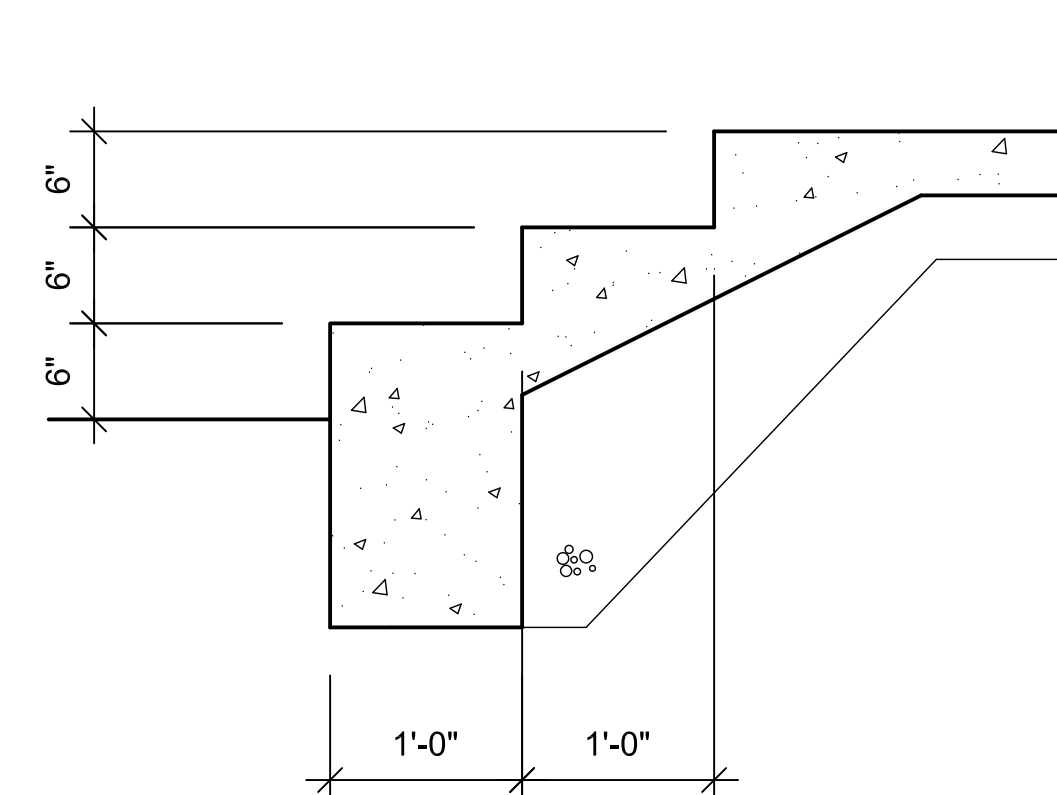
3
 A5.0
TOOLED JOINT DETAIL
 SCALE: 1" = 1'-0"



4
 A5.0
TERRACE DETAIL
 SCALE: 1" = 1'-0"



5
 A5.0
HANDRAIL EMBED DETAIL
 SCALE: 1" = 1'-0"



6
 A5.0
ENTRY STAIRS
 SCALE: 1" = 1'-0"



Clackamas County
 Children's Commission

**HEAD
 START**

16518 SE RIVER ROAD
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**ESTACADA
 HEAD START
 IMPROVEMENTS
 PROJECT**
 264 N. BROADWAY
 ESTACADA, OREGON

**CONTRACT
 DOCUMENTS**

DETAILS

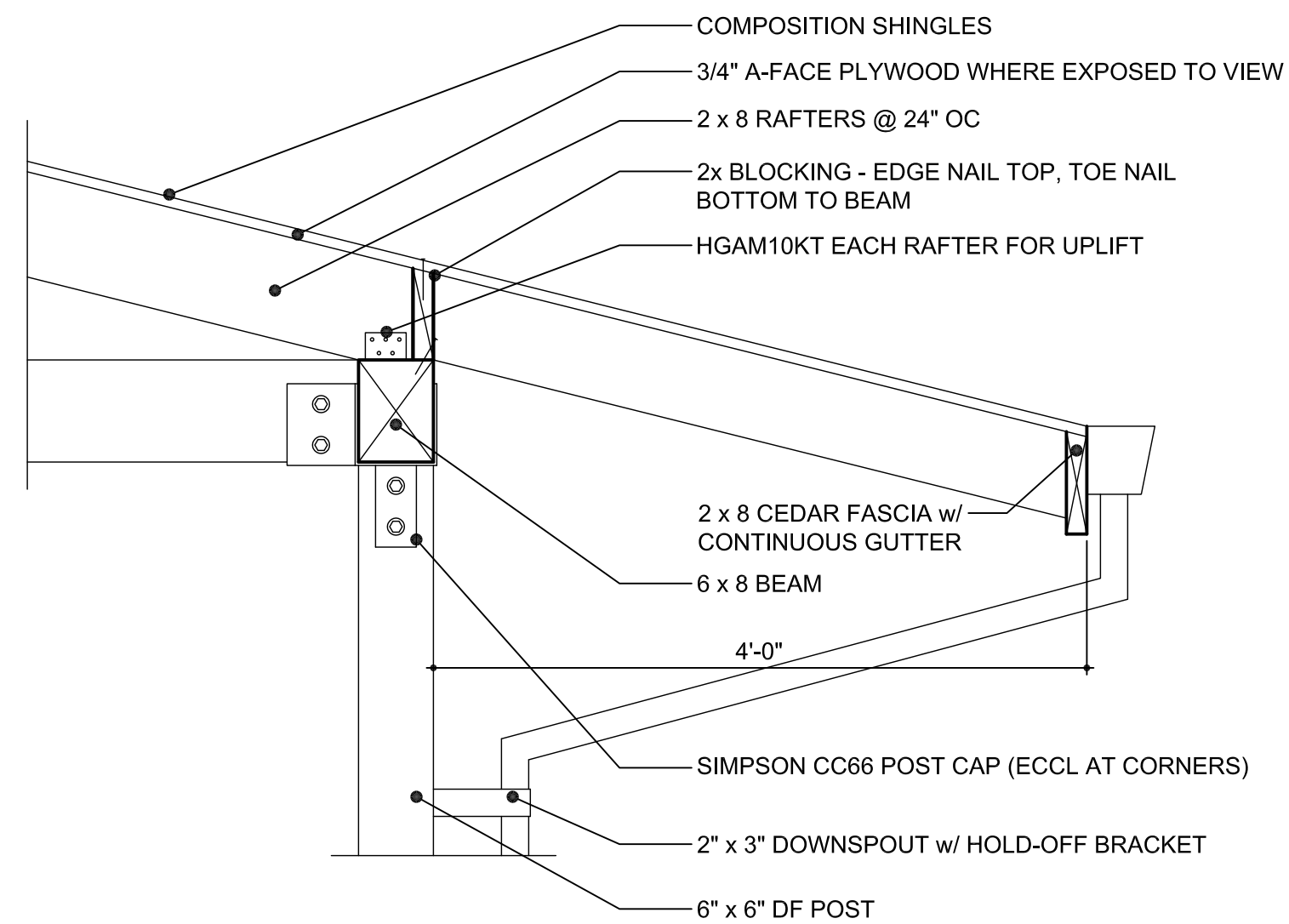
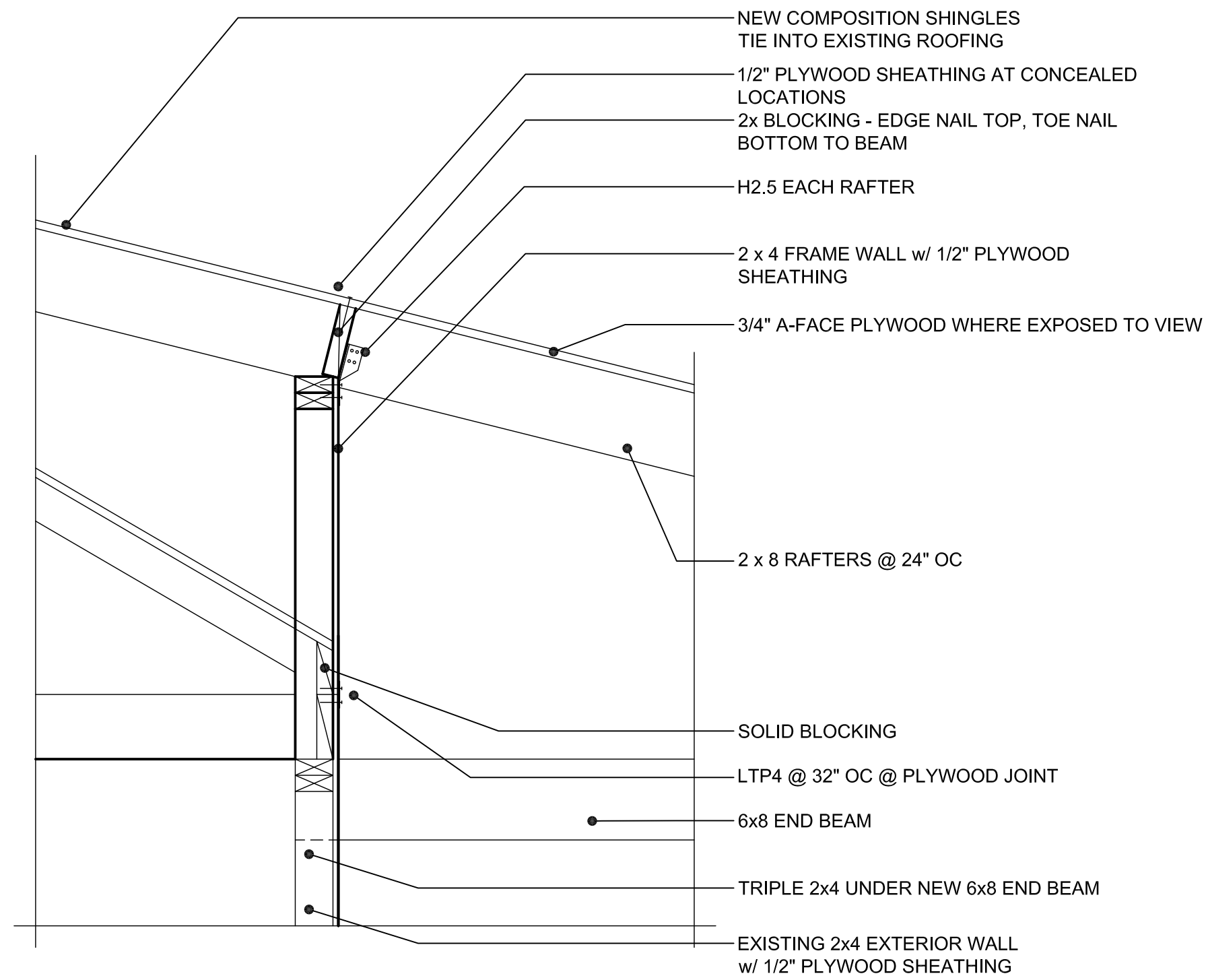
DATE:
10 MAY 2022

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RC

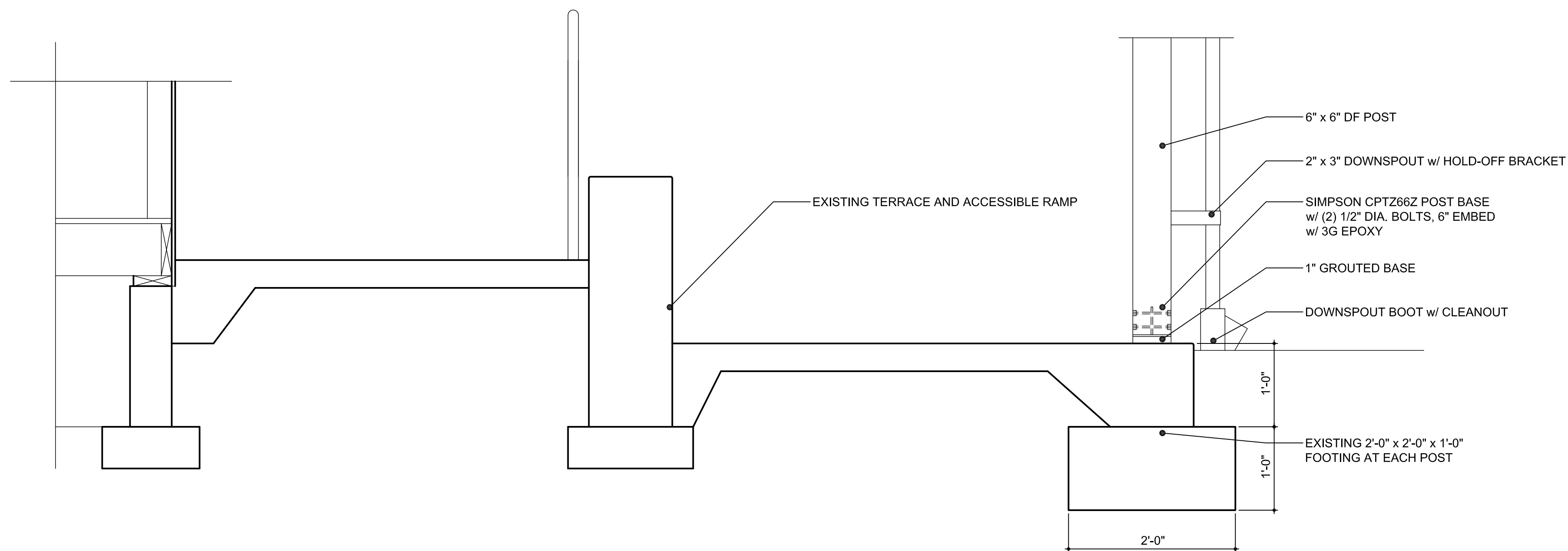
REVISIONS

A5.1

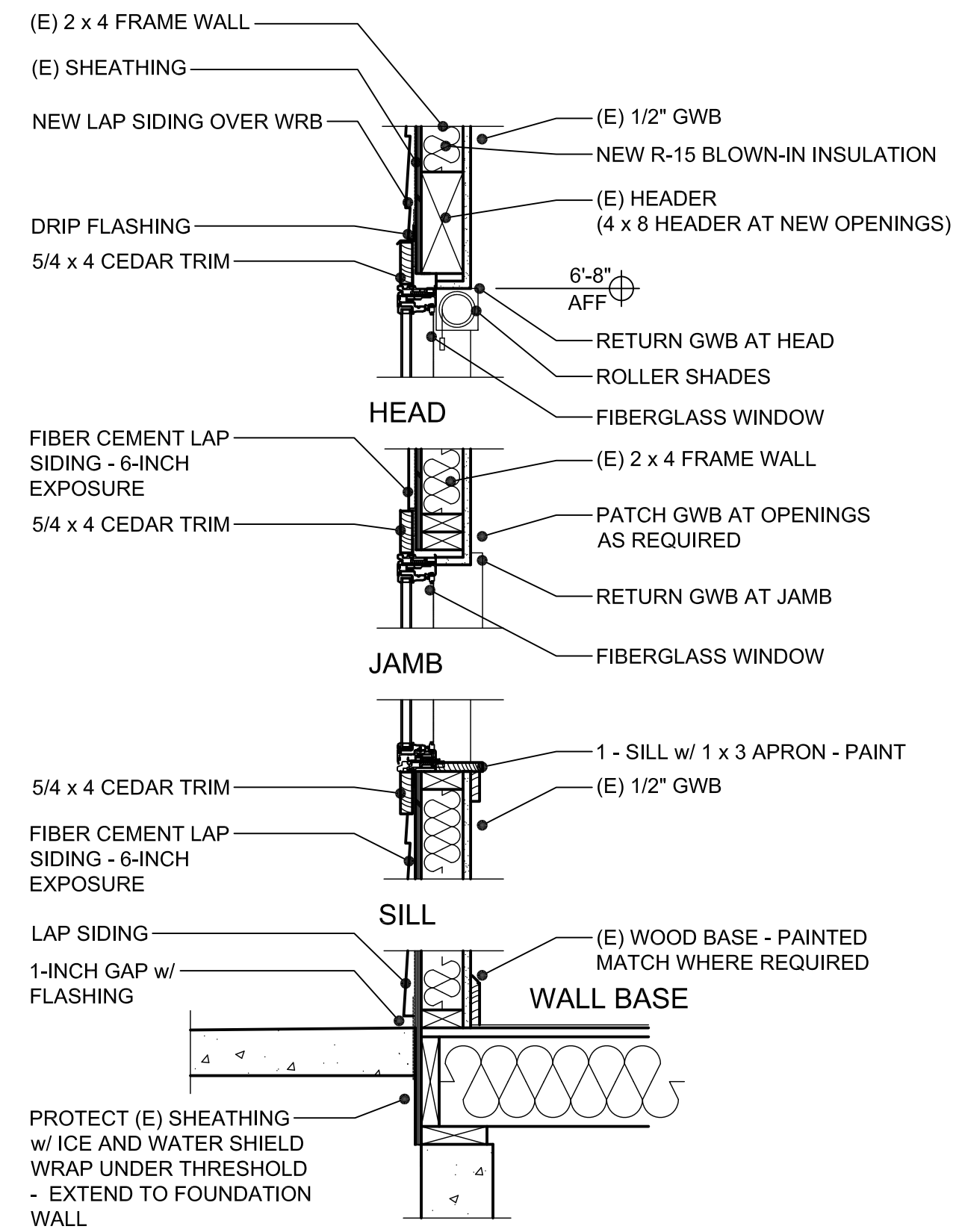


1
 A5.1 **ROOF DETAIL**
 SCALE: 1" = 1'-0"

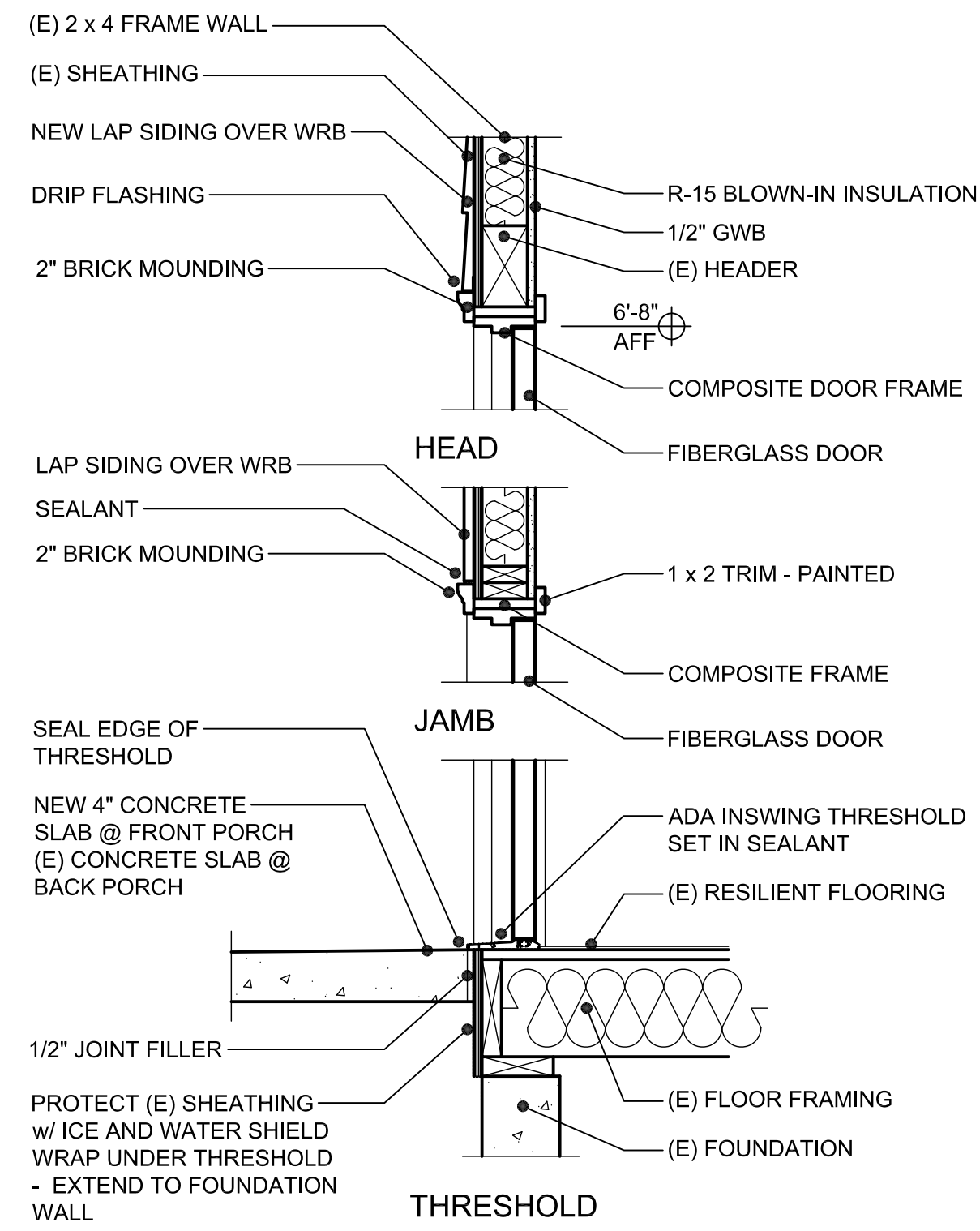
2
 A5.1 **EAVE DETAIL**
 SCALE: 1" = 1'-0"



3
 A5.1 **TERRACE DETAIL**
 SCALE: 1" = 1'-0"



1 WALL SECTION AT WINDOW
SCALE: 1" = 1'-0"



2 WALL SECTION AT EXTERIOR DOOR
SCALE: 1" = 1'-0"

3 NOT USED
SCALE: 1" = 1'-0"

4 NOT USED
SCALE: 1" = 1'-0"

9 NOT USED
SCALE: 1" = 1'-0"

10 NOT USED
SCALE: 1" = 1'-0"

11 NOT USED
SCALE: 1" = 1'-0"

12 NOT USED
SCALE: 1" = 1'-0"



**HEAD
START**

**ESTACADA
HEAD START
IMPROVEMENTS
PROJECT**
264 N. BROADWAY
ESTACADA, OREGON

**CONTRACT
DOCUMENTS**

DETAILS

DATE:
10 MAY 2022

DRAWN BY:
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**HEAD
START**

**ESTACADA
HEAD START
IMPROVEMENTS
PROJECT**
264 N. BROADWAY
ESTACADA, OREGON

**CONTRACT
DOCUMENTS**

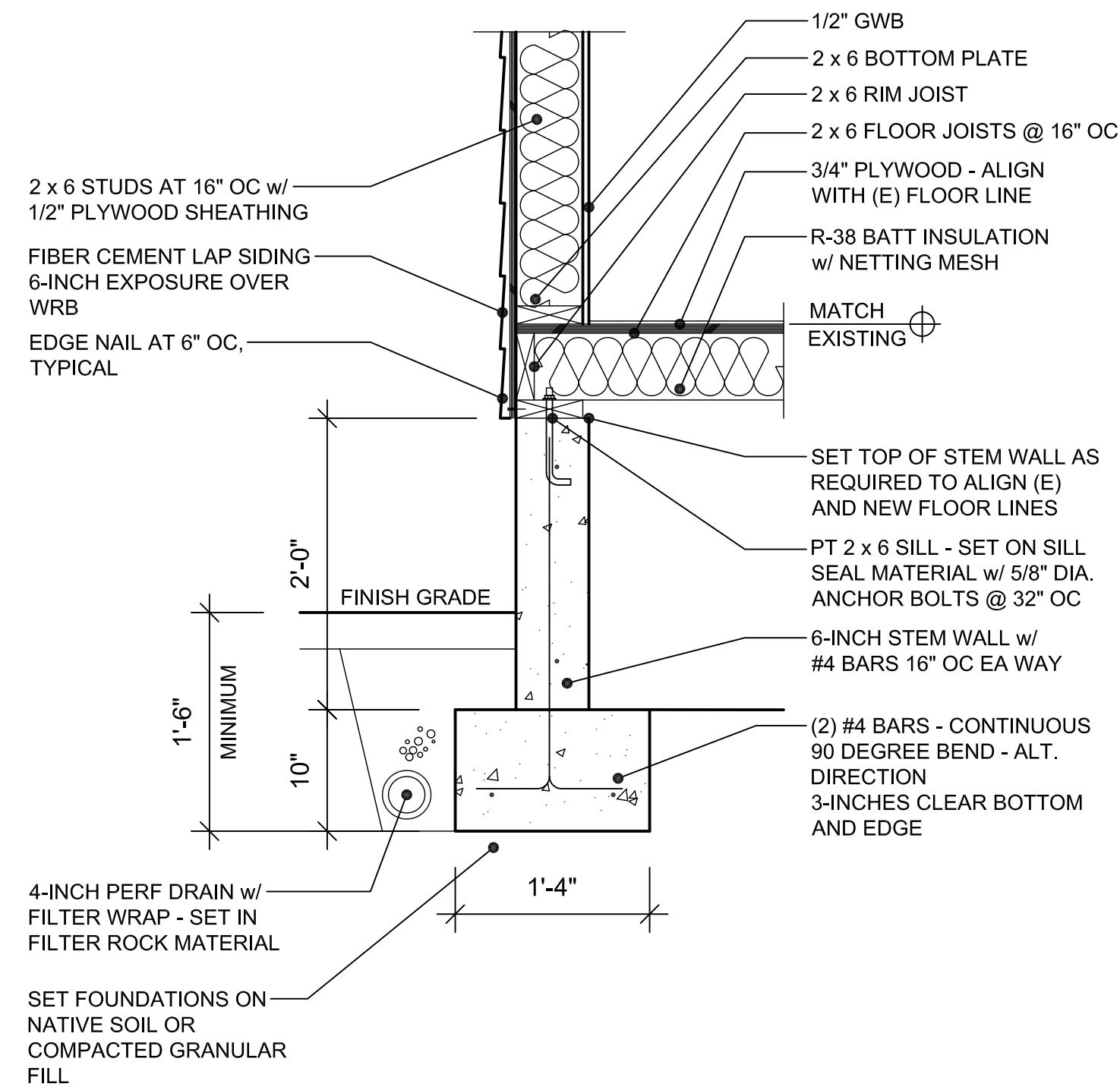
**ALTERNATE B1
DETAILS**

DATE:
10 MAY 2022

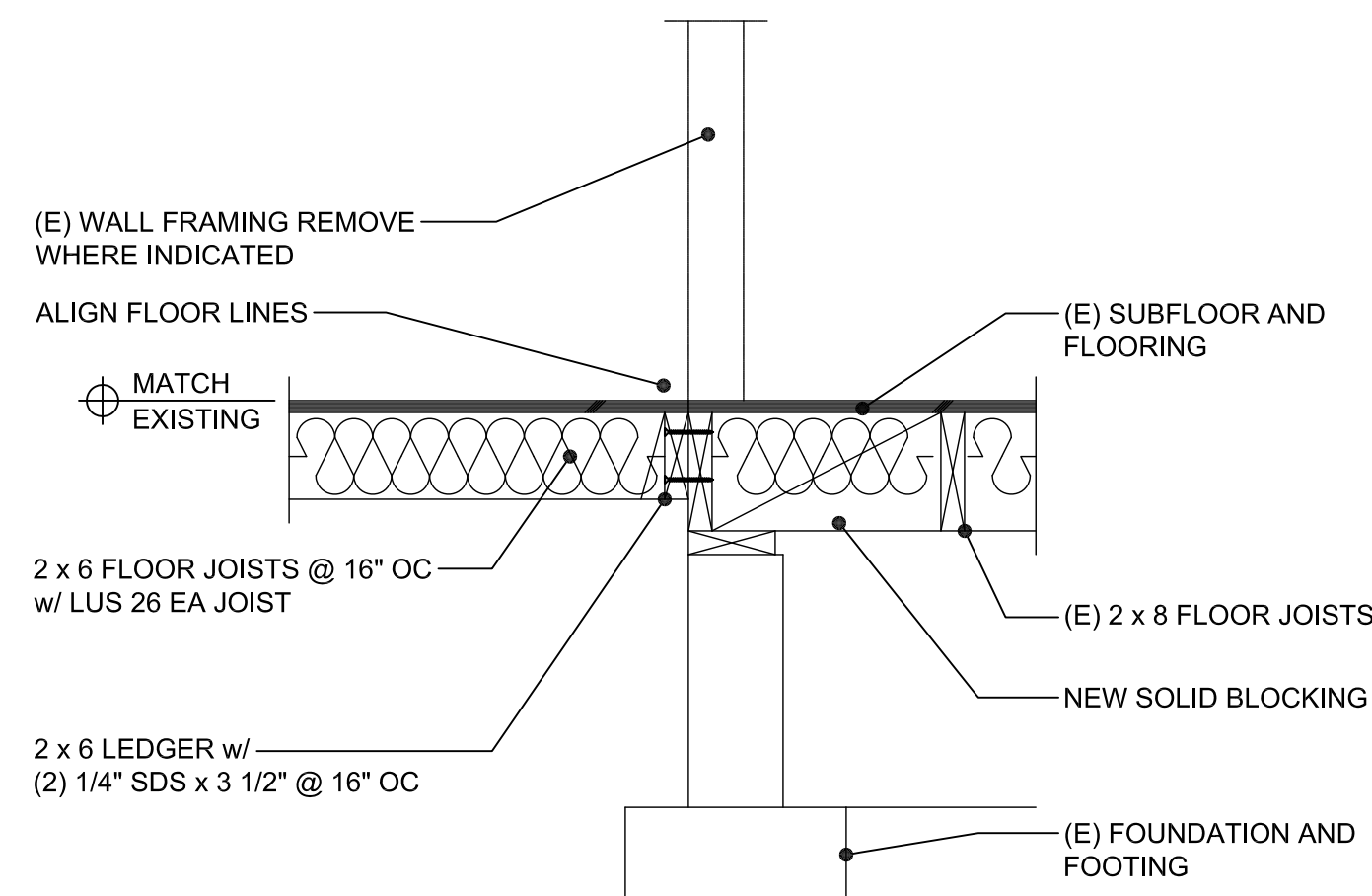
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JTR

CHECKED BY:
RC

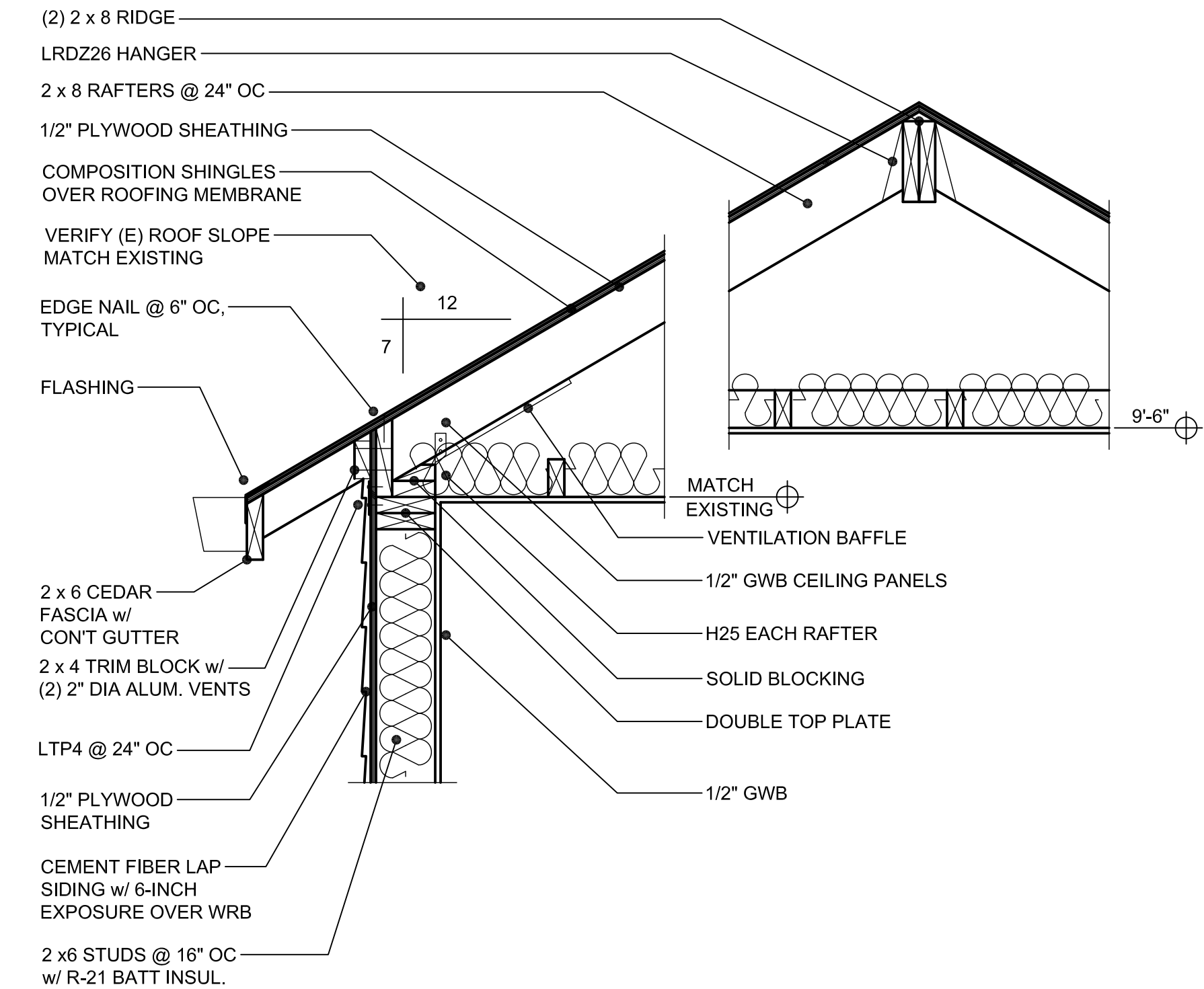
REVISIONS



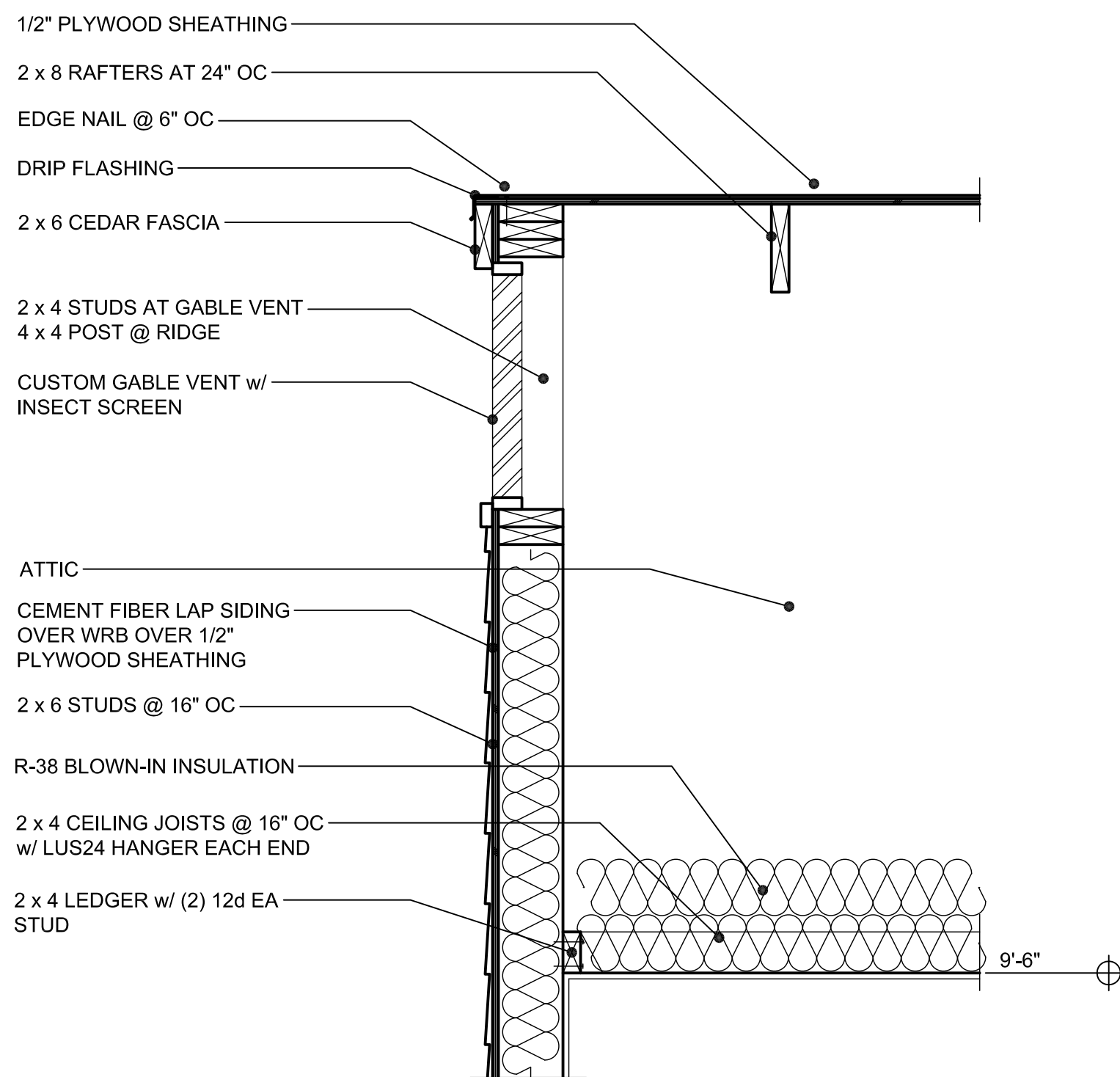
1 FOUNDATION @ ADDITION - ALTERNATE B1
A5.3 SCALE: 1" = 1'-0"



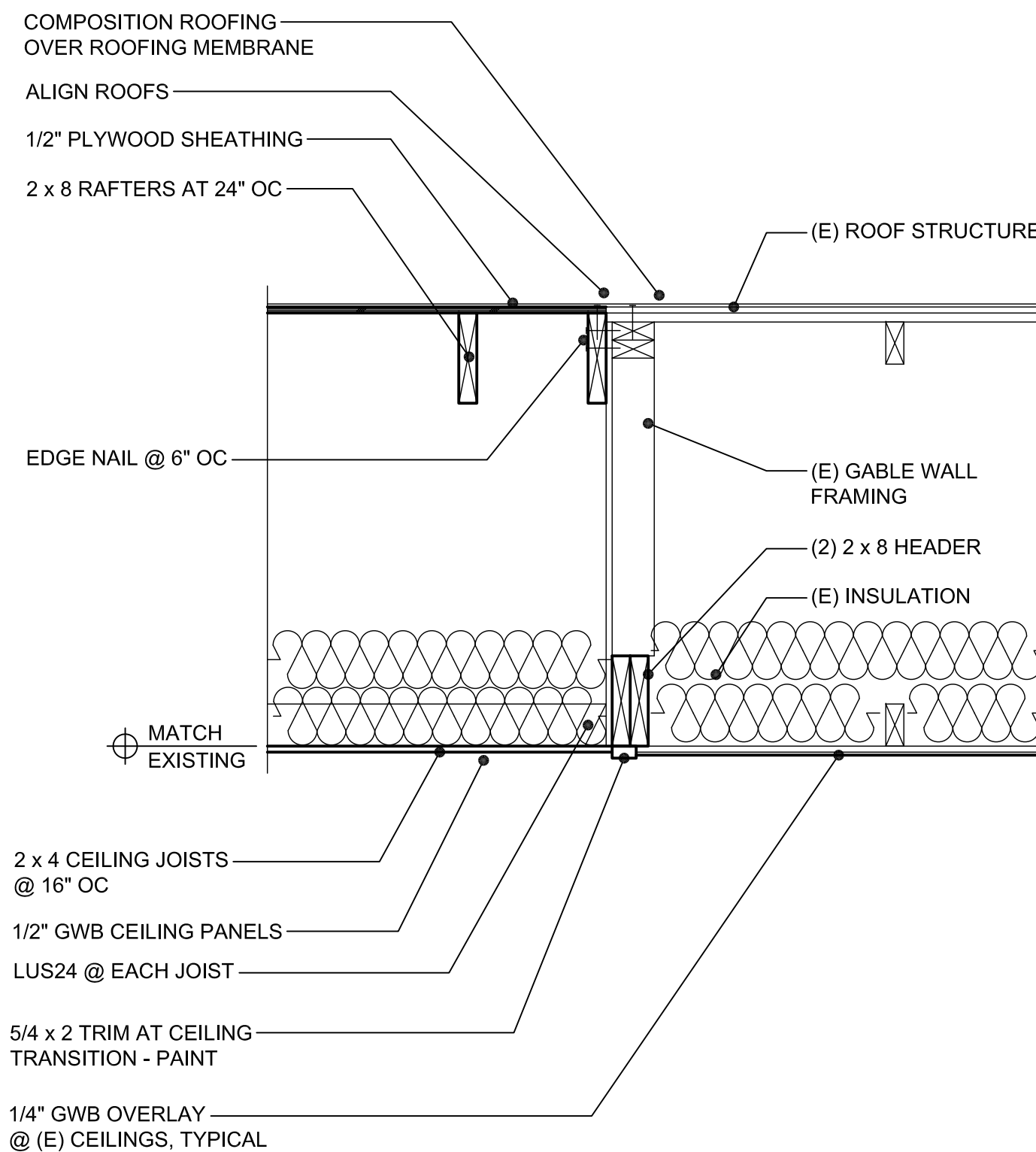
2 FOUNDATION @ ADDITION - ALTERNATE B1
A5.3 SCALE: 1" = 1'-0"



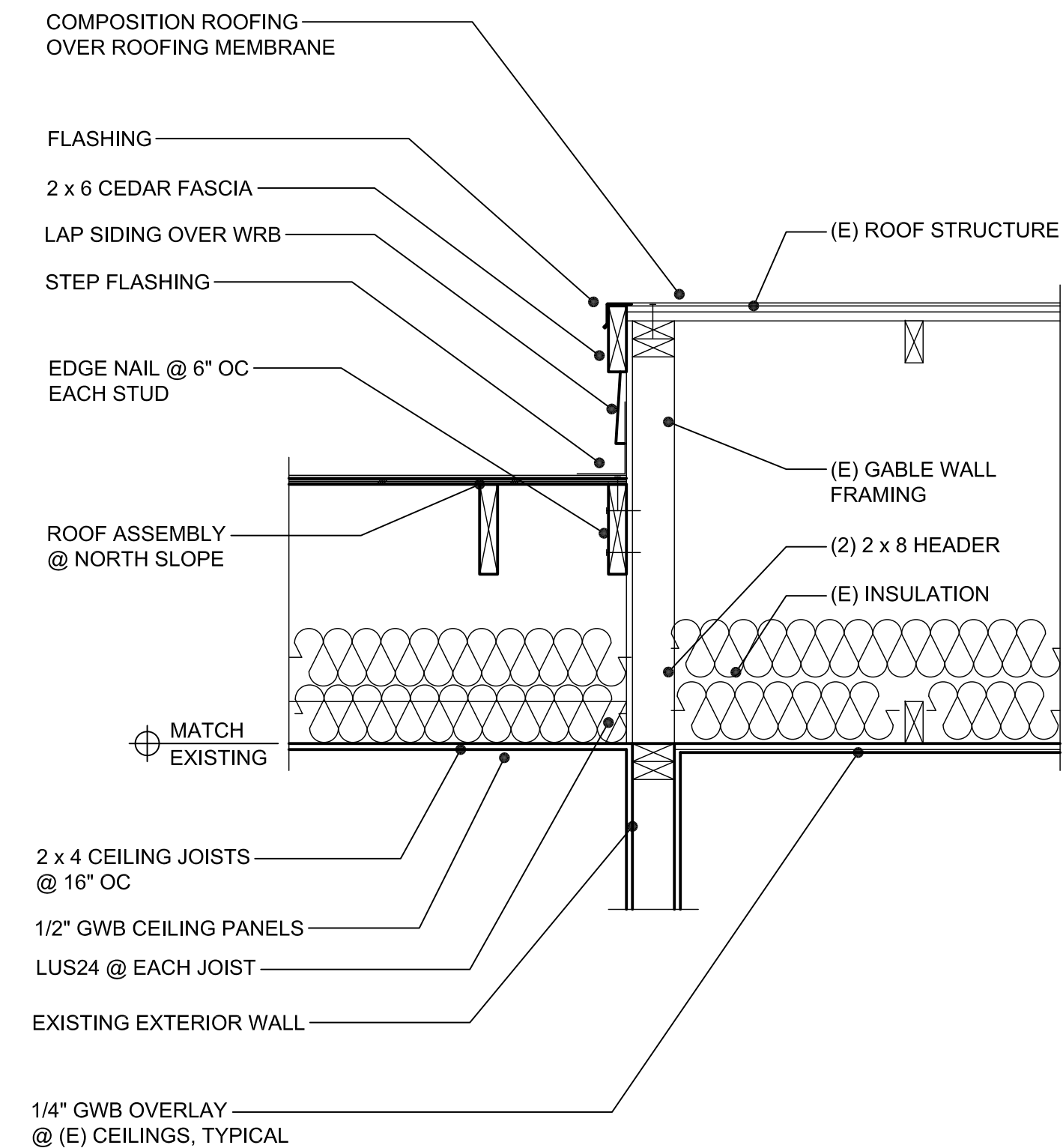
3 EAVE AND RIDGE DETAIL - ALTERNATE B1
A5.3 SCALE: 1" = 1'-0"



4 GABLE END DETAIL - ALTERNATE B1
A5.3 SCALE: 1" = 1'-0"



5 ROOF TIE-IN DETAIL @ OFFICE - ALTERNATE B1
A5.3 SCALE: 1" = 1'-0"



6 ROOF TIE-IN DETAIL @ LAUNDRY - ALTERNATE B1
A5.3 SCALE: 1" = 1'-0"



HEAD START

ESTACADA HEAD START IMPROVEMENTS PROJECT
 264 N. BROADWAY
 ESTACADA, OREGON

CONTRACT DOCUMENTS

EXISTING FLOOR PLAN / DEMOLITION PLAN

PLUMBING

DATE:
10 MAY 2022

DRAWN BY:
NLB

CHECKED BY:
LTB

REVISIONS

FIXTURE SCHEDULE						
FIXTURE NO.	FIXTURE	WASTE PIPE	VENT PIPE	CW	HW	COMMENTS
WC-1	WATER CLOSET, FLUSH TANK, FLOOR MOUNTED	3"	2"	1/2"		AMERICAN STANDARD BABY DEVORO, 10-1/4" SEAT HEIGHT CHILDREN'S TOILET, FLUSH TANK, WITH OPEN FRONT, COVER-LESS SEAT
CW-1	CLOTHES WASHER VALVE BOX.	2"	1-1/2"	1/2"	1/2"	OATEY WASHING MACHINE VALVE BOX, 1/4 TURN HOT AND COLD WATER VALVES, 2" DRAIN HUB.

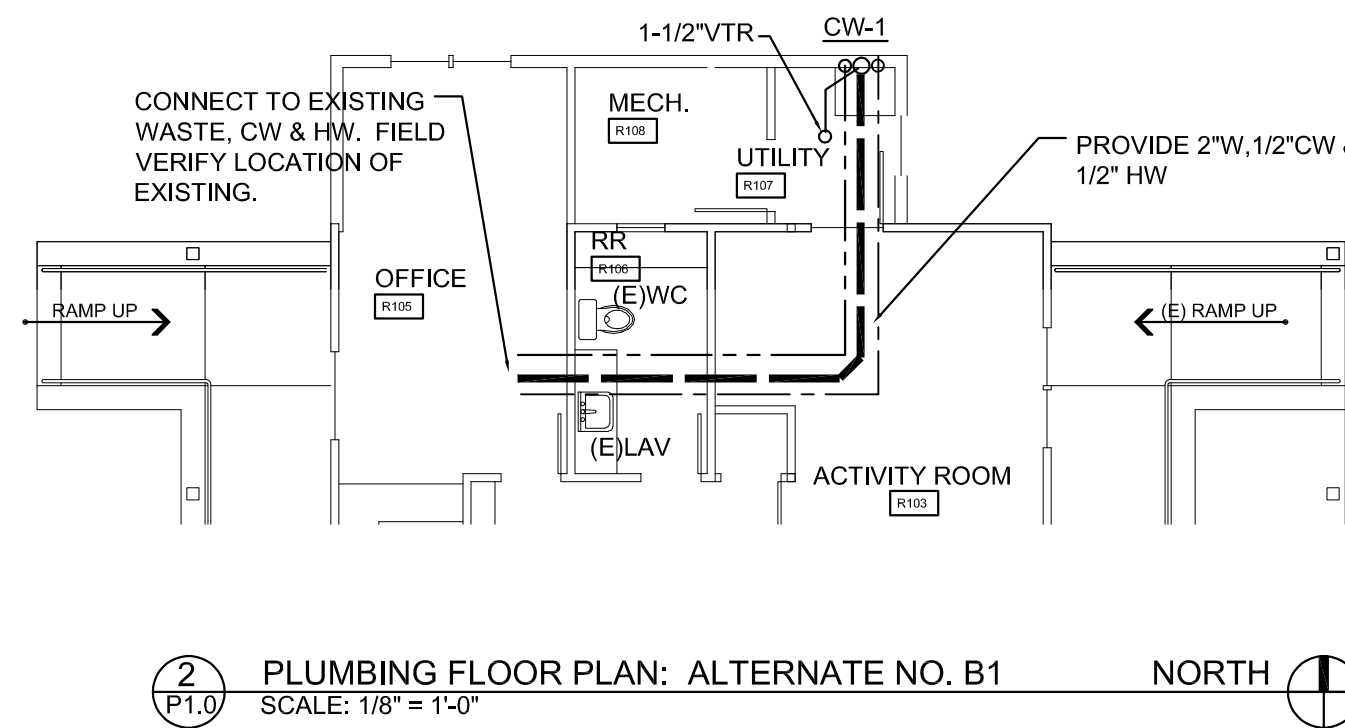
MATERIALS	
SERVICE	MATERIAL
DOMESTIC COLD AND HOT WATER	HARD DRAWN COPPER TUBE, ASTM B88
SANITARY WASTE	HUBLESS CAST IRON SOIL PIPE, CISPI 301
SANITARY VENT	HUBLESS CAST IRON SOIL PIPE, CISPI 301

PLUMBING LEGEND

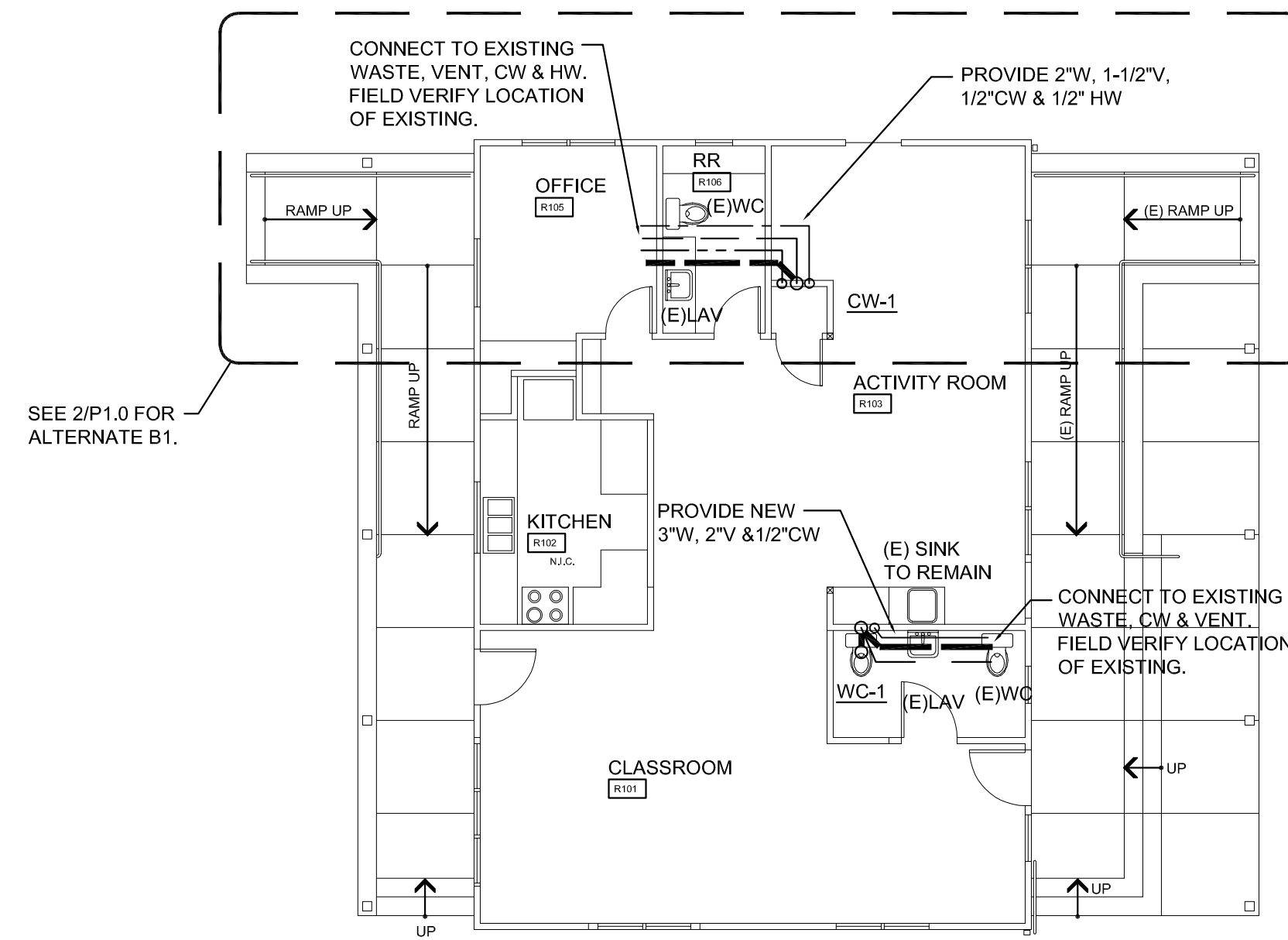
	CW	COLD WATER
	FS	FIRE SERVICE
		PIPE BELOW FLOOR OR GRADE
	HW	HOT WATER, 120°F
	HWR	RECIRCULATED HOT WATER
	V	VENT
	G	NATURAL GAS
	W	SANITARY WASTE BELOW FLOOR OR GRADE
	SD	STORM DRAIN BELOW FLOOR OR GRADE
	CTG	CLEANOUT TO GRADE
	FCO	FLOOR CLEANOUT
	WCO, CO	WALL CLEANOUT, CLEANOUT
		SHUTOFF VALVE, BALL VALVE
		CHECK VALVE, STRAINER
		BALANCING VALVE
		PIPE UP
		PIPE DOWN
		CAP OR PLUG

GENERAL PLUMBING NOTES

- OBTAIN EXACT LOCATIONS AND MOUNTING HEIGHTS OF PLUMBING FIXTURES FROM ARCHITECTURAL DRAWINGS.
- SEE ARCHITECTURAL DRAWINGS FOR A.D.A.-COMPLIANT FIXTURE LOCATIONS AND MOUNTING HEIGHTS.
- INSTALL ALL PLUMBING WORK SO AS TO AVOID INTERFERENCE WITH ELECTRICAL AND MECHANICAL EQUIPMENT AND STRUCTURAL FRAMING.
- INSTALL ALL CLEANOUTS WHERE READILY ACCESSIBLE AND AS PER SECTIONS 707 AND 719 OF THE UPC. COORDINATE ALL CLEANOUT LOCATIONS WITH EQUIPMENT, CABINETS, ETC., AND THE ARCHITECT PRIOR TO INSTALLATION.
- VALVES, UNIONS, ETC. SHALL BE SAME SIZE AS LINE SIZE UNLESS OTHERWISE INDICATED ON DRAWINGS.
- PROVIDE UNIONS AFTER EACH SCREW TYPE VALVE AND PRIOR TO EQUIPMENT CONNECTIONS.
- WASTE PIPING SHALL SLOPE AT 2% UNLESS OTHERWISE INDICATED.
- ALL WORK AND MATERIALS SHALL BE IN FULL ACCORDANCE WITH THE RULES AND REGULATIONS OF STATE AND LOCAL LAWS AND ORDINANCES. OBTAIN AND PAY FOR ALL REQUIRED PERMITS, LICENSES, CODE INSPECTIONS, ETC.
- ROUTE ALL PIPING ON THE WARM SIDE OF BUILDING ENVELOPE INSULATION.
- COORDINATE REQUIREMENTS FOR POINTS OF CONNECTION WITH THE GENERAL CONTRACTOR AND OTHER TRADES PRIOR TO BID.
- PRIME ALL FLOOR DRAINS, DECK DRAINS, TRENCH DRAINS, FLOOR SINKS AND ALL OTHER SIMILAR FIXTURES.
- COORDINATE THE LOCATION OF ALL CEILING ACCESS PANELS WITH ARCHITECTURAL REFLECTED CEILING PLANS, LIGHTING LAYOUTS, AND MECHANICAL PLANS.
- PIPES DISCHARGING INTO FLOOR SINKS AND/OR FLOOR DRAINS SHALL HAVE AN AIR GAP AS REQUIRED BY CODE AND ARRANGED TO PERMIT EASY REMOVAL OF FLOOR SINK BASKET STRAINERS.
- BEFORE FABRICATION OR INSTALLATION, VERIFY EXACT LOCATIONS OF MECHANICAL EQUIPMENT AND OTHER EQUIPMENT PROVIDED UNDER OTHER SECTIONS OF THE SPECIFICATION. COORDINATE EXACT ROUGH-IN LOCATIONS AND REQUIREMENTS IN THE FIELD.
- INSTALL VALVES, TRAP PRIMERS, WATER HAMMER ARRESTORS, AND OTHER EQUIPMENT SHOWN IN WALLS OR ABOVE NON-ACCESSIBLE CEILINGS BEHIND AN ACCESS PANEL.
- PROJECT CLOSE OUT DOCUMENTATION AND USER TRAINING SHALL BE PROVIDED FOR ALL MECHANICAL COMPONENTS. CLOSE OUT DOCUMENTATION SHALL INCLUDE RECORD DOCUMENTS AND O&M MANUALS.



2 PLUMBING FLOOR PLAN: ALTERNATE NO. B1
 SCALE: 1/8" = 1'-0"
 NORTH



1 PLUMBING FLOOR PLAN
 SCALE: 1/8" = 1'-0"
 NORTH



HEAD START

ESTACADA HEAD START IMPROVEMENTS PROJECT
 264 N. BROADWAY
 ESTACADA, OREGON

CONTRACT DOCUMENTS

ABBREVIATIONS, LEGENDS AND SCHEDULES

MECHANICAL

DATE:
10 MAY 2022

DRAWN BY:
XXX

CHECKED BY:
XXX

REVISIONS

NO.	DESCRIPTION

M1.0

EXHAUST FANS											
EQUIPMENT TAG	AREA SERVED	TYPE	CONTROL	BASIS OF DESIGN		AIRFLOW	ESP	ELECTRICAL		WEIGHT	NOTES
				MAKE	MODEL			VOLTAGE	AMPS		
				CFM	INWC	V	A	LBS			
<u>CEF-1</u>	KIDS RESTROOM	CENTRIFUGAL CEILING EXHAUST FAN	ON WITH LIGHTS	GREENHECK	CSP-190	140	0.375	115	1.1	16	1, 2
<u>CEF-2</u>	STAFF RESTROOM	CENTRIFUGAL CEILING EXHAUST FAN	ON WITH LIGHTS	GREENHECK	CSP-110	70	0.375	115	0.62	16	1, 2
<u>CEF-3</u>	LAUNDRY	CENTRIFUGAL CEILING EXHAUST FAN	ON WITH LIGHTS	GREENHECK	CSP-110	50	0.375	115	0.62	16	1, 2, 3

NOTES:
 1) PROVIDE WITH BACKDRAFT DAMPER.
 2) PROVIDE WITH FACTORY MOUNTED AND WIRED SPEED CONTROL. ADJUST SPEED IN FIELD TO DESIGN FLOW RATE.
 3) PROVIDE CEF-3 WITH BASE ALTERNATE ONLY.

GENERAL MECHANICAL NOTES

- INSTALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND ALL CURRENT CODES.
- MAINTAIN RECOMMENDED EQUIPMENT SERVICE CLEARANCES.
- PROVIDE STRUCTURAL SUPPORT AND SEISMIC BRACING AS REQUIRED.
- DUCTWORK SHALL BE CONSTRUCTED PER SMACMA CLASS A STANDARDS AND SEALED AIR TIGHT.
- PROJECT CLOSE OUT DOCUMENTATION AND USER TRAINING SHALL BE PROVIDED FOR ALL MECHANICAL COMPONENTS. CLOSE OUT DOCUMENTATION SHALL INCLUDE RECORD DOCUMENTS AND O&M MANUALS.

SPLIT SYSTEM HEAT PUMPS																	
EQUIPMENT TAG	SYSTEM / AREA SERVED	COOLING		NOMINAL SIZE	HEATING		AIRFLOW	EXTERNAL STATIC PRESSURE	BASIS OF DESIGN		ELECTRICAL			PHYSICAL			
		CAPACITY	SEER		CAPACITY (BTU/HR)	CFM			WG	MAKE	MODEL	VOLT (V)	MCA (A)	NOMINAL HP	LENGTH (IN.)	WIDTH (IN.)	HEIGHT (IN.)
		BTU/HR		TONS													
<u>HP-1</u>	<u>AH-1</u>	36000	22.3	3	42000	NA	NA	TRANE / MITSUBISHI	TUMYH0361AK41NA	230/1PH	36.0	15.0	14	42	53	278	
<u>AH-1</u>	CLASSROOM, ACTIVITY & LAUNDRY ROOMS & OFFICE	36000	NA	3	40000	1090	0.80"	TRANE / MITSUBISHI	TPEFYP036MH141A	230/1PH	4.10	1.50	22	21	55	141	

NOTES:
 1) HP-1: PROVIDE HOUSSEKEEPING PAD AND MAINTAIN MANUFACTURER'S CLEARANCES FROM BUILDING.
 2) AH-1: PROVIDE MANUFACTURER'S BUILT-IN CONDENSATE PUMP AND ADJUST AIRFLOW TO INDICATED VALUE.

VENTILATION																
SYSTEM	SPACE	OCCUPANCY	OCCUPANT DENSITY	ZONE POPULATION		PEOPLE OUTDOOR AIRFLOW RATE	ZONE OCCUPIABLE AREA	AREA OUTDOOR AIRFLOW RATE	BREATHING ZONE OUTDOOR AIRFLOW	ZONE AIR DISTRIBUTION EFFECTNESS	CALCULATED ZONE OUTDOOR AIRFLOW	ZONE OUTDOOR AIRFLOW SUPPLIED	PRIMARY AIR	SYSTEM % OSA	TRANSFER AIR	SYSTEM EXHAUST
AH-1	CLASS/ACTIVITY ROOM	Classrooms (Ages 5-8)	25	23	10	890	0.12	337	1.0	337	337	950	35%	(250)	0	
	OFFICES 1 & 2	OFFICE SPACES	5	1	5	174	0.06	15	1.0	15	35	100	35%		0	
	MECHANICAL ROOM	UNOCCUPIED STORAGE	-	-	-	52	-	-	-	-	-	-	-	RA PLENUM		
	LAUNDRY ROOM	RESIDENTIAL WASHER/DRYER & OCCUPIABLE DRY STORAGE	2	1	5	33	0.06	7	1.0	7	14	40	35%	40	40	
	KIDS RESTROOM,	PUBLIC RESTROOM	-	-	-	60	-	-	-	-	-	-	-	-	140	140
	STAFF RESTROOM	PUBLIC RESTROOM	-	-	-	55	-	-	-	-	-	-	-	-	70	70
SYSTEM TOTAL				1		1,264		359		359	386	1,090			250	

NOTES:
 1) VENTILATION FOR BASE ALTERNATE.



HEAD START

ESTACADA HEAD START IMPROVEMENTS PROJECT
 264 N. BROADWAY
 ESTACADA, OREGON

CONTRACT DOCUMENTS

EXISTING FLOOR PLAN / DEMOLITION PLAN

MECHANICAL

DATE:
10 MAY 2022

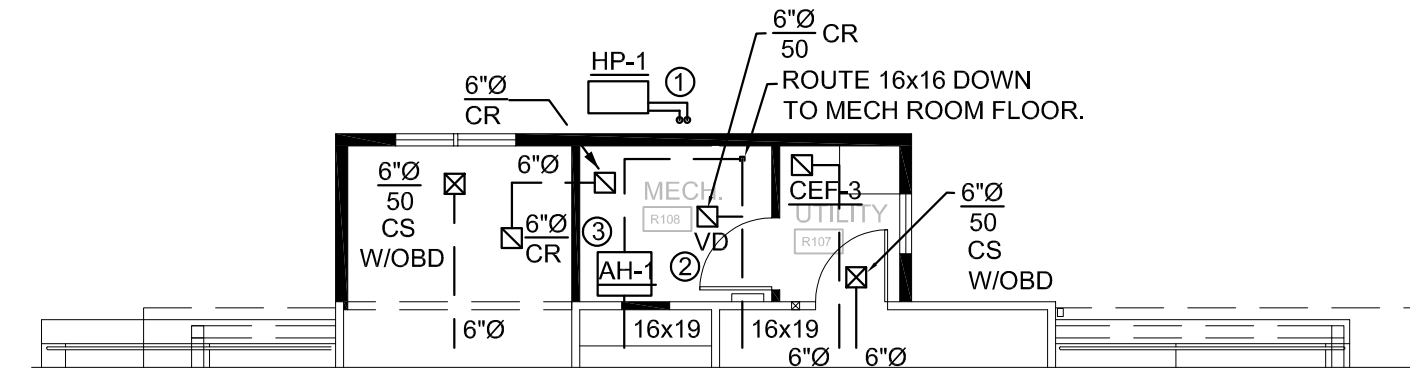
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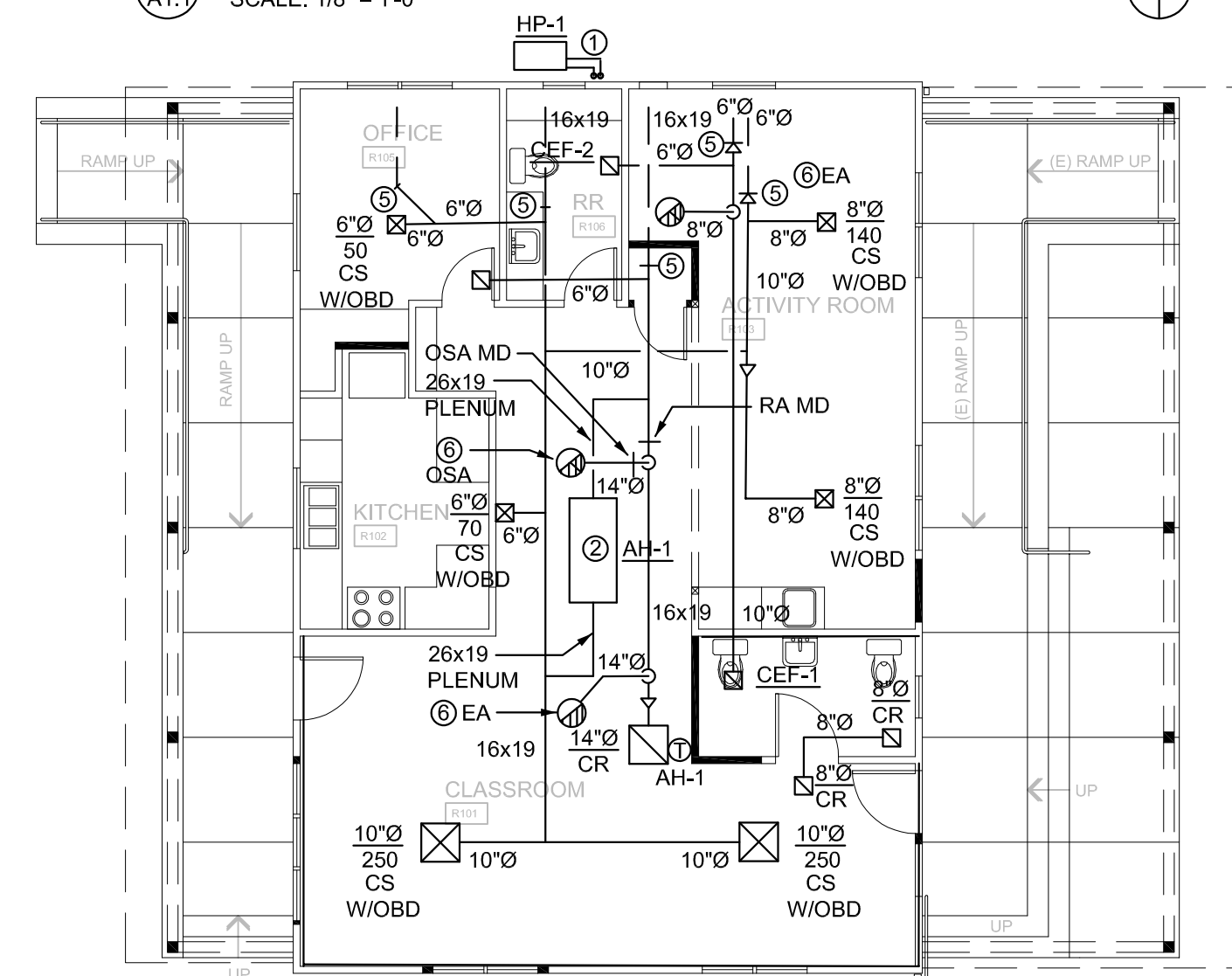
REVISIONS

NO.	DESCRIPTION

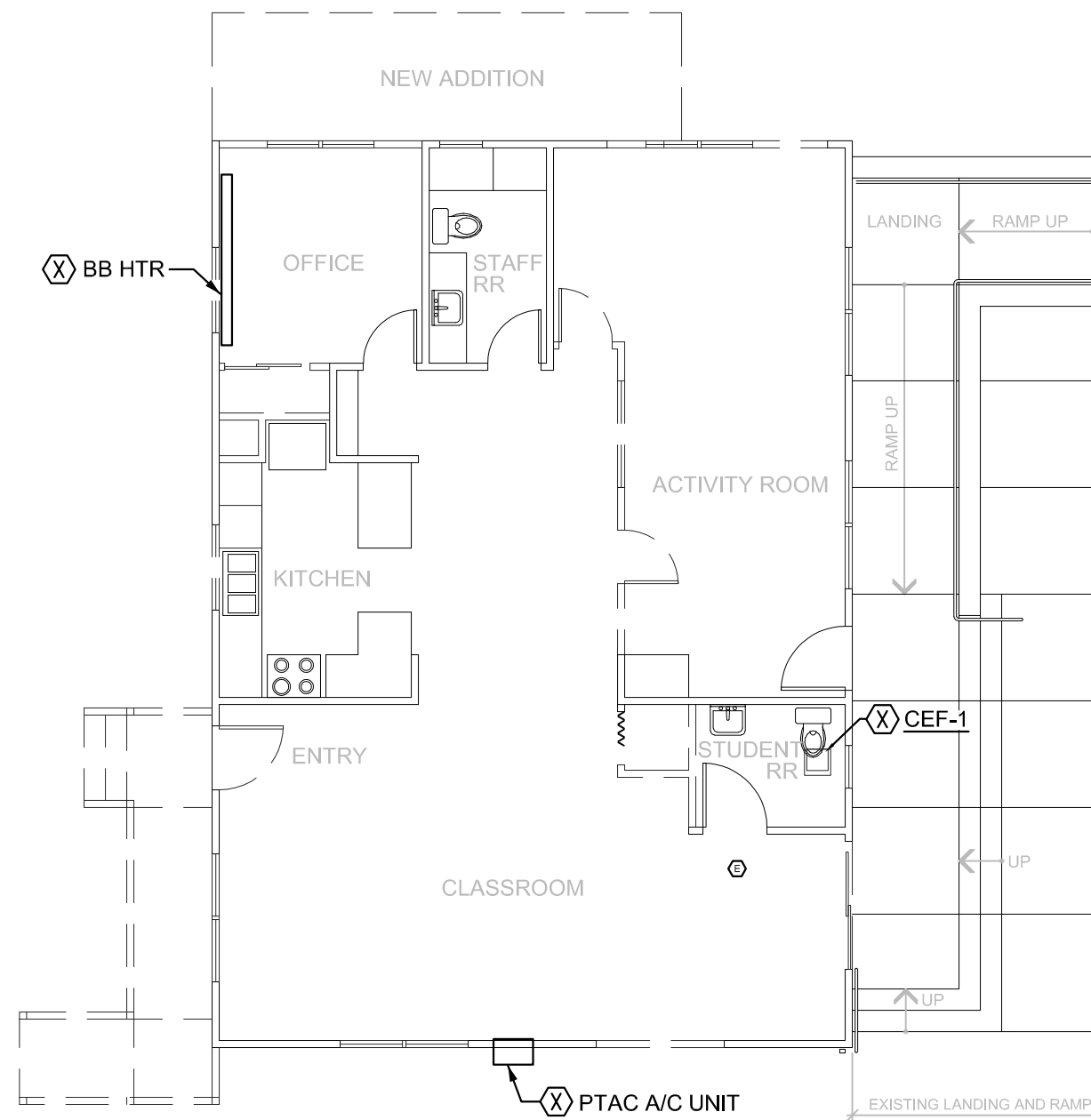
M2.0



2 ALTERNATE NO. B1 - FLOOR PLAN
 SCALE: 1/8" = 1'-0" NORTH



1 FLOOR PLAN
 SCALE: 1/8" = 1'-0" NORTH



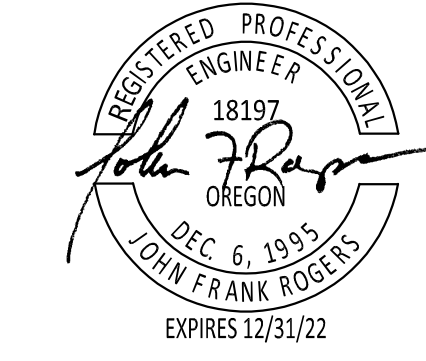
1 EXISTING FLOOR PLAN / DEMOLITION PLAN
 SCALE: 1/8" = 1'-0" NORTH

GENERAL NOTES

1. MAINTAIN MINIMUM 10' CLEARANCE BETWEEN INTAKE (OSA) & RELIEF (EXHAUST) OPENINGS. ALL ROOFTOP (OSA & EXHAUST) OPENINGS TO BE A MINIMUM OF 10' FROM THE ROOF EDGE.
2. B1 ALTERNATE ONLY DUCTWORK DASHED.
3. ROUTE ALL DUCTWORK IN THE ATTIC. ALL SUPPLY, RETURN & OUTSIDE AIR DUCTWORK TO BE INSULATED.

SHEET NOTES

1. ROUTE INSULATED REFRIGERANT LINES TO AH-1. BASE ALTERNATE INTO MECH ROOM. M1 ALTERNATE TO ATTIC.
2. ROUTE 1/2" CONDENSATE FROM AH-1 CONDENSATE PUMP TO CW-1 CLOTHES WASHER BOX AND DAYLIGHT.
3. MOUNT BASE ALTERNATE AH-1 @ 20" AFF AND PROVIDE STAND. SECURE UNIT TO WALL. ROUTE RA DUCT INTO BOTTOM OF AH-1.
4. AH-1 RA & OSA MOTORIZED DAMPERS TO ACT AS MASTER & SLAVE. SET MASTER OSA DAMPER TO 390 CFM MINIMUM. SET SLAVE RA DAMPER TO 650 CFM. MASTER & SLAVE MOTORIZED DAMPERS TO FUNCTION AS ECONOMIZER AND MODULATE. SEE SECTION 23 81 26 FOR CONTROLS.
5. B1 ALTERNATE SA OR RA CONNECTING DUCTWORK SHOWN ON B1 AND M1 ALTERNATE PLANS.. CAP M1 DUCTWORK AT POINT OF M1 / B1 CONNECTION IF M1 ALTERNATE SELECTED.
6. ROUTE UP TO ROOF CAP. PROVIDE BACKDRAFT DAMPER FOR EXHAUST AIR. PROVIDE MOTORIZED SHUT-OFF DAMPER FOR OUTSIDE AIR INLET TO CLOSE WHEN AH-1 IS DE-ENERGIZED.



Clackamas County
Children's Commission
HEAD START
16518 SE RIVER ROAD
MILWAUKIE - OREGON - 97267

ESTACADA HEAD START IMPROVEMENTS PROJECT
264 N. BROADWAY ESTACADA, OREGON

CONTRACT DOCUMENTS

ELECTRICAL LEGEND

DATE:
10 MAY 2022

DRAWN BY:
SGW

CHECKED BY:
JFR

REVISIONS

E1.0

ELECTRICAL LEGEND

LIGHTING	POWER	POWER	SIGNAL
○ □ CEILING LUMINAIRE: SURFACE, RECESSED	⌀ CEILING RECEPTACLE: DUPLEX	HA-3.5. CONDUIT HOMERUN TO PANELBOARD "HA" WITH CIRCUIT 3.5.	Ⓜ MANUAL FIRE ALARM STATION
⊕ □ WALL LUMINAIRE: SURFACE, RECESSED	Ⓜ SPECIAL PURPOSE OUTLET AS NOTED	LCP1-24.26. CONDUIT HOMERUN TO LIGHTING CONTROL PANEL "LCP1" WITH RELAYS 24.26. SEE SCHEDULE FOR HOMERUN TO PANELBOARDS	Ⓜ Ⓜ DETECTOR: IONIZATION, RATE OF RISE
○ □ WALL WASHER: SURFACE, RECESSED	Ⓜ FLUSH IN FLOOR OUTLET: DUPLEX, TELECOMMUNICATIONS	— DENOTES NEUTRAL	Ⓜ Ⓜ DETECTOR: HEAT, PHOTOELECTRIC
□ □ LUMINAIRE: SURFACE, RECESSED	Ⓜ SURFACE OUTLET STRIP: DIMENSIONS AS SHOWN	— DENOTES HOT OR SWITCH LEG	Ⓜ — DUCT DETECTOR, TYPE AS NOTED
□ □ LUMINAIRE: WALL MOUNTED	Ⓜ JUNCTION BOX	— DENOTES ISOLATE GREEN GROUND WIRE	Ⓜ □ FIRE ALARM: HORN, HORN WITH VISUAL
○ — LUMINAIRE: STRIP	Ⓜ DISCONNECT SWITCH: FUSED, NON FUSED	— DENOTES GROUND CONNECTION	Ⓜ □ FIRE ALARM: VISUAL STROBE ONLY
Ⓜ ⊕ EXIT LIGHT: CEILING, WALLS (ARROWS AS SHOWN)	Ⓜ MOTOR CONNECTION	<u>PER LIGHTING PLANS:</u>	◁ WALL OUTLET: TELECOMMUNICATIONS. PROVIDE 4" SQ BOX WITH SINGLE GANG MUDRING AND 1-1/4"C. TO ACCESSIBLE CEILING SPACE.
Ⓜ □ DESIGNATES LIGHT ON EMERGENCY	Ⓜ MOTOR STARTER: MANUAL, MAGNETIC, COMBINATION	1/2" CONDUIT WITH 2 #12 WIRES	◁ WALL OUTLET: TELEPHONE ONLY
Ⓜ ⊕ EMERGENCY BATTERY LIGHT	Ⓜ CONTACTOR, RELAY, SOLENOID	1/2" CONDUIT WITH 3 #12 WIRES	◁ W WALL OUTLET: TELEPHONE ONLY @ ADA HT
Ⓜ \$2 WALL SWITCH: SINGLE POLE, 2 POLE	Ⓜ TRANSFORMER	1/2" CONDUIT WITH 4 #12 WIRES	◁ WALL OUTLET: TELEVISION
Ⓜ \$3 \$4 WALL SWITCH: 3 WAY, 4 WAY	Ⓜ CONDUIT ELL	3/4" CONDUIT WITH 5#12 WIRES	◁ WALL OUTLET: CCTV CAMERA
Ⓜ \$K WALL SWITCH: KEYED	Ⓜ PANELBOARD: SURFACE, RECESSED	3/4" CONDUIT WITH 6#12 WIRES	Ⓜ WALL CLOCK (PROVIDE DUPLEX RECEPTACLE)
Ⓜ \$LV LOW VOLTAGE WALL SWITCH ACUITY nPODM SERIES	Ⓜ CABINET: SURFACE, RECESSED	<u>PER POWER & EQUIPMENT PLANS:</u>	Ⓜ PENDANT CLOCK (PROVIDE DUPLEX RECEPTACLE)
Ⓜ \$D LOW VOLTAGE DIMMER SWITCH ACUITY nPODM-DX SERIES	Ⓜ SWITCH: MOTORIZED SHADE CONTROL	3/4" CONDUIT WITH 2#12 WIRES, 1 #12 GREEN INSULATED GROUND WIRE	Ⓜ SMOKE DETECTOR
Ⓜ \$D LINE VOLTAGE, DUAL TECHNOLOGY WALL SWITCH OCCUPANCY SENSOR ACUITY WSX-PDT SERIES	Ⓜ SWITCH: FAN CONTROL, AS NOTED	3/4" CONDUIT WITH 3#12 WIRES, 1 #12 GREEN INSULATED GROUND WIRE	Ⓜ COMBINATION CARBON MONOXIDE / SMOKE DETECTOR
Ⓜ \$D LINE VOLTAGE, DUAL TECHNOLOGY WALL SWITCH OCCUPANCY SENSOR ACUITY WSX-PDT-2P-FAN SERIES	Ⓜ SPEAKER	DUPLEX RECEPTACLE OUTLET, 20 AMPS, 125 VOLTS, FLUSH WALL MOUNTED, +18" AFF OR AS NOTED ON DRAWINGS ON DEDICATED 20 AMPS DEDICATED CIRCUIT.	Ⓜ DOOR ENTRY PUSHBUTTON
Ⓜ \$IR LINE VOLTAGE INFRARED OCCUPANCY SENSOR WALL SWITCH, ACUITY WSX SERIES	Ⓜ FIRE SMOKE DAMPER. PROVIDE 120V CONNECTION AND PROVIDE CONNECTION TO FIRE ALARM SYSTEM.	GFCI DUPLEX RECEPTACLE OUTLET, 20 AMPS, 125 VOLTS, FLUSH WALL MOUNTED, +18" AFF OR AS NOTED ON DRAWINGS.	Ⓜ DOOR ENTRY CHIME
Ⓜ \$L LOW VOLTAGE DUAL TECHNOLOGY OCCUPANCY SENSOR, ACUITY nCM-9-RJB-ADCX SERIES	Ⓜ PUSHBUTTON: AS NOTED	DOUBLE DUPLEX RECEPTACLE OUTLET, 20 AMPS, 125 VOLTS, FLUSH WALL MOUNTED, +18" AFF OR AS NOTED ON DRAWINGS.	Ⓜ KEYPAD
Ⓜ PHOTO DAYLIGHTING SENSOR	Ⓜ EXISTING TO REMAIN	DUPLEX RECEPTACLE WITH ONE OUTLET ON UNSWITCHED CIRCUIT AND ONE OUTLET ON CIRCUIT CONTROLLED VIA ROOM OCCUPANCY SENSOR. PROVIDE ACUITY nPP20-PL POWER PACK. PROVIDE CAT 5e CABLE BETWEEN ALL nLIGHT DEVICES. PROVIDE LABELING FOR OUTLET ON OCCUPANCY SENSOR CONTROL.	
Ⓜ PHOTOELECTRIC CELL	Ⓜ EXISTING TO BE RELOCATED		
Ⓜ EXTERIOR LINE VOLTAGE MOTION SENSOR, ACUITY SENSORSWITCH SBOR-10-OEX-MVOLT, FINISH AS SELECTED BY ARCHITECT.	Ⓜ EXISTING TO BE REMOVED		
	Ⓜ ELECTRICAL SHEET NOTE DESIGNATOR		

NOTE: NOT ALL SYMBOLS SHOWN ON LEGEND APPEAR ON DRAWINGS.

PROJECT GENERAL NOTES

- PROVIDE PATCHING IN AREAS OF WORK NOT SHOWN ON ARCHITECTURAL FINISH SCHEDULES AND DRAWINGS, COORDINATE WITH ARCHITECTURAL DRAWINGS AND ELEVATIONS. PATCHING SHALL MATCH EXISTING, PROVIDE ALL LABOR AND MATERIAL AS REQUIRED.
- VERIFY PHASING OF PROJECT WITH ARCHITECTURAL DRAWINGS AND SPECIFICATIONS. CONTRACTOR SHALL PROVIDE ADDITIONAL MATERIAL AND LABOR AS REQUIRED TO ENERGIZE AREAS OF PROJECT TO REMAIN IN OPERATION DURING CONSTRUCTION AND PROVIDE ALL TEMPORARY POWER AS REQUIRED.
- ELECTRICAL DRAWINGS ARE DIAGRAMMATIC, REFERENCE ARCHITECTURAL FLOOR PLANS, ELEVATIONS AND DETAILS FOR DEVICE LOCATIONS AND MOUNTING HEIGHTS, INCLUDING BUT NOT LIMITED TO LUMINAIRES, AND FIRE ALARM DEVICES. IT SHALL BE THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO COORDINATE WITH DRAWINGS, IF CONFLICTS ARISE CONTACT THE ARCHITECT AND/OR ENGINEER.
- REFERENCE ARCHITECTURAL SPECIFICATIONS AND DOOR SCHEDULES FOR ADDITIONAL ELECTRICAL CONNECTIONS REQUIRED. PROVIDE ALL MATERIAL AND LABOR AS REQUIRED FOR A COMPLETE AND OPERATIONAL INSTALLATION WHETHER SPECIFICALLY SHOWN ON THE ELECTRICAL DRAWINGS.
- MOUNT ELECTRICAL DEVICES PER CURRENT ADA REQUIREMENTS, COORDINATE WITH CODE OFFICIALS HAVING JURISDICTION. THERMOSTATS, SWITCHES AND RECEPTACLES INSTALLED IN AREAS EQUIPPED FOR THE DISABLED SHALL BE LOCATED AT NOT MORE THAN 48" MEASURED FROM THE TOP OF BOX TO FINISH FLOOR, THE BOTTOM OF THE BOX FOR THERMOSTATS, SWITCHES AND RECEPTACLES SHALL BE NO LOWER THAN 15" TO FINISH FLOOR, PER 2013 U.B.C. 11B-308.
- ALL WORK TO COMPLY WITH THE LATEST ADDITION OF THE NATIONAL ELECTRICAL CODE AS AMENDED AND ADOPTED BY THE CITY WITH THE AUTHORITY HAVING JURISDICTION.
- ELECTRICAL DEDICATED SPACES: NO PIPING, DUCTS, EQUIPMENT FOREIGN TO ELECTRICAL EQUIPMENT SHALL BE PERMITTED WITHIN THE DEDICATED SPACE ABOVE THE ELECTRICAL EQUIPMENT.
- DUPLEX, DOUBLE DUPLEX AND GFCI RECEPTACLES PER SECTION 26 27 26 WILL BE 20 AMPS. PROVIDE TAMPER PROOF RECEPTACLES IN CLASSROOMS AND IN ALL LOCATIONS REQUIRED BY NEC AND OREGON SPECIALTY CODE.
- EQUIPMENT WIRING TERMINAL WILL BE LISTED FOR 75 DEGREE C WIRING TERMINATION.
- CONDUIT WILL BE EMT, MC CABLE MAY BE USED AS INSTALLED PER SECTION 26 05 33.12 - METAL CLAD CABLE.
- NM CABLE MAY BE USES ON THE PROJECT AS ALLOWED BY THE CURRENT EDITION OF THE NEC AND OREGON SPECILTY CODE.
- CONDUCTORS WILL BE TYPE THHN/THWN.
- LIGHTING AND MECHANICAL FIXTURES MUST BE SUPPORTED BY ADDITIONAL INDEPENDENT NO. 12 GAGE WIRES ATTACHED TO EACH CORNER OF FIXTURE.
- ALL ELECTRICAL DEVICES AND UTILIZATION EQUIPMENT SHALL BE LISTED BY AN APPROVED TESTING AGENCY.
- SEE MECHANICAL PLANS FOR ADDITIONAL ELECTRICAL CONNECTIONS.
- CONTRACTOR SHALL FURNISH AND INSTALL A GROUND WIRE IN ALL PVC CONDUIT, GROUND WIRES MAY NOT BE SHOWN, BUT SHALL BE INCLUDED IN THE ELECTRICAL CONTRACTOR'S BASE BID AND SIZED PER CURRENT CODE.
- CONTRACTOR TO TAG/IDENTIFY ALL CONDUCTORS FOR EQUIPMENT INSTALLATION.
- FITTINGS: GALVANIZED STEEL TYPE ONLY, DIE CAST NOT PERMITTED.
- SLEEVES: PROVIDE SLEEVES FOR ALL RACEWAYS AND/OR WIRING THROUGH ALL FIRE-RATED WALLS, CEILINGS AND CONCRETE STEEL FLOORS. SEAL SLEEVES, AFTER INSTALLING RACEWAYS, WITH APPROVED FIRE-RATING MATERIAL OF EQUAL RATING AS ORIGINAL FIRE-RATINGS.
- ALL CONDUIT ONLY (C.O.) SHALL HAVE A PULL WIRE OR ROPE.
- INSTALLTION WILL CONFORM TO THE CURRENT EDITION OF THE NEC AND OREGON SPECILTY CODE INCLUDING BUT NOT BE LIMITED TO NEC 210, 215, 220 & 230.

LUMINAIRE SCHEDULE

- TYPE A1: SURFACE MOUNT 7"DIA. DOWNLIGHT WITH 1000 LUMEN, 13W LED LAMPING. JUNO JSF-7IN-10LM-27K-90CRI-MVOLTZT-WH SERIES, OR APPROVED EQUAL.
- TYPE A2: SURFACE MOUNT 11"DIA. DOWNLIGHT WITH 1300 LUMEN, 15W LED LAMPING. JUNO JSF-11IN-13LM-27K-90CRI-MVOLTZT-WH SERIES, OR APPROVED EQUAL.
- TYPE A3: SURFACE MOUNT 13"DIA. DOWNLIGHT WITH 1800 LUMEN, 20W LED LAMPING. JUNO JSF-13IN-18LM-27K-90CRI-MVOLTZT-WH SERIES, OR APPROVED EQUAL.
- TYPE B: 24" VANITY LIGHT WITH 1550 LUMEN, 18W LED LAMPING. LITHONIA FMVCSLS-24IN-MVOLT-30K-90CRI-XX, FINISH SELECTED BY ARCHITECT.
- TYPE C: 48" SURFACE MOUNT STRIPLIGHT WITH 3000 LUMEN, 25W LED LAMPING. LITHONIA ZL1N-L48-3000LM-FST-MVOLT.
- TYPE D: SURFACE WALL MOUNT LUMINAIRE WITH 2000 LUMEN, 17W LED LAMPING. LITHONIA ARC1-LED-P2-30K-MVOLT-E4WH-X, FINISH SELECTED BY ARCHITECT.
- TYPE F1: SURFACE MOUNT 4' LINEAR WITH 3000 LUMEN, 25W LED LAMPING. LITHONIA BLWP4-30L-ADSM-120V-EZ1-LP830. FINISH AS SELECTED BY ARCHITECT.
- TYPE F2: SURFACE MOUNT 4' LINEAR WITH 4000 LUMEN, 35W LED LAMPING. LITHONIA BLWP4-40L-ADSM-120V-EZ1-LP830. FINISH AS SELECTED BY ARCHITECT.
- TYPE X: LED EXIT SIGN WITH BATTERY PACK. LITHONIA LE-S-G-120/277-ELN.



HEAD START

ESTACADA HEAD START IMPROVEMENTS PROJECT
 264 N. BROADWAY
 ESTACADA, OREGON

CONTRACT DOCUMENTS

EXISTING ELECTRICAL PLAN / DEMOLITION PLAN

ELECTRICAL PLAN

DATE: **10 MAY 2022**

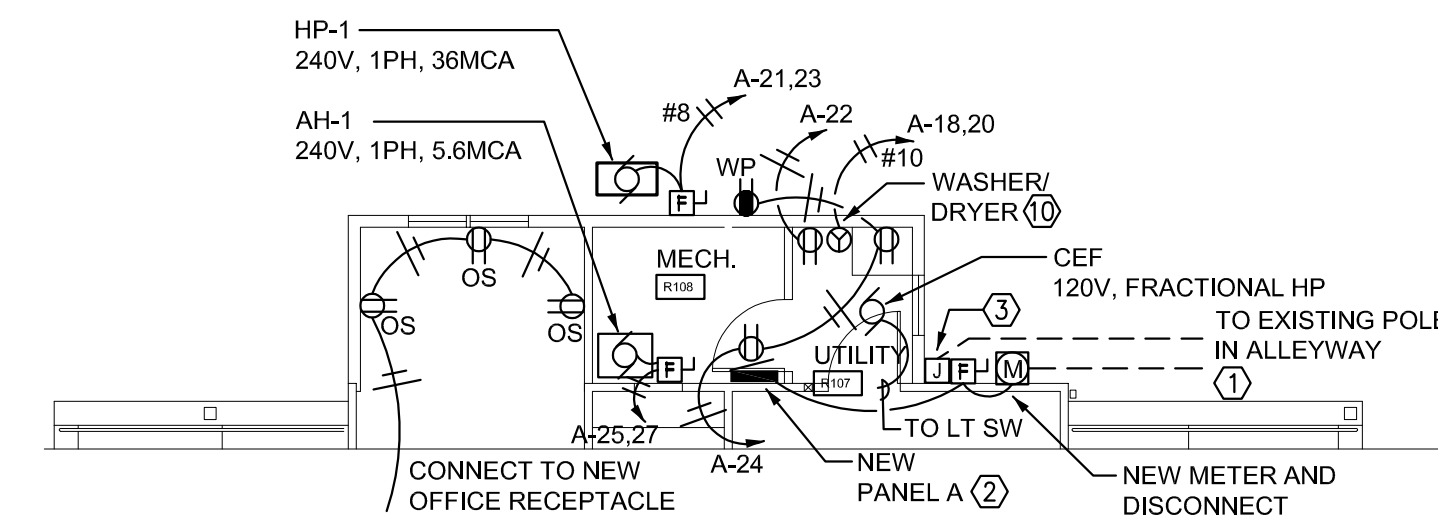
DRAWN BY: **SGW**

CHECKED BY: **JFR**

REVISIONS

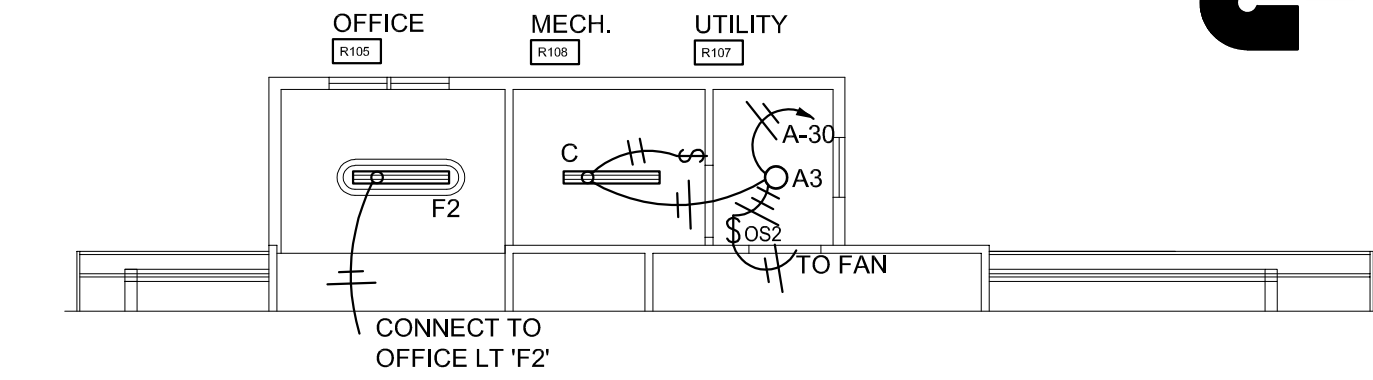
NO.	DESCRIPTION

E2.0



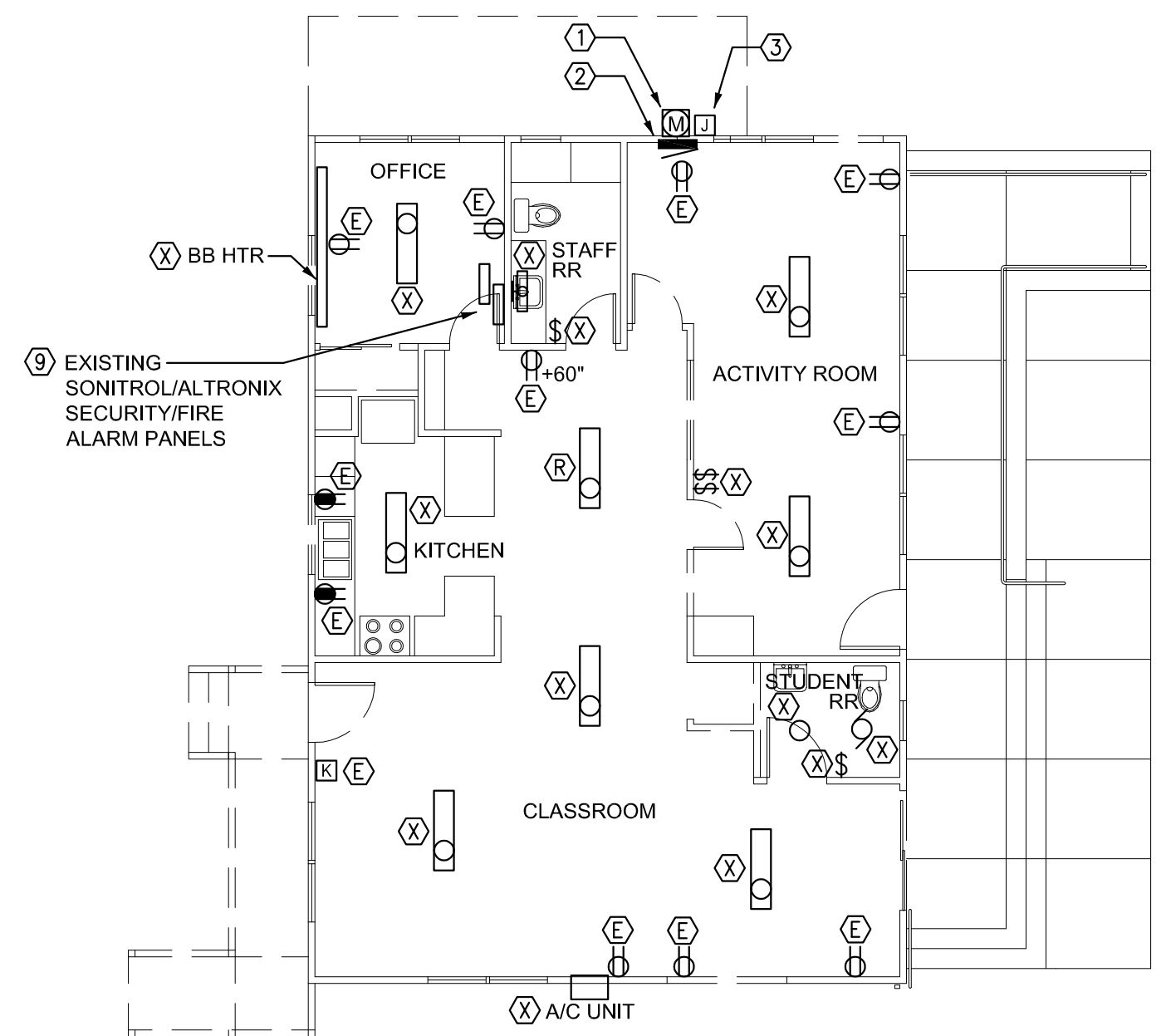
NOTE: DETAIL DEPICTS ADDITIONAL EQUIPMENT AND CONNECTIONS AS PART OF ALTERNATE B1. REFER ALSO TO SPECIFICATION SECTION 01 20 00 ALTERNATES.

2.1 ALTERNATE NO. B1 POWER PLAN NORTH
 SCALE: 1/8" = 1'-0"

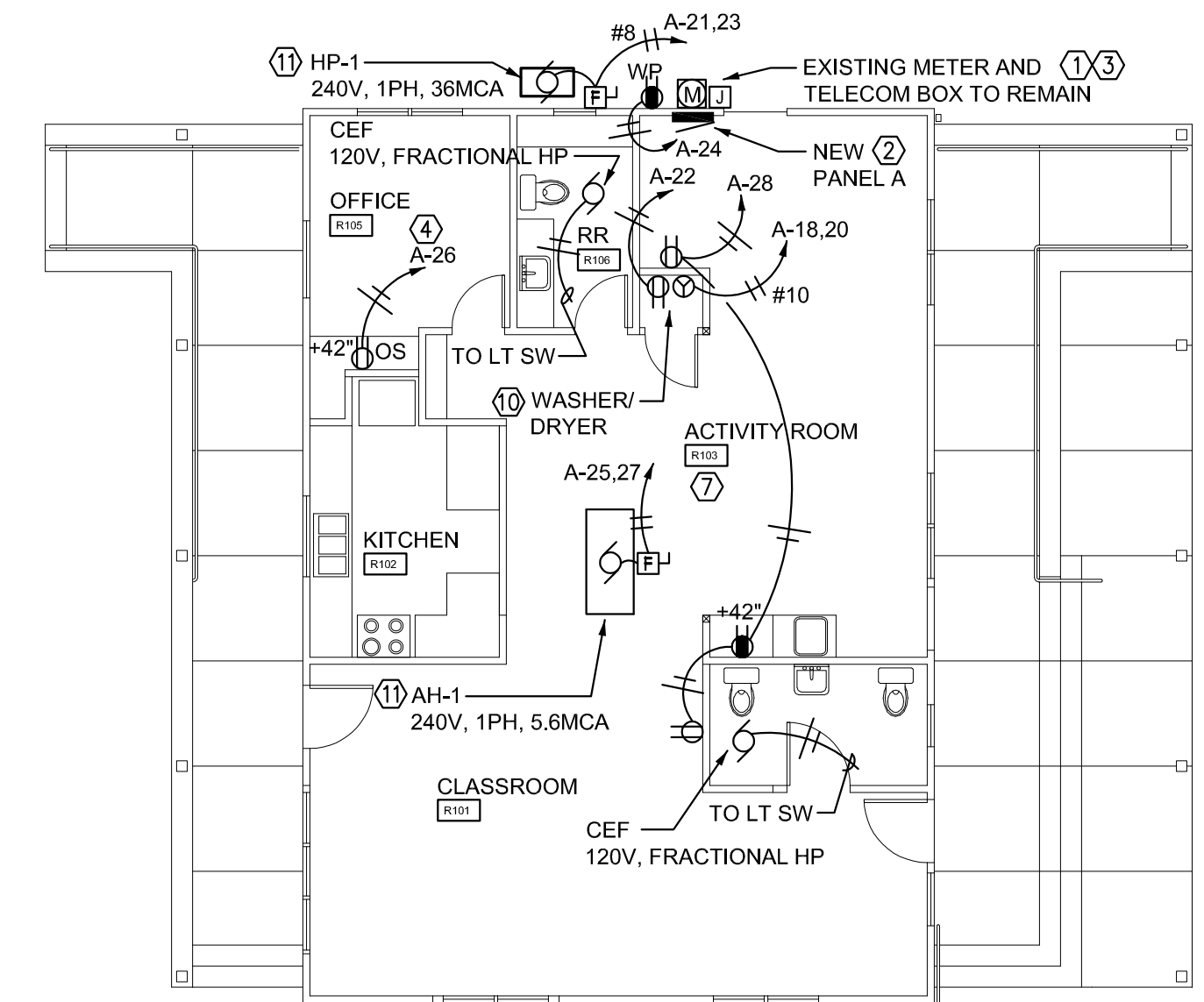


NOTE: DETAIL DEPICTS ADDITIONAL EQUIPMENT AND CONNECTIONS AS PART OF ALTERNATE B1. REFER ALSO TO SPECIFICATION SECTION 01 20 00 ALTERNATES.

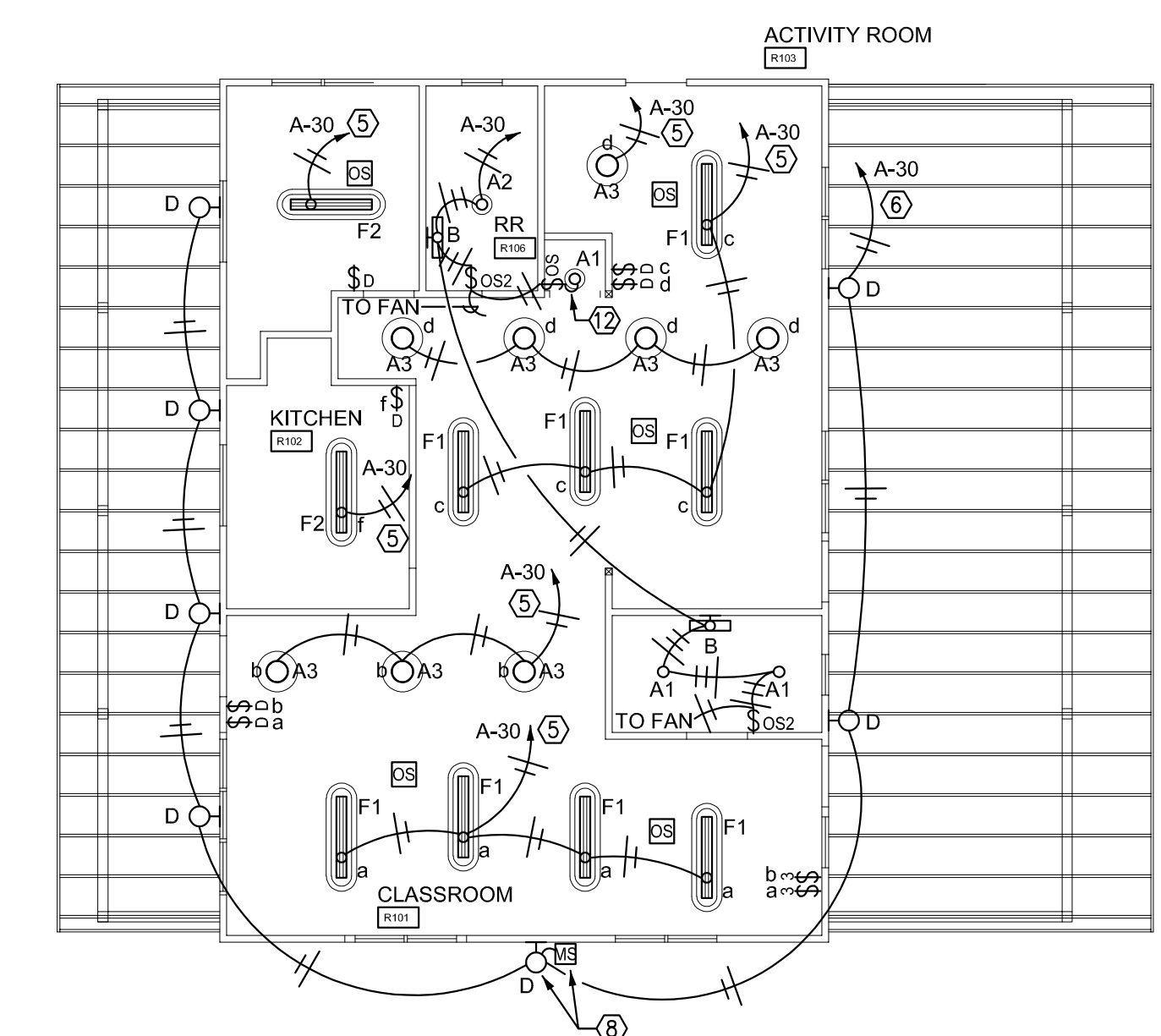
3.1 ALTERNATE NO. B1 LIGHTING PLAN NORTH
 SCALE: 1/8" = 1'-0"



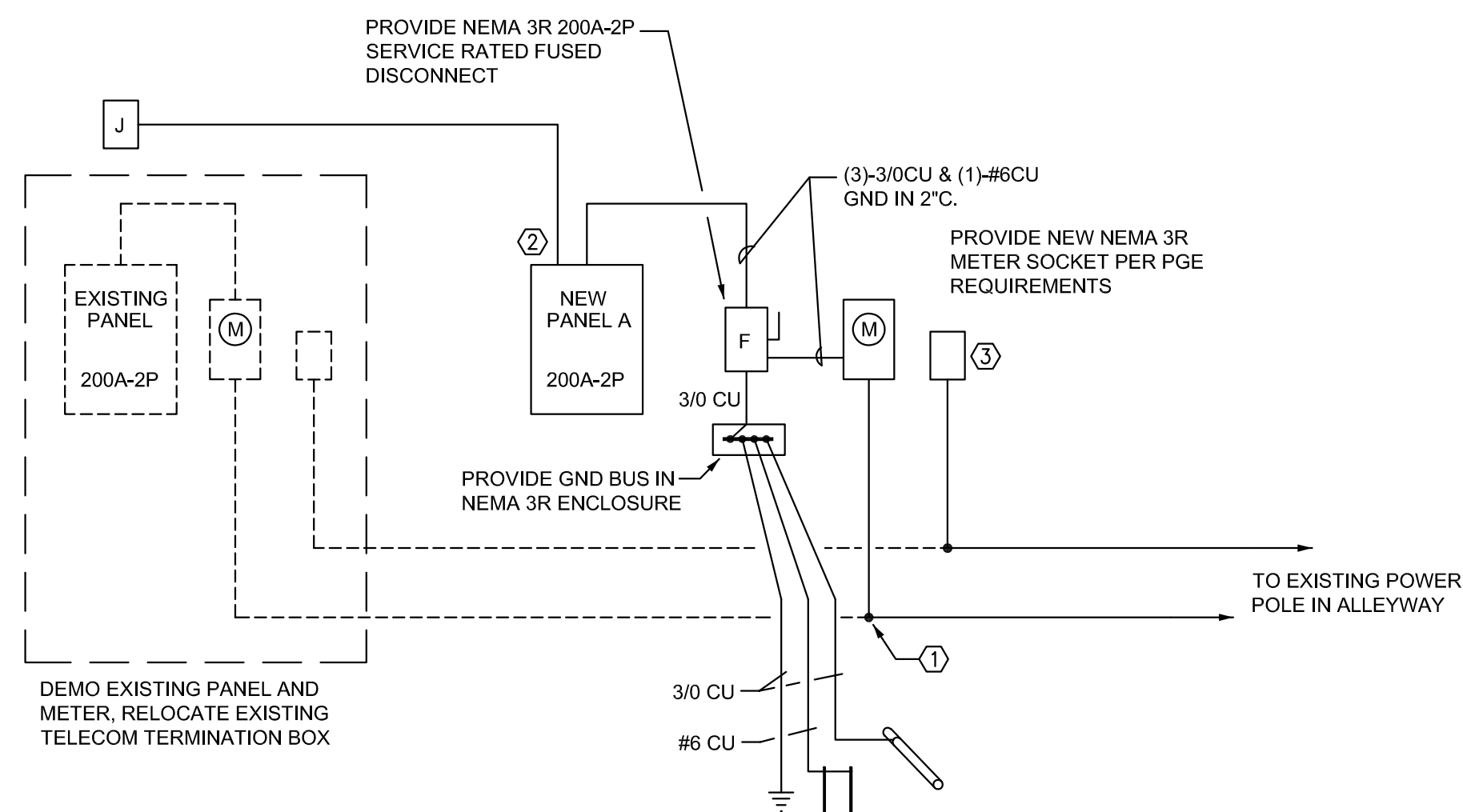
1 EXISTING FLOOR PLAN / DEMOLITION ELECTRICAL PLAN NORTH
 SCALE: 1/8" = 1'-0"



2 POWER PLAN NORTH
 SCALE: 1/8" = 1'-0"



3 LIGHTING PLAN NORTH
 SCALE: 1/8" = 1'-0"



Panel A Location	Mlo	Volts	120 / 240	Amps	200
1 Existing Kit Lts *	1	20			
3 Existing Freezer #2	1	20			
5 Existing Freezer #1	1	20			
7 Existing Dishwasher	1	20			
9 Existing Kit Outlets	1	20			
11 Existing Kit Refrig Outlets	1	20			
13 Existing Main Rm Lts *	1	20			
15 Existing Main Rm Outlets	1	20			
17 Existing Sleep Rm Lts *	1	20			
19 Existing Sleep Rm Outlets	1	20			
21 HP-1	2	40	4320		
23	2		4320		
25 AH-1	2	15	672		
27	2		672		
29 SPARE	1	20			
31 SPARE	1	20			
33 SPARE	1	20			
35 SPARE	1	20			
37 SPARE	1	20			
39 Existing Range	2	40	4000		
41	2		4000		
2 Existing Main Rm Heat*	2	30			
4	2				
6 Existing Back Rm Heat*	2	20			
8	2				
10 Existing Water Heater	2	30	2250		2250
12	2				
14 Existing Office Heat*	2	20			
16	2				
18 Dryer	2	30	2500		2500
20	2				
22 Washer	1	20	1200		360
24 Mech. Laundry, Ext Outlets	1	20			
26 Office Outlets	1	20	720		720
28 Activity Rm Outlets	1	20			
30 Lighting	1	20	735		
32 SPACE	1				
34 SPACE	1				
36 SPACE	1				
38 SPACE	1				
40 SPACE	1				
42 SPACE	1				
Phase A		16,397	Watts	137	Amp
Phase B		14,822	Watts	124	Amp
Total		31,219	Watts	130	Amp

Notes: * Investigate and eliminate circuit and use as spare breaker if found all existing lighting, devices, and/or equipment served have been removed.

KEYED NOTES THIS SHEET

- EXISTING METER TO REMAIN AS PART OF BASE BID. REPLACE AND RELOCATE METER AS PART OF ALTERNATE B1. INTERCEPT EXISTING 3".C. AND EXTEND TO NEW METER LOCATION. COORDINATE REQUIREMENTS WITH PGE.
- REPLACE EXISTING PANELBOARD AND MAINTAIN AT EXISTING LOCATION AS PART OF BASE BID. REPLACE AND RELOCATE PANEL TO MECHANICAL ROOM AS PART OF ALTERNATE B1. RETERMINATE ALL EXISTING BRANCH CIRCUITS TO NEW PANELBOARD. PROVIDE SPLICE BOX AND EXTEND NEW CONDUIT AND WIRING AS REQUIRED. FIELD VERIFY EXACT REQUIREMENTS.
- EXISTING TELECOMMUNICATIONS TERMINAL BOX TO REMAIN AS PART OF BASE BID. RELOCATE BOX AS PART OF ALTERNATE B1. INTERCEPT EXISTING SERVICE FLEX DUCT AND CABLING. REROUTE TO NEW LOCATION AND TERMINATE COMPLETE. COORDINATE REQUIREMENTS WITH SERVING UTILITY. MAINTAIN ALL EXISTING TELECOM/CABLE OUTLETS. REPULL ALL INTERIOR CABLES TO NEW LOCATION AND RETERMINATE COMPLETE. PROVIDE NEW AS REQUIRED.
- ROUTE CIRCUIT(S) VIA OCCUPANCY SENSOR POWER PACK TO CONTROL HALF OF EACH DUPLEX. ONE OUTLET SHALL BE CONTROLLED AND ONE UNSWITCHED FOR EACH DUPLEX. ROUTE CAT 5e CABLE BETWEEN ALL nLIGHT DEVICES.
- ROUTE VIA ACUITY nLIGHT nPP16D SERIES DIMMING RELAY PACK. LOCATE RELAY PACKS IN ATTIC SPACE FOR BASE BID AND MECHANICAL ROOM FOR ALTERNATE B1. CONTROL VIA OCCUPANCY/PHOTO SENSOR CONTROL AND ASSOCIATED LOW VOLTAGE SWITCH. ROUTE CAT 5e CABLE BETWEEN ALL nLIGHT DEVICES.
- ROUTE VIA ACUITY nLIGHT nPP16-NDTC SERIES SWITCHING RELAY PACK WITH TIME CLOCK. PROVIDE LOW VOLTAGE OVERRIDE SWITCH IN OFFICE FOR BASE BID AND IN UTILITY ROOM FOR ALTERNATE B1. PROVIDE LABELING. ROUTE CAT 5e CABLE BETWEEN ALL nLIGHT DEVICES.
- PROVIDE TAMPER PROOF DEVICES IN CLASSROOM AND ACTIVITY ROOM.
- CONTROL LUMINAIRE WITH EXTERIOR WALL MOUNT LINE VOLTAGE MOTION SENSOR. ALL EXTERIOR LIGHTING TO BE CONTROLLED VIA nLIGHT TIME CLOCK, SEE KEYED NOTE 6.
- MAINTAIN EXISTING SONITROL/ALTRONIX SECURITY/FIRE ALARM PANELS AND ASSOCIATED DEVICES AS MUCH AS POSSIBLE. RELOCATE DEVICES AS NECESSARY TO ACCOMMODATE CONSTRUCTION. REMOVE EXISTING FIRE ALARM DETECTORS FROM CEILING AND REPLACE WITH NEW WITH SAME MANUFACTURER. RELOCATE AND PROVIDE ADDITIONAL AS REQUIRED. SECURITY AND FIRE ALARM SYSTEM WITH 100% DETECTION SCOPE IS DESIGN-BUILD. ENSURE A COMPLETE FUNCTIONING SECURITY AND FIRE ALARM SYSTEM, PER REQUIREMENTS OF NEC, NFPA AND LOCAL JURISDICTION, DELIVERED TO OWNER.
- PROVIDE DEVICES FOR WASHER AND DRYER. LOCATE DEVICES IN NEW LAUNDRY CLOSET IN MAIN BUILDING FOR BASE BID, LOCATE IN NEW LAUNDRY ROOM IN NEW ADDITION AS PART OF ALTERNATE B1.
- PROVIDE CONNECTIONS TO MECHANICAL UNIT AS PART OF ALTERNATE M1. ALTERNATE M1 TO BE CONSIDERED IF ALTERNATE B1 IS NOT SELECTED.
- PROVIDE LUMINAIRE AND SWITCH AS PART OF BASE BID. OMIT AS PART OF ALTERNATE B1.

NOTE: ONE-LINE DIAGRAM REFLECTS ALTERNATE B1 WORK. REFER ALSO TO KEYED NOTES 1, 2, 3, 10, 12, AND SPECIFICATION SECTION 01 20 00. REFER TO KEYED NOTE 11 FOR WORK ASSOCIATED WITH ALTERNATE M1.

- BASE BID SHALL INCLUDE:
- REPLACE EXISTING PANELBOARD AND MAINTAIN AT EXISTING LOCATION.
 - MAINTAIN EXISTING METER AT EXISTING LOCATION.
 - MAINTAIN EXISTING TELECOM BOX AT EXISTING LOCATION.

- ALTERNATE B1 SHALL INCLUDE:
- REPLACE EXISTING PANELBOARD AND RELOCATE TO NEW LOCATION.
 - REPLACE EXISTING METER AND RELOCATE TO NEW LOCATION, PROVIDE NEW DISCONNECT. PROVIDE NEW GROUND BAR.
 - RELOCATE EXISTING TELECOM BOX TO NEW LOCATION.

4 ONE-LINE POWER DISTRIBUTION DIAGRAM
 NO SCALE

CONTRACT DOCUMENTS
PROJECT MANUAL

For

CLACKAMAS COUNTY CHILDREN'S COMMISSION
ESTACADA HEAD START
IMPROVEMENTS PROJECT

264 N BROADWAY STREET

ESTACADA, OREGON 97923

DATE: 10 MAY 2022

PROJECT MANUAL
For
CLACKAMAS COUNTY CHILDREN'S COMMISSION
ESTACADA HEAD START
IMPROVEMENTS PROJECT
264 N. BROADWAY STREET
ESTACADA, OREGON 97023
DATE: 10 MAY 2022

OWNER:

Clackamas County Children's Commission
16518 SE River Road
Milwaukie, Oregon 97267
971.204.5638
Contact: Erich Brill

PROJECT MANAGER:

Clackamas County Community Development
2051 Kaen Road
Oregon City, Oregon 97045
971.349.2949, Fax 503.655.8563
Contact: Amy Council

ARCHITECT

J Timothy Richard Architect, LLC
4543 NE 23rd Avenue
Portland, Oregon 97211
503.449.7326
Contact: Tim Richard

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Portland, Oregon 97214
503.248.0227, Fax 503.248.0240
Contact: Steve Watkins

LANDSCAPE ARCHITECT

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Portland, Oregon 97214
503.222.5612, Fax 503.222.2283
Contact: Ben Johnson

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Portland, Oregon 97214
503.248.0227, Fax 503.248.0240
Contact: Larry Ball

STRUCTURAL ENGINEER

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Portland, Oregon 97204
503.244.7014
Contact: Jesse Wolfe

PLUMBING ENGINEERS

System Design Consultants. Inc
333 SW 2nd Avenue, Suite 100
Portland, Oregon 97214
503.248.0227, Fax 503.248.0240
Contact: Larry Ball



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SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 PROJECT INFORMATION

- A. Project Identification: Estacada Head Start – Improvements Project
 - 1. Project Location: 264 N. Broadway, Estacada, Oregon 97023
- B. Project Manager: Clackamas County Community Development
 - 1. Project Coordinator: Amy Council
- C. Owner: Clackamas County Children's Commission
 - 1. Owner's Representative: CCCC HS Executive Director: Darcee Kilsdonk
- D. Architect: J Timothy Richard Architect, LLC
 - 1. Project Manager / Architect: Tim Richard
- E. Contractor: To Be Determined.
 - 1. Construction Manager for this Project is Project's constructor. The terms "Construction Manager" and "Contractor" are synonymous.
- F. The Work consists of construction of new front porch and accessible ramp, new back porch roof, replacement of exterior doors and windows, new siding and roofing, interior renovation including removal of interior wall, and expansion of student restroom. Site work includes new driveway surfacing, accessible parking, site circulation, recycle / waste storage area, and landscape planting. See Section 012000 for delineation of Alternates.
 - 1. Site Demolition: Remove concrete driveway, portion of public sidewalk, and existing plantings as indicated on landscape plans.
 - 2. Building Demolition: Remove existing front porch, ramp, roof, and existing concrete stoop below porch. Remove existing siding, windows, doors, gutters, and roofing. Remove exterior walls for new openings, and remove interior walls as indicated on architectural plans.
 - 3. Interior Renovation: New structural framing and reinforcement at existing roof framing, non-bearing partition walls and finishes, and GWB overlay at ceilings.
 - 4. Electrical: New service and panel, LED lighting.
 - 5. Plumbing: New water closet.

6. Site Improvements: Concrete paving, asphalt paving, landscape planting, and fencing.
7. Alternate: New office, mechanical room and laundry room addition. See Section 012000.

G. Type of Contract.

1. Project will be constructed under a single prime contract.

1.2 WORK BY OWNER / SEPARATE CONTRACTS

A. Work by Owner's Contractor.

1. Security system
2. Fire alarm systems

- B. Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying Work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

1.3 UNDERGROUND FACILITIES MARKING

- A. Comply local facilities protection laws with current amendments. Call with the required amount of notice and do not proceed with work until the member utilities have responded. Make additional requests as required for areas greater than the maximum distance of a single request and for operations longer than the duration of a single request.
- B. For any known or suspected types of underground facilities that the public service does not mark, use electronic line location, probing, or other methods to locate and mark facilities.
- C. Protect the markings of underground facilities.
- D. Immediately notify the owner of underground facilities of any known or suspected damage.

1.4 WORK RESTRICTIONS

- A. Contractor's Use of Premises: During construction, Contractor will have limited use of site and building spaces indicated.
- B. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- C. On-Site Work Hours: Limit work hours to comply with current edition of local noise ordinances, including but not limited to:
 1. Construction noises are limited to 7:00 am to 8:00 p.m. Monday through Friday. Comply with Estacada Development Code.

- D. Construction Waste: Remove from Project site and legally dispose. Do not burn.
 - 1. Recycle per local regulations. Recycle to maximum extent possible.
- E. Employee Behavior:
 - 1. Do not allow personnel to play loud music or create loud noises, or use harassing or foul language.
 - 2. No smoking anywhere on site.
 - 3. Keep work areas and premises clean from trash, dust, and construction debris upon completion of each task and end of each workday.
- F. Restrictions apply equally to subcontractor and supplier employees.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012000 - PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 ALTERNATES

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
 - 2. The cost for each alternate is the net addition to the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.
- B. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- C. Notification: Immediately following award of the Contract, notify each party involved, in writing, whether alternates have been accepted, rejected, or deferred for later consideration.

1.2 PAYMENT PROCEDURES

- A. Submit a Schedule of Values at least seven days before the initial Application for Payment. Break down the Contract Sum into at least one line item for each Specification Section in the Project Manual table of contents. Coordinate the schedule of values with Contractor's construction schedule.
 - 1. Arrange schedule of values consistent with format of AIA Document G703.
 - 2. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
 - 3. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - 4. Provide separate line items in the schedule of values for initial cost of materials and for total installed value of that part of the Work.
 - 5. Provide a separate line item in the schedule of values for each allowance.
- B. Application for Payment Forms: Use forms acceptable to Owner as form for Applications for Payment.

- C. Submit three copies of each application for payment according to the schedule established in Owner/Contractor Agreement.
1. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor.
 2. With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
 3. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 - a. Include insurance certificates, proof that taxes, fees, and similar obligations were paid, and evidence that claims have been settled.
 - b. Include affidavit of payment of debts and claims.
 - c. Include affidavit of release of liens.
 - d. Submit final meter readings for utilities, a record of stored fuel, and similar data as of the date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Additive Alternates
1. Alternate S1: See Landscape Plans and Specifications
 - Site work – New asphalt driveway, concrete paving and additional planting
 2. Alternate B1: See Building Plans and Specifications
 - Building Addition – Building shell, exterior and interior finishes, removal of exterior wall for office expansion, additional doors, and windows.
 - Mechanical – Locate mechanical equipment in addition
 - Electrical – Lighting and power distribution at addition
 - Plumbing – Located laundry connections in addition
 3. Alternate M1: (Considered if Alternate B1 is not selected) See Mechanical Plans and Specifications
 - Building – Provide attic access with pull down ladder
 - Mechanical – Locate mechanical system in existing attic.

END OF SECTION 012000

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUBSTITUTION PROCEDURES

- A. Substitutions include changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
1. Substitutions for Cause: Architect will consider Contractor's request for substitution when the following conditions are satisfied:
 - a. Requested substitution does not impact Contract Sum, or provides cost saving to the Contract Sum.
 - b. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - c. Requested substitution will not adversely affect Contract Time or Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
 2. Substitutions for Convenience: Not allowed unless otherwise indicated.
- B. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Substitution Request Form: Use CSI Form 13.1A or other approved form.
 2. During Procurement: Submit requests no later than 10 days prior to bid opening.
 3. During Construction: Submit requests immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
 4. Identify product to be replaced and show compliance with requirements for substitutions. Include a detailed comparison of significant qualities of proposed substitution with those of the Work specified, a list of changes needed to other parts of the Work required to accommodate proposed substitution, and any proposed changes in the Contract Sum or the Contract Time should the substitution be accepted.
- C. Architect will review proposed substitutions and notify Contractor of their acceptance or rejection by Change Order. If necessary, Architect will request additional information or documentation for evaluation.

1. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 2. Architect and Owner have final decision on what will be accepted.
- D. Do not submit unapproved substitutions on Shop Drawings or other submittals.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 CONTRACT MODIFICATION PROCEDURES

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."
- B. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work.
 - 1. Proposal Requests are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in Proposal Request or 15 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time.
- C. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
- D. On Owner's approval of a Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor, for all changes to the Contract Sum or the Contract Time.
- E. Architect may issue a Construction Change Directive. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- F. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 013000 - ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 PROJECT MANAGEMENT AND COORDINATION

- A. Subcontract List: Submit a written summary identifying individuals or firms proposed for each portion of the Work. Use CSI Form 1.5A.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. List e-mail addresses and telephone numbers.
- C. Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work.
- D. Requests for Information (RFIs): On discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI. Use AIA Document G716 or other form acceptable to Architect and Owner.

1.2 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.
 - 1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.
 - a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
 - b. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Architect.
 - c. Contract Drawings are for reference only and are not intended to be used directly for submittals.
- B. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 1. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 - 2. Architect will return submittals, without review, received from sources other than Contractor.
- C. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with unique identifier, including project identifier, Specification Section number, and revision identifier.
 3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
- D. Identify options requiring selection by Architect.
- E. Identify deviations from the Contract Documents on submittals.
- F. Contractor's Construction Schedule Submittal Procedure:
1. Submit required submittals in the following format:
 - a. Working electronic copy of schedule file, where indicated.
 - b. PDF electronic file.
 2. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
 - a. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.
 3. Coordinate Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

PART 2 - PRODUCTS

2.1 CONSTRUCTION SCHEDULE, GENERAL

- A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
1. Use Microsoft Project, Primavera, Meridian Prolog, for Windows 7 or higher or Macintosh OS X operating system.

2.2 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections.
1. Transmit electronic submittals as PDF electronic files to email specifically established for Project.

- a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

2.3 ACTION SUBMITTALS

- A. Product Data: Mark each copy to show applicable products and options. Include the following:
 1. Manufacturer's written recommendations, product specifications, and installation instructions.
 2. Wiring diagrams showing factory-installed wiring.
 3. Printed performance curves and operational range diagrams.
 4. Testing by recognized testing agency.
 5. Compliance with specified standards and requirements.
 6. Safety Datasheets (MSDS or SDS):
 - a. To the extent that Safety Datasheets are available, subcontractors shall submit to General Contractor.
 - b. General Contractor will keep on file at the Project site.
 - c. If submitted to Architect and Owner, Safety Datasheets are for information only and will not be reviewed for completeness or appropriateness.
- B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data. Submit on sheets at least 8-1/2 by 11 inches but no larger than 30 by 42 inches. Include the following:
 1. Dimensions and identification of products.
 2. Fabrication and installation drawings and roughing-in and setting diagrams.
 3. Wiring diagrams showing field-installed wiring.
 4. Notation of coordination requirements.
 5. Notation of dimensions established by field measurement.
- C. Samples: Submit Samples for review of kind, color, pattern, and texture and for a comparison of these characteristics between submittal and actual component as delivered and installed. Include name of manufacturer and product name on label.
 1. If variation is inherent in material or product, submit at least three sets of paired units that show variations.

2.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- B. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- C. Research Reports / Evaluation Reports: Submit ICC-ES or other compliance reports acceptable to authorities having jurisdiction.

2.5 DELEGATED DESIGN SERVICES

- A. "Deferred Submittal" items are listed on Drawings and are synonymous with the term "Delegated Design" used in the Specifications.
- B. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- C. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit three copies of a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 SUBMITTAL REVIEW

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Architect will review each action submittal, make marks to indicate corrections or modifications required, will stamp each submittal with an action stamp, and will mark stamp appropriately to indicate action.
- C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Submittals not required by the Contract Documents may not be reviewed and may be discarded.
- E. Architect will forward submittals requiring review of design consultants. Design consultants will review and approve or reject related work. Architect will provide final review and approval or rejection.

3.2 CONSTRUCTION SCHEDULE

- A. Updating: At three-week intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. As the Work progresses, indicate Actual Completion percentage for each activity.
- B. Distribute copies of approved schedule to Owner, Architect, subcontractors, testing and inspecting agencies, and parties identified by Contractor with a need-to-know schedule responsibility. When revisions are made, distribute updated schedules to the same parties.

END OF SECTION 013000

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Periodic construction photographs.

1.2 COORDINATION

- A. Photographic documentation will be required before and after installation, reconfiguration, change or completion.

1.3 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Take photographs weekly. Submit unaltered, original, full-size image files, on a bi-weekly basis.
 - 1. Digital Camera: Minimum sensor resolution of 8 megapixels.
 - 2. Identification: Provide the following information with each image description in file metadata tag:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Date photograph was taken.
 - d. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

1.4 USAGE RIGHTS

- A. Owner and Architect shall have unlimited copyright usage.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

- A. Digital Images: Provide images in JPG format, with minimum size of 8 megapixels.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

- A. Photographer: Engage a qualified photographer, or an employee of Contractor who is experienced in taking construction photographs.
- B. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
 - 1. Date and Time: Include date and time in file name for each image.
 - 2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect.
- D. Preconstruction Photographs: Before commencement of demolition, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
 - 1. Flag excavation areas before taking construction photographs.
 - 2. Take 20 photographs to show existing conditions adjacent to property before starting the Work.
 - 3. Take 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
- E. Periodic Construction Photographs: Take 20 photographs at specified interval, and submit every two weeks. Select vantage points to show status of construction and progress since last photographs were taken.
- F. Final Completion Construction Photographs: Take 20 color photographs after date of Substantial Completion for submission as Project Record Documents. Architect will inform photographer of desired vantage points.
- G. Additional Photographs: Architect may request photographs in addition to periodic photographs specified.

1. Three days' notice will be given, where feasible.
2. In emergency situations, take additional photographs within 24 hours of request.
3. Additional photographs are included in the Contract Sum, except for the following circumstances that could be paid for by Change Order if a professional photographer is engaged:
 - a. Special events planned at Project site.
 - b. Immediate follow-up when on-site events result in construction damage or losses.
 - c. Photographs to be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.
 - d. Substantial Completion of a major phase or component of the Work.
 - e. Extra record photographs at time of final acceptance.
 - f. Owner's request for special publicity photographs.

END OF SECTION 013233

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
- B. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements, comply with the most stringent requirement. Refer uncertainties to Architect for a decision.
- C. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum. The actual installation may exceed the minimum within reasonable limits. Indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision.
- D. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 - 12. Name and signature of laboratory inspector.
 - 13. Recommendations on retesting and reinspecting.
- E. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, notices, receipts for fee payments, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.
- F. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated.

- G. Testing Agency Qualifications: An independent agency with the experience and capability to conduct testing and inspecting indicated; and where required by authorities having jurisdiction, that is acceptable to authorities.
- H. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- I. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 - 1. Notify Architect and Contractor of irregularities or deficiencies in the Work observed during performance of its services.
 - 2. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
 - 3. Do not perform any duties of Contractor.
 - 4. Send copies of reports to Contractor, Architect, and applicable consultants.
- J. Associated Services: Cooperate with testing agencies and provide reasonable auxiliary services as requested. Provide the following:
 - 1. Access to the Work.
 - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 - 4. Facilities for storage and field curing of test samples.
 - 5. Security and protection for samples and for testing and inspecting equipment.
- K. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
 - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- L. Special Tests and Inspections: Owner will engage a qualified testing and inspection agency to conduct special tests and inspections required by authorities having jurisdiction.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
- B. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014200 - REFERENCES AND DEFINITIONS

PART 1 - GENERAL

1.1 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Certified": Officially stated in writing with the signature of a qualified and authorized representative.
- D. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- E. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- F. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.2 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

1.3 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."
- B. Code Agencies, Government Agencies, Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of those agencies, standards and regulations.
 - 1. Refer to Drawings for applicable codes.
 - 2. Current edition of the International Family of Codes with Oregon State Amendments and all other applicable state and local codes.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Coordinate with Owner for uninterrupted operations of pre-school operations.
- B. Use of Facilities:
 - 1. Use and access is limited to construction period only, as approved by Owner. Special access may also be given shortly before construction and shortly after construction with Owner approval.
 - a. General Contractor shall locate sanitary facilities, secure enclosed storage, exterior storage of materials and other construction activities on site.
 - b. Limited parking will be available on site. Limited access is also available from the alley. Owner and contractor to develop site access plan based on required construction access.
 - c. Protect existing concrete terrace and children's play area from construction activities.
 - d. Permits for curbside parking of support facilities if required to be included in project cost.
- C. Water and Electric Power: On site water and power are available from Owner's existing system without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations. If required, Contractor is responsible for costs related to temporary power including, but not limited to; installation, related fees, power usage and removal after completion of project.
- D. Erosion- and Sedimentation-Control Plan: Submit plan showing compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
- E. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- F. Accessible Temporary Egress: Comply with applicable provisions in ICC A117.1 and applicable local codes.

PART 2 - PRODUCTS

2.1 TEMPORARY FACILITIES

- A. Provide field office, storage and fabrication sheds, and other support facilities as necessary for construction operations. Store combustible materials apart from building.

- B. Security Fencing: Provide temporary 6 ft high cyclone as indicated to secure construction site. Verify final configuration with Owner and Architect.
- C. Field Office, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations or supports adequate for normal loading.
- D. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly.
- E. Alternative Field Office: Space is available within the building and may be allocated for office use. This could require relocating the office as construction proceeds. Contractor to provide furnishings and equipment as required for functional office use.
- F. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

2.2 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. Construction Use of Permanent HVAC System: Prior to beginning operations, provide filter with MERV of 8 at each return-air grille in system and remove at end of construction. Operate permanent HVAC System only after completion of work that generates dust or debris. Obtain permission from Architect and Mechanical Engineers prior to operation.

PART 3 - EXECUTION

3.1 TEMPORARY UTILITY INSTALLATION

- A. Toilets: Provide temporary toilet facilities and wash station. Use of Owner's existing toilet facilities will not be allowed.
- B. Heating and Cooling: Provide temporary heating and cooling required for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. LP fired units are not allowed.
- C. Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, traffic conditions, and safety.
- D. Telephone / Data Service: Provide temporary telephone / data communication line in field office for use by all General Contractor, Architect, and Owner.
 - 1. Post a list of important telephone numbers.
 - a. Police and fire departments.

- b. Ambulance service.
- c. Contractor's home office.
- d. Contractor's emergency after-hours telephone number.
- e. Architect's office.
- f. Engineers' offices.
- g. Owner's office.
- h. Principal subcontractors' field and home offices.

- 2. Provide superintendent with cellular telephone for use when away from field office.

3.2 SUPPORT FACILITIES INSTALLATION

- A. Install project identification and other signs in locations approved by Owner to inform the public and persons seeking entrance to Project.
- B. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Recycle waste materials to the greatest extent possible. Comply with requirements of authorities having jurisdiction.

3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- B. Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
- C. Furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
- D. Barricades and Warning Signs: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- E. Provide temporary walls and enclosures for protection of construction, in progress and completed, as required for construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
- F. Install and maintain temporary fire-protection facilities. Comply with NFPA 241.

3.4 MOISTURE AND MOLD CONTROL

- A. Before installation of weather barriers, protect materials from water damage and keep porous and organic materials from coming into prolonged contact with concrete.
 - 1. Protect stored and installed material from flowing or standing water.

- B. After installation of weather barriers but before full enclosure and conditioning of building, protect as follows:
 - 1. Do not load or install drywall or porous materials into partially enclosed building.
 - 2. Discard water-damaged material.
 - 3. Do not install material that is wet.
 - 4. Discard, replace, or clean stored or installed material that begins to grow mold.
 - 5. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion.
- C. At Substantial Completion, repair and clean permanent facilities used during construction period.

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
- B. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced.
 - 1. Show compliance with requirements for comparable product requests.
 - 2. Architect will review the proposed product and notify Contractor of its acceptance or rejection.
- C. Basis-of-Design Product Specification Submittal: Show compliance with requirements.
- D. Compatibility of Options: If Contractor is given option of selecting between two or more products, select product compatible with products previously selected.
- E. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
 - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - 2. Deliver products to Project site in manufacturer's original sealed container or packaging, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 3. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
 - 4. Store materials in a manner that will not endanger Project structure.
 - 5. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
- F. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. Provide products that comply with the Contract Documents, are undamaged, and, unless otherwise indicated, are new at the time of installation.

1. Provide products complete with accessories, trim, finish, and other devices and components needed for a complete installation and the intended use and effect.
 2. Where products are accompanied by the term "as selected," Architect will make selection.
 3. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
- B. Where the following headings are used to list products or manufacturers, the Contractor's options for product selection are as follows:
1. Products:
 - a. Where requirements include "one of the following," provide one of the products listed that complies with requirements.
 - b. Where requirements do not include "one of the following," provide one of the products listed that complies with requirements or a comparable product.
 2. Manufacturers:
 - a. Where requirements include "one of the following," provide a product that complies with requirements by one of the listed manufacturers.
 - b. Where requirements do not include "one of the following," provide a product that complies with requirements by one of the listed manufacturers or another manufacturer.
 3. Basis-of-Design Product: Provide the product named, or indicated on the Drawings, or a comparable product by one of the listed manufacturers.
- C. Where Specifications require "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches Architect's sample.
- D. Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

- A. Architect will consider Contractor's request for comparable product when the following conditions are satisfied:
1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications.
 3. List of similar installations for completed projects, if requested.
 4. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 CLOSEOUT SUBMITTALS

- A. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- B. Operation and Maintenance Data: Submit one copy of manual.
- C. PDF Electronic File: Assemble manual into a composite electronically indexed file. Submit on digital media.
- D. Record Drawings: Submit one set(s) of marked-up record prints.
- E. Record Digital Data Files: Submit data file and one set(s) of plots.
- F. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.

1.2 SUBSTANTIAL COMPLETION PROCEDURES

- A. Prepare a list of items to be completed and corrected (punch list).
- B. Submittals Prior to Substantial Completion: Before requesting Substantial Completion inspection, complete the following:
 - 1. Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
- C. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will proceed with inspection or advise Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will advise Contractor of items that must be completed or corrected before certificate will be issued.

1.3 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting inspection for determining final completion, complete the following:
 - 1. Submit closeout submittals specified in other sections, including project record documents, operation and maintenance manuals, property surveys, similar final record information, warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 2. Submit maintenance material submittals specified in other sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Owner.

3. Submit test/adjust/balance records.
4. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
5. Make final changeover of permanent locks and deliver keys to Owner.
6. Complete startup and testing of systems and equipment.
7. Perform preventive maintenance on equipment used prior to Substantial Completion.
8. Advise Owner of changeover in heat and other utilities.
9. Participate with Owner in conducting inspection and walk-through with local emergency responders.
10. Remove temporary facilities and controls.
11. Complete final cleaning requirements, including touchup painting.
12. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
13. Submit a final Application for Payment.
14. Submit copy of Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Contractor.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
- B. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

2.2 OPERATION AND MAINTENANCE DOCUMENTATION

- A. Directory: Prepare a single, comprehensive directory of operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information.
- B. Organization: Unless otherwise indicated, organize manual into separate sections for each system and subsystem, and separate sections for each piece of equipment not part of a system.
- C. Organize data into three-ring binders with identification on front and spine of each binder, and envelopes for folded drawings. Include the following:
 1. Manufacturer's operation and maintenance documentation.
 2. Maintenance and service schedules.
 3. Maintenance service contracts. Include name and telephone number of service agent.
 4. Emergency instructions.
 5. Spare parts list and local sources of maintenance materials.
 6. Wiring diagrams.

7. Copies of warranties. Include procedures to follow and required notifications for warranty claims.

2.3 RECORD DRAWINGS

- A. Record Prints: Maintain a set of prints of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued. Mark to show actual installation where installation varies from that shown originally. Accurately record information in an acceptable drawing technique.
 1. Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
- B. Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance.
 1. Verify compatibility with and suitability of substrates.
 2. Examine roughing-in for mechanical and electrical systems.
 3. Examine walls, floors, and roofs for suitable conditions.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Take field measurements as required to fit the Work properly. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication.
- E. Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- F. Surface and Substrate Preparation: Comply with manufacturer's written recommendations for preparation of substrates to receive subsequent work.

3.2 CONSTRUCTION LAYOUT

- A. Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to existing conditions.

3.3 INSTALLATION

- A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
 - 3. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.
- B. Comply with manufacturer's written instructions and recommendations.
- C. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- D. Templates: Obtain and distribute to the parties' involved templates for work specified to be factory prepared and field installed.
- E. Attachment: Provide blocking, attachment plates, anchors, and fasteners of adequate size and number to securely anchor each component in place. Where size and type of attachments are not indicated, verify size and type required for load conditions.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
- F. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- G. Use products, cleaners, and installation materials that are not considered hazardous.

3.4 CUTTING AND PATCHING

- A. Provide temporary support of work to be cut.
- B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Cutting: Cut in-place construction using methods least likely to damage elements retained or adjoining construction.
 - 1. Cut in-place construction to allow for installation of components indicated or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

2. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
- D. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.
1. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction in a manner that will minimize evidence of patching and refinishing.
 2. Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance.
 3. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 4. Include underlayments and similar patching materials where needed. Include ramping underlayment if needed at doorways.

3.5 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Temporary Occupancy and/or Substantial Completion.
- B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- C. Comply with manufacturer's written instructions for temperature and relative humidity.

3.6 CLEANING

- A. Clean Project site and work areas daily, including common areas. Dispose of materials lawfully.
1. Remove liquid spills promptly.
 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
 3. Remove debris from concealed spaces before enclosing the space.
- B. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion:
1. Clean Project site, yard, and grounds, in areas disturbed by construction activities.
 2. Sweep paved areas broom clean. Remove spills, stains, and other foreign deposits.
 3. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 4. Remove labels that are not permanent.
 5. Clean transparent materials, including mirrors. Remove excess glazing compounds.
 6. Clean exposed finishes to a dust-free condition, free of stains, films, and foreign substances. Sweep concrete floors broom clean.
 7. Vacuum carpeted surfaces and wax resilient flooring.

8. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and foreign substances. Clean plumbing fixtures. Clean light fixtures, lamps, globes, and reflectors.
9. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

3.7 OPERATION AND MAINTENANCE MANUAL PREPARATION

- A. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- B. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data includes more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 1. Prepare supplementary text if manufacturers' standard printed data are unavailable and where the information is necessary for proper operation and maintenance of equipment or systems.
- C. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams.

END OF SECTION 017000

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Action Submittals:

1. Waste Management Plan: Submit plan within seven days of date established for commencement of the Work.

B. Informational Submittals:

1. Waste Reduction Progress Reports: Submit concurrent with each Application for Payment. Include total quantity of waste, total quantity of waste salvaged and recycled, and percentage of total waste salvaged and recycled.
2. Records of Donations and Sales: Receipts for salvageable waste donated or sold to individuals and organizations. Indicate whether organization is tax exempt.
3. Recycling and Processing Facility Records: Manifests, weight tickets, receipts, and invoices.
4. Landfill and Incinerator Disposal Records: Manifests, weight tickets, receipts, and invoices.
5. Local Requirements: Clackamas County off-site sort and required reports.
6. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations.

C. Quality Assurance

1. Waste Management Conference: Conduct conference at Project site to comply with requirements in Section 013000 "Administrative Requirements." Review methods and procedures related to waste management.

PART 2 - PRODUCTS

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.

1. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

3.2 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work: Clean salvaged items and install salvaged items to comply with installation requirements for new materials and equipment.
- B. Salvaged Items for Sale and Donation: Not permitted on Project site.
- C. Salvaged Items for Owner's Use: Clean salvaged items and store in a secure area until delivery to Owner.
- D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.
- E. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs.
- F. Plumbing Fixtures: Separate by type and size.
- G. Lighting Fixtures: Separate lamps by type and protect from breakage.

3.3 RECYCLING WASTE

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Packaging:
 1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
 2. Polystyrene Packaging: Separate and bag materials.
 3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
 4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
- C. Concrete: Recycle as required by authorities having jurisdiction.
- D. Wood Materials:
 1. Sort and stack reusable members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.
 2. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
 3. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
- E. Metals: Separate metals by type.

- F. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.
- G. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.
- H. Metal Suspension System: Separate metal members including trim, and other metals from acoustical panels and tile and sort with other metals.
- I. Carpet and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
 - 1. Store clean, dry carpet and pad in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.
- J. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.
- K. Conduit: Reduce conduit to straight lengths and store by type and size.

3.4 DISPOSAL OF WASTE

- A. Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill.
- B. Do not burn waste materials.

END OF SECTION 017419

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
1. Operation and maintenance documentation directory.
 2. Emergency manuals.
 3. Operation manuals for systems, subsystems, and equipment.
 4. Product maintenance manuals.
 5. Systems and equipment maintenance manuals.

1.2 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
1. Architect will comment on whether content of operations and maintenance submittals are acceptable.
 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:
1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.
 - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
 - b. Enable inserted reviewer comments on draft submittals.
 2. Three paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves. Architect will return two copies.
- C. Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.
1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 REQUIREMENTS FOR OPERATION, AND MAINTENANCE MANUALS

- A. Directory: Prepare a single, comprehensive directory of operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information.
- B. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1. Title page.
 - 2. Table of contents.
 - 3. Manual contents.
- C. Title Page: Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name and contact information for Contractor.
 - 6. Name and contact information for Architect.
 - 7. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 - 8. Cross-reference to related systems in other operation and maintenance manuals.
- D. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- E. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- F. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 - 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 - 2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

- G. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.
 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
 4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor is delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.
 10. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
1. Product name and model number. Use designations for products indicated on Contract Documents.
 2. Manufacturer's name.

3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.3 PRODUCT MAINTENANCE MANUALS

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.

3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

2.4 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
1. Standard maintenance instructions and bulletins.
 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 3. Identification and nomenclature of parts and components.
 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.
 2. Troubleshooting guide.
 3. Precautions against improper maintenance.
 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.
 6. Demonstration and training video recording, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
- E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original project record documents as part of operation and maintenance manuals.

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
- B. Related Requirements:
 - 1. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.2 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit copies of record Drawings as follows:
 - a. Initial Submittal:
 - 1) Submit one paper-copy set(s) of marked-up record prints.
 - 2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - b. Final Submittal:
 - 1) Submit PDF electronic files of scanned record prints and three set(s) of prints.
 - 2) Print each drawing, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit Project's Specifications, including addenda and contract modifications.
 - 1. Format:
 - a. One paper copy, and
 - b. Annotated PDF electronic files or scanned PDF electronic files of marked up paper copies.

- C. Record Product Data: Submit annotated PDF electronic files or scanned PDF electronic files of marked up paper copy of Product Data for each submittal, in folders organized by specification section number and title.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised Drawings as modifications are issued.
 - 1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Record data as soon as possible after obtaining it.
 - c. Record and check the markup before enclosing concealed installations.
 - 2. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
 - 3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 - 4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
 - 1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
 - 2. Incorporate changes and additional information previously marked on record prints.
 - 3. Architect will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.
- C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
 - 1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 - 2. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.

3. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. Note related Change Orders, record Product Data, and record Drawings where applicable.
- B. Format: See submittal requirements of this Section.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 3. Note related Change Orders, record Specifications, and record Drawings where applicable.
- B. Format: See submittal requirements of this Section.

2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit marked-up miscellaneous record submittals as PDF electronic file or scanned PDF electronic file(s), and paper copy.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

END OF SECTION 017839

SECTION 02 4113-SELECTIVE SITE DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of selected site elements.
2. Repair procedures for selective demolition operations.

B. Related Sections:

1. Section 01 1100 Summary of Work, for use of the premises and Owner occupancy during construction.
2. Section 01 5000: Temporary Facilities and Controls, for temporary construction, environmental protection measures, and security at Owner occupied areas.
3. Division 22: Plumbing, for demolishing, cutting, patching, or relocating plumbing items.
4. Division 26: Electrical, for demolishing, cutting, patching, or relocating electrical items.
5. Division 31: Earthwork, for Clearing
6. Division 33: Utilities, for civil utility demolition

1.2 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose off-site, unless indicated to be removed and salvaged, or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing construction items of construction to remain without removal.

1.3 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain on Owner's property, demolished materials become Contractor's property and shall be removed from Project site. Do not burn or bury materials on site.
- B. Historic items, relics, and similar objects including, but not limited to, commemorative plaques, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner's property.
1. Carefully remove and salvage each item or object in a manner to prevent damage and deliver to Owner.

1.4 SUBMITTALS

- A. Schedule of Selective Demolition Activities: Indicate sequence of demolition and removal work, interruption of utility services, coordination for shutoff, capping, and continuation of utility services, and coordination of Owner's continuing occupancy of portions of existing building.
 - 1. Submit list of salvage items indicated for future use by Owner, with date of delivery to Owner's stockpile area, and location delivered.
- B. Utility Survey: Accurately record actual locations of capped utilities.
- C. Predemolition Photographs or Videotape: Show existing condition of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Submit before work begins.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Comply with applicable codes and ordinances concerning demolition operations and refuse removal.
 - 2. Where site improvements are suspected or known to contain hazardous materials including, stop Work and notify Owner's Representative.
- B. Pre-Demolition Meeting:
 - 1. Meet at the site with Owner's Representatives.
 - 2. Review location of existing service and utility lines.
 - 3. Review protection of existing adjacent surfaces and buildings.
 - 4. Review building occupant access and egress requirements.
- A. Standards: Comply with the following:
 - 1. ANSI A10.6: "Safety Requirements for Construction and Demolition."
 - 2. NFPA 241: "Safeguarding Construction, Alteration, and Demolition Operations."
 - 3. Applicable local codes for demolition work, safety of structure, and dust control.
- B. Obtain required permits from governing authorities.
- C. Comply with governing EPA notification regulations before beginning of demolition operations.
- D. Comply with hauling and disposal regulations of authorities having jurisdiction.
- E. Conduct pre-demolition conference at Project site; Review the following:
 - 1. Location of existing service and utility lines.
 - 2. Protection of existing adjacent surfaces and buildings.
 - 3. Location of interior air barriers and vapor retarders.
 - 4. Building occupant access and egress requirements.
 - 5. Procedures for coordination of hazardous material removal by other contractors.

1.6 PROJECT CONDITIONS

A. Traffic Requirements:

1. Do not close or obstruct public streets, access roads, parking areas, pedestrian walks, and required fire lanes without written permission from Owner's representative and authorities having jurisdiction.
2. Provide alternate routes around closed and obstructed areas when required by Owner's representative and authorities having jurisdiction.

B. Owner assumes no responsibility for condition of areas to be selectively demolished.

C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Owner. Hazardous materials will be removed by Owner under a separate contract.

D. Utility Service: Notify affected utility companies of selective demolition before starting work and comply with their requirements for maintaining service, and disconnecting existing services, where required.

1. Maintain existing utilities indicated to remain in service and protect them against damage during demolition operations.
2. Maintain fire protection facilities in service during demolition operations.

H. During dry weather, sprinkle exposed soil materials and demolition debris with water to limit dust in the air.

1.7 SCHEDULING

A. Schedule Work to coincide with new construction.

PART 2 PRODUCTS

2.1 REPAIR MATERIALS

A. Use repair materials identical to existing materials, or materials that visually match existing surfaces if identical materials are not available.

B. Comply with material and installation requirements specified in individual Specification Sections.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Prior to start of Work, examine work to be removed and work to remain to determine nature of work and conditions under which selective demolition will be conducted.
 - 1. Make necessary probes to determine extent and kind of protection required.
 - 2. When applicable, verify that utilities have been disconnected and capped.
 - 3. Where existing conditions are found to be conflict with representations of Contract Documents, submit written notification and request clarification.
 - a. Do not perform Work related to conflicting conditions until clarification is obtained.

3.2 PREPARATION

- A. Utilities: Locate, identify, disconnect, and seal or cap off utilities serving area to be demolished. Mark location of existing utilities to remain.
- B. Provide, erect, and maintain temporary barriers at locations indicated, or as required to separate the public and occupied areas from areas of Work.
- C. Protect existing materials which are not to be demolished or removed.
- D. Provide and maintain shoring, bracing, or structural support to prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction to be demolished.

3.3 PROTECTION

- A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations.
- B. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during demolition. When permitted by Owner, items may be removed to a suitable, protected storage location during demolition and cleaned and reinstalled in their original locations after demolition operations are complete.
- C. Existing Utilities: Maintain utility services indicated to remain and protect them against damage during demolition operations.
 - 1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.
 - 2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.
 - a. Provide at least 72 hours' notice to Owner if shutdown of service is required during changeover.
- D. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated.
 - 1. Protect existing site improvements, appurtenances, and landscaping to remain.
 - 2. Provide protection to ensure safe passage of people around demolition area.

3. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that are exposed to demolition operations.
- E. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

3.4 SELECTIVE DEMOLITION

- A. Demolish and remove existing construction only to the extent required by new construction and as indicated.
- B. Selective Demolition of Existing Site:
 1. Remove existing curbs, walks, and paving as indicated in Drawings.
 2. Remove abandoned storm and sanitary sewer, water, natural gas, steam, and power lines as indicated on Drawings.
 3. Remove underground tanks, utility meters, hose bibs, fire hydrants, traffic signs, underground vaults, manholes, drainage trenches, and drain lines as indicated on Drawings.
 4. Remove existing plumbing and light fixtures.
- E. Demolish in an orderly and careful manner. Protect existing supporting structural members.
- F. Structural Requirements:
 1. Do not use explosives for demolition Work.
 2. Cut reinforcing bars in existing concrete during sawing operation until flush and without damage to the bond between concrete and reinforcing bars.
 3. Cut reinforcing bars in existing masonry during sawing operation until flush and without damage to the bond between masonry grout and reinforcing bars.
 4. Cut Work by methods least likely to damage existing exposed surfaces scheduled to remain.
- H. Removed and Salvaged Items: Comply with the following:
 1. Clean salvaged items of dirt and demolition debris.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area off-site designated by Owner.
 5. Protect items from damage during transport and storage.
- I. Removed and Reinstalled Items: Clean and repair to functional reuse, pack or crate with identification marked with identification, protect from damage during storage, and reinstall in locations indicated. Comply with requirements for new materials and equipment.
- J. Existing Items to Remain: Protect against damage and soiling during selective demolition. When permitted by Owner, items may be removed to suitable storage and reinstalled in their original locations after demolition operations are complete.
- K. Promptly repair damage to adjacent construction caused by selective demolition.

- L. Remove demolished materials from site as work progresses.
- M. Do not burn demolished materials on site.
- N. Transport demolished materials off Owner's property and legally dispose of them.
- O. Upon completion of work, leave areas in clean condition. Remove temporary partitions, barriers, and construction.

3.5 REPAIRS

- A. Promptly repair damage to existing surfaces, materials, equipment, site improvements, utility lines, and adjacent construction caused by building selective demolition operations.
- B. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
- C. Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolition waste materials from Project site and legally dispose of them in an EPA-approved landfill acceptable to authorities having jurisdiction. See Section 01 7419, "Construction Waste Management" for recycling and disposal of demolition waste.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Dispose of friable asbestos fibers and PCB materials as required by local building officials and the Department of Environmental Quality at a refuse site authorized for asbestos and PCB disposal.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.7 CLEANING

- A. Clean adjacent structures and site improvements to remove dust, dirt, and debris caused by demolition operations.
- B. Keep site clean of garbage and debris throughout contract.

END OF SECTION

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Items indicated to be removed and salvaged remain Owner's property. Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner. Include fasteners or brackets needed for reattachment elsewhere.
- B. Pre-demolition Photographs: Show existing conditions of adjoining construction and site improvements. Submit before Work begins.
- C. It is not expected that hazardous materials will be encountered in the Work. If hazardous materials are encountered, do not disturb; immediately notify Architect and Owner.
 - 1. See also Owner/Contractor Agreement.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with EPA regulations and with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 DEMOLITION

- A. Maintain services/systems indicated to remain and protect them against damage during selective demolition operations. Before proceeding with demolition, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of the building.
- B. Locate, identify, shut off, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
- C. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent spaces and facilities to remain.
- D. Protect materials and finishes that are to remain. Erect and maintain dustproof partitions. Cover and protect furniture, furnishings, and equipment that have not been removed.

- E. Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
- F. Provide temporary weather protection to prevent water leakage and damage to structure and interior areas.
- G. Maintain existing building elements not indicated to be demolished; do not demolish such existing construction beyond indicated limits.
- H. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction.
- I. Remove demolition waste materials from Project site and legally dispose of them. Do not burn demolished materials.
- J. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.
- K. Demolition: As indicated on Drawings, and as follows:
 - 1. Front yard and driveway: Remove existing concrete driveway and sidewalk as indicated and as required for installation of new work. Remove planting materials and trees as indicated on Landscape Plans.
 - 2. Remove existing front porch, steps, access ramp, roof, and concrete stoop below porch.
 - 3. Remove existing exterior lap siding, gutters, downspouts and roofing.
 - 4. Remove existing windows, exterior doors, and exterior walls as required for new work.
 - 5. Remove interior walls after installation of new roof framing and supports.
 - 6. Remove existing electrical panel and lighting.

END OF SECTION 024119

SECTION 033000 – CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Summary: Section includes cast-in-place concrete, below-slab vapor retarder, formwork, reinforcement, concrete materials, mixture design, placement procedures, flatness and levelness tolerances, and finishes.
- B. Submittals:
 - 1. Product Data: Concrete mix designs, and submittals required by ACI 301.
 - 2. Samples: Vapor retarder.
 - 3. Safety Data Sheets: For all products containing chemicals, according to special procedure in Section 013000, 'Administrative Requirements'.
- C. Ready-Mixed Concrete Producer Qualifications: ASTM C 94/C 94M.
- D. It is not expected that hazardous materials will be encountered in the Work. If hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
 - 1. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- E. Hot-weather Placement: Comply with ACI 301.

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
 - 2. ACI 117

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.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal or other approved material. Provide lumber dressed on at least two edges and one side for tight fit.

2.3 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 deformed, weldable.
- B. Low-Alloy-Steel Reinforcing Bars: ASTM A706/A706m, deformed.
- C. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.
- D. Deformed-Steel Welded-Wire Reinforcement: ASTM A 1064/A1064M, flat sheet.
- 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'.

2.4 CONCRETE MATERIALS

- A. Cementitious Materials:
 - 1. Portland Cement: ASTM C 150/C 150M, Type I or Type III, gray.
 - 2. Fly Ash: ASTM C 618, Class F or C.
- B. Normal-Weight Aggregates: ASTM C 33/C 33M, graded.
 - 1. Maximum Coarse-Aggregate Size: 3/4 inches normal for footings and all other elements (slabs, walls, columns).
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Air-Entraining Admixture: ASTM C 260/C 260M.
- D. 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. Choose from the following in accordance with 'CONCRETE ADMIXTURES, GENERAL', paragraph within each Section:
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C 494.C 494M, Type D.
 - 4. High-Range Water Reducing Admixture: ASTM C 494/C 494M, Type F.
 - 5. High-Range, Water Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 - 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
- E. Water: ASTM C 94/C 94M.

2.5 WATERSTOPS

- A. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, $\frac{3}{4}$ by 1 inch.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include but are not limited to, the following:
 - a. AMCOL/CETCO: Waterstop-RX-101, Waterstop-RX101T, or Waterstop-RX-102.
 - b. Carlisle Coatings & Waterproofing, Inc.: CCW MiraSTOP.
 - c. Concrete Sealants Inc.: Conseal CS-231.
 - d. Henry Company, Sealants Division: Hydro-Flax
 - e. JP Specialties, Inc.: Earth Shield Type 20
 - f. Sika Greenstreak: Swellstop.

2.6 VAPOR RETARDERS

- A. Bituminous Vapor Retarder: 110-mil- (2.8MM-) thick, semiflexible, seven-ply sheet membrane consisting of reinforced core and carrier sheet with fortified asphalt layers, protective weathercoating, and removable plastic release liner. Furnish manufacturer's accessories, including bonding asphalt, pointing mastics, and self-adhering joint tape.
1. Products: Subject to compliance with requirements and approval by Architect, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Meadows, W. R. Grace, Inc.: Pre-molded Membrane Vapor Seal.
 2. Water-Vapor Permeance: 0.0011 grains/h x sf. ft. x inches Hg (0.063 ng/Pa x s x sq. m), ASTM E 154.
 3. Tensile Strength: 140 ibf/inch (24.5 kN/m), ASTM E 154.
 4. Puncture Resistance: 90 lbf (400N), ASTM E 154.
- B. Do not use blotter layer between concrete slab-on-grade and vapor retarder.
- C. Granular Fill: Crushed stone or crushed or uncrushed gravel; ASTM D 488, Size 57, with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing No. 8 sieve.
- D. Fine Grained Granular Material: Clean mixture of crushed stone, crushed gravel, and manufactured or natural sand; ASTM D 488, Size 10, with 100 percent passing a 3/8-inch sieve, 10 to 30 percent passing a No. 100 sieve, and at least 5 percent passing No. 200 sieve; complying with deleterious substance limits of ASTM C33 for fine aggregates.
- E. Termination Bar: Provide non-corrosive metal termination bar for below-slab vapor retarder.

2.7 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for the application to fresh concrete use only where compatible with floor finishes indicated.
1. Products: Subject to compliance with requirements and approval by Architect, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. BASF Construction Chemicals – Building Systems; Confilm.
 - b. ChemMasters; SprayFilm.
 - c. Dayton Superior; AquaFilm J74.
 - d. Euclid Chemical Company; EUCOBAR.
 - e. L&M Construction Chemicals, Inc.; E-CON.
 - f. Meadows, W.R., Inc.; EVAPRE.
 - g. Sika Corporation; SikaFilm.
 - h. SpecChem, LLC; SpecFilm.
 - i. Vexcon Chemicals Inc.; Certi-Vex EnvioAssist.
- B. Cure and Seal: Where Sealed Concrete is indicated:
1. Products: Subject to compliance with requirements and approval by Architect, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. W.R. Meadows; VOCOMP-30.
 2. VOC Content: Not greater than the limits of authorities having jurisdiction.
 3. Water-based acrylic curing and sealing compound shall be a non-yellowing, clear, acrylic curing and sealing compound meeting the following requirements:
 - a. ASTM C 309, Type I, Class B.
 - b. AASHTO M 148, Type I, Class B.
 - c. ASTM C 1315, Class A, Section 6.4.1 – Non-yellowing.
 - d. ASTM C 11315, Section 6.6 – exceed 50 MPa (70psi) adhesion requirements.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Dissipating Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type I, Class B, dissipating.
1. Products: Subject to compliance with requirements and approval by Architect, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Anti-Hydro International, Inc.; A-H Curing Compound #2 DR WB.
 - b. ChemMasters Inc.; Safe-Cure Clear DR.
 - c. Dayton Superior; Clear Resin Cure J11W.

- d. Euclid Chemical Company; Kurez DR VOX.
- e. L&M Construction Chemicals, Inc.; L&M Cure R.
- f. Meadows, W.R., Inc.; 1100-CLEAR
- g. SpecChem, LLC; PaveCure Rez.
- h. Vexcon Chemicals Inc.; Certi-Vex Enviro Cure 100.

2.8 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, Asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.
- B. Provide approved membrane on wood framing to accept concrete topping. Do not damage during placement.

2.9 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.
- B. Cementitious Materials: Use fly ash, pozzolan, slag cement, and silica fume per local availability and as needed to reduce the total amount of Portland cement, which would otherwise be used, by not less than 40 percent.
- C. 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, and concrete with a w/c ratio below 0.50.

2.10 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Normal-Weight Concrete:
 - 1. Minimum Compressive Strength: As indicated at 28 days.
 - 2. Concrete Slabs: As indicated on Drawings. Not to exceed maximum W/C Ratio 0.45.
 - 3. Slump Limit: 5 inches or 5 to 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
 - 4. Air Content: 3.5 to 5 percent, plus or minus 1.5 percent at point of delivery for ¾-inch nominal maximum aggregate size.
 - 5. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.
 - 6. Air Content at Exterior Slabs: All concrete exposed to exterior elements shall have a minimum of 5 percent air content.
 - 7. Synthetic Micro-Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than a rate of 1.0 lb/cu.yd.

2.11 FABRICATION REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's 'Manual of Standard Practice'.

2.12 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, 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.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
 - 1. Elevated deck formwork shall be reviewed and approved by registered engineer in the State of Oregon.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Chamfer exterior corners and edges of permanently exposed concrete.

3.2 FORMWORK REMOVAL

- A. General: Formwork, for all 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 50deg F for 24 hours after placing concrete; provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.
- B. Leave formwork, for beam soffits, joints, slabs, and other structural elements, that supports weight of concrete in place at least 21 days and until concrete has achieved the following:
 - 1. At least 90 percent of 28-day design compressive strength.
 - 2. Determine compressive strength of in-place concrete by testing representative field-cured or laboratory-cured test specimens according to ACI 301.
 - 3. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
 - 4. Following stress and lock off of post tensioned cables where occurs.

3.3 SHORES AND RESHORING

- A. Comply with ACI 318, ACI 301, and recommendations in ACI347R for design, installation, and removal of shoring and reshoring.
- B. 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.

3.4 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.

3.5 VAPOR-RETARDER INSTALLATION

- A. Granular Course: Place vapor retarder under slab on grade on top of 4-inches minimum of granular fill, after moistening and compacting granular fill with mechanical equipment to elevation tolerances of plus 0-inch or minus $\frac{3}{4}$ -inch.
 - 1. Place and compact a $\frac{1}{2}$ -inch-thick layer of fine-graded granular material over granular fill.
- B. Bituminous Vapor Retarders: Place, protect, and repair bituminous vapor retarder according to manufacturer's written instructions.
 - 1. Tape, seal, lap joints, and seal to foundation according to radon mitigation system details.
- C. Vapor Retarder Termination: At all perimeter terminations, and elsewhere as shown, install per manufacturer's instructions and requirements below:
 - 1. Lay vapor retarder loosely, to prevent concrete from pulling on termination.
 - 2. Secure vapor retarder in place by anchoring bar to vertical surface, with butyl tape between vapor retarder and substrate.
 - 3. Install expansion anchor in each predrilled hole.

3.6 STEEL REINFORCEMENT INSTALLATION

- A. General: Comply with CRSI's 'Manual of Standard Practice' for fabrication, placing, and supporting reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

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.
- 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 the concrete thickness.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slabs with vertical surfaces, such as pedestals, foundation walls, grade beams, and other locations, as indicated.

3.8 CONCRETE PLACEMENT

- A. Before placing concrete, verify that the installation of formwork, reinforcement, and embedded items is complete and that required inspections are complete.
- B. 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 segregations.
 - 1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.

3.9 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 of formed-surface irregularities.
 - 1. Apply to concrete surfaces not exposed to view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces exposed to view.

3.10 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. Float Finish: Consolidate surface with power-driven floats or by hand floating if an area is too 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 uniform, smooth, granular texture.

- C. 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.

3.11 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 301 for hot-weather protections 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. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. 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.
 - 2. Curing Compound at Sealed Concrete:
 - a. Comply with manufacturer's written instructions.
 - b. Scarify surfaces and clean substrates of substances that could impair bond of sealer, including dust, dirt, oil, grease, and incompatible materials and encapsulants.
 - 1) Remove incompatible materials or apply compatible tie coat as required to produce sealed concrete system indicated.
 - c. Apply sealer according to manufacturer's written instructions.
 - d. Apply sealer to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections.
 - e. Protect work of other trades against damage from sealer application. At completion of construction activities of other trades, touch up and restore damage or defaced sealed surfaces.

3. Curing Compound for Other Areas:
 - a. Use dissipating curing compound or curing compound compatible with finish floorings indicated, or remove compound after curing.
 - b. 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.
 - c. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certified curing compound does not interfere with bonding of floor coverings used on project.

3.12 CONCRETE SURFACE REPAIRS

- A. Corrective Measures: If work is found to be noncompliant, provide from the following remedial measures within the Contract Sum:
 1. Grinding, planning, surface repair, or retopping.
 2. Slab Removal and replacement if required by Owner.

3.13 FIELD QUALITY CONTROL

- A. Special Inspection: Owner will engage a special inspector to perform field test and inspections and prepare test reports.

END OF SECTION 033000

SECTION 055000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Summary: Miscellaneous metal fabrications, steel framing and supports for items not specified elsewhere.
- B. Submittals: Shop Drawings.

PART 2 - PRODUCTS

2.1 METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Hot-Rolled Steel Floor Plate: ASTM A 786/A 786M, rolled from plate complying with ASTM A 36/A 36M or ASTM A 283/A 283M, Grade C or D.
- C. Steel Tubing: ASTM A 500/A 500M.
- D. Steel Pipe: ASTM A 53/A 53M, standard weight (Schedule 40), black finish.
- E. Slotted Channel Framing: Cold-formed steel channels complying with MFMA-4, 1-5/8 by 1-5/8 inches by 0.053-inch minimum thickness, hot-dip galvanized after fabrication.
- F. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 240/A 240M or ASTM A 666, Type 304.
- G. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304.
- H. Aluminum Plate and Sheet: ASTM B 209, Alloy 6061-T6.
- I. Aluminum Extrusions: ASTM B 221, Alloy 6063-T6.
- J. Aluminum Castings: ASTM B 26/B 26M, Alloy 443.0-F.

2.2 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners at exterior walls. Select fasteners for type, grade, and class required.
 - 1. Provide stainless-steel fasteners for fastening aluminum.
 - 2. Provide stainless-steel fasteners for fastening stainless steel.

2.3 GROUT

- A. Nonshrink, Nonmetallic Grout: ASTM C 1107; recommended by manufacturer for exterior applications.

2.4 FABRICATION

- A. General: Shear and punch metals cleanly and accurately. Remove burrs and ease exposed edges. Form bent-metal corners to smallest radius possible without impairing work.
- B. Welding: Weld corners and seams continuously. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals. At exposed connections, finish welds and surfaces smooth, with contour of welded surface matching those adjacent.
- C. On units indicated to be cast into concrete or built into masonry, provide welded-steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c.
- D. Fabricate steel pipe columns with 1/2-inch steel base plates and 1/4-inch steel top plates welded to pipe with continuous fillet weld same size as pipe wall thickness. Drill top plates for connection bolts and base plates for 5/8-inch anchor bolts.
- E. Fabricate custom connectors as indicated.

2.5 STEEL AND IRON FINISHES

- A. Hot-dip galvanize steel fabrications at exterior locations.
- B. Prepare uncoated ferrous metal surfaces to comply with SSPC-SP 3 and paint with a fast-curing, lead- and chromate-free, universal modified-alkyd primer.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Corrosion Protection: Coat concealed surfaces of aluminum that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:
 - 1. Cast Aluminum: Heavy coat of bituminous paint.
 - 2. Extruded Aluminum: Two coats of clear lacquer.
- B. Provide anchorage devices and fasteners where needed to secure items to in-place construction.
- C. Perform cutting, drilling, and fitting required for installing miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation, with edges and surfaces level, plumb, true, and free of rack.

- D. Fit exposed connections accurately together to form hairline joints or, where indicated, with uniform reveals and spaces for sealants and joint fillers.

END OF SECTION 055000

SECTION 055213 - TUBE RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Related Documents:
 - 1. Drawings and general provisions of the Subcontract apply to this Section.
 - 2. Review these documents for coordination with additional requirements and information that apply to work under this Section.
- B. Section Includes:
 - 1. Steel tube handrails, balusters, and fittings.

1.2 REFERENCES

- A. General:
 - 1. The following documents form part of the Specifications to the extent stated. Where differences exist between codes and standards, the one affording the greatest protection shall apply.
 - 2. Unless otherwise noted, the referenced standard edition is the current one at the time of commencement of the Work.
 - 3. Refer to Division 01 Section "General Requirements" for the list of applicable regulatory requirements.
- B. ASTM International:
 - 1. ASTM A 386 Zinc-Coating (Hot-Dip) on Assembled Steel Products
 - 2. ASTM A 513 Carbon Steel Tubing
- C. Steel Structures Painting Council (SSPC)

1.3 SUBMITTALS

- A. Submit under provisions of Division 01 Section "General Requirements."
- B. Shop drawings shall indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

1.4 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on shop drawings.

PART 2 - PRODUCTS

2.1 STEEL RAILING SYSTEM

- A. Steel Tubing: ASTM A 513
- B. Rails and Posts: 1 1/4-inch diameter steel tubing; welded. 34-inch height.
- C. Fittings: Elbows, T-shapes, wall brackets, escutcheons; machined steel.
- D. Mounting: Brackets and flanges, with steel inserts for casting in concrete.
- E. Exposed Fasteners: Flush countersunk screws or bolts; consistent with design of railing.
- F. Splice Connectors: Steel concealed spigots.
- G. Shop and Touch-Up Primer: SSPC 15, type 1, red oxide.

2.2 FABRICATION

- A. Fit and shop assemble components in largest practical sizes, for delivery to site.
- B. Fabricate components with joints tightly fitted and secured.
- C. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- D. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
- E. Continuously seal joined pieces by continuous welds.
- F. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed butt joints tight, flush, and hairline. Ease exposed edges to small uniform radius.
- G. Accurately form components to suit steps, ramps, and landings, to each other and to building structure.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Prior to the beginning of the installation, the Subcontractor shall assure the University that field conditions are suitable for the installation of handrails and railings.
- B. By beginning installation work, the Subcontractor warrants that existing conditions are suitable for installing handrails and railings.

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, placed in walls with setting templates, to appropriate sections of this Specification.

3.3 INSTALLATION

- A. Install components plumb and level, accurately fitted, free from distortion or defects.
- B. Provide anchors and plates as required for connecting railings to structure. Anchor railing to structure.
- C. Conceal bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

3.4 ERECTION TOLERANCES

- A. Maximum Variation from Plumb: 1/4 inch, non-cumulative.
- B. Maximum Offset from True Alignment: 1/4 inch.

END OF SECTION 055213

SECTION 055213 - TUBE RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Related Documents:
 - 1. Drawings and general provisions of the Subcontract apply to this Section.
 - 2. Review these documents for coordination with additional requirements and information that apply to work under this Section.
- B. Section Includes:
 - 1. Steel tube handrails, balusters, and fittings.

1.2 REFERENCES

- A. General:
 - 1. The following documents form part of the Specifications to the extent stated. Where differences exist between codes and standards, the one affording the greatest protection shall apply.
 - 2. Unless otherwise noted, the referenced standard edition is the current one at the time of commencement of the Work.
 - 3. Refer to Division 01 Section "General Requirements" for the list of applicable regulatory requirements.
- B. ASTM International:
 - 1. ASTM A 386 Zinc-Coating (Hot-Dip) on Assembled Steel Products
 - 2. ASTM A 513 Carbon Steel Tubing
- C. Steel Structures Painting Council (SSPC)

1.3 SUBMITTALS

- A. Submit under provisions of Division 01 Section "General Requirements."
- B. Shop drawings shall indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

1.4 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on shop drawings.

PART 2 - PRODUCTS

2.1 STEEL RAILING SYSTEM

- A. Steel Tubing: ASTM A 513
- B. Rails and Posts: 1 1/4-inch diameter steel tubing; welded. 34-inch height.
- C. Fittings: Elbows, T-shapes, wall brackets, escutcheons; machined steel.
- D. Mounting: Brackets and flanges, with steel inserts for casting in concrete.
- E. Exposed Fasteners: Flush countersunk screws or bolts; consistent with design of railing.
- F. Splice Connectors: Steel concealed spigots.
- G. Shop and Touch-Up Primer: SSPC 15, type 1, red oxide.

2.2 FABRICATION

- A. Fit and shop assemble components in largest practical sizes, for delivery to site.
- B. Fabricate components with joints tightly fitted and secured.
- C. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- D. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
- E. Continuously seal joined pieces by continuous welds.
- F. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed butt joints tight, flush, and hairline. Ease exposed edges to small uniform radius.
- G. Accurately form components to suit steps, ramps, and landings, to each other and to building structure.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Prior to the beginning of the installation, the Subcontractor shall assure that field conditions are suitable for the installation of handrails and railings.
- B. By beginning installation work, the Subcontractor warrants that existing conditions are suitable for installing handrails and railings.

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, placed in walls with setting templates, to appropriate sections of this Specification.

3.3 INSTALLATION

- A. Install components plumb and level, accurately fitted, free from distortion or defects.
- B. Provide anchors and plates as required for connecting railings to structure. Anchor railing to structure.
- C. Conceal bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

3.4 ERECTION TOLERANCES

- A. Maximum Variation from Plumb: 1/4 inch, non-cumulative.
- B. Maximum Offset from True Alignment: 1/4 inch.

END OF SECTION 055213

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. ICC-ES evaluation reports for wood-preservative treated wood, fire-retardant treated wood, engineered wood products, shear wall panels, and metal framing anchors.
2. Safety Datasheets for all products containing chemicals, according to special procedure in Section 013000 "Administrative Requirements".
3. Design calculations, stamped by engineer licensed in the State of Oregon.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: Provide dressed lumber, S4S, marked with grade stamp of inspection agency.

1. Moisture Content: All sole plates, blocking and members exposed to continuous moisture, or near grade shall have a maximum moisture content as specified for treated materials of 12 percent.

B. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.

1. Allowable Design Stresses: Engineered wood products shall have allowable design stresses, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be demonstrated by comprehensive testing.
2. Moisture Content: All Engineered wood products shall have a maximum moisture content of 12 percent.

2.2 TREATED MATERIALS

A. Preservative-Treated Materials: AWWA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items where any part is in contact with the ground.

1. Use treatment containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
2. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.

3. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- B. Provide preservative-treated materials for items indicated on Drawings, and the following:
1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 2. Wood sills, blocking, furring, and similar concealed members in contact with masonry or concrete.
 3. Wood framing members that are less than 18 inches above the ground.
 4. Wood floor plates that are installed over concrete slabs-on-grade.
 5. Wood in contact with concrete or masonry.
 6. Other exterior wood not indicated to be fire-retardant-treated.
- C. Fire-Retardant-Treated Materials: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
1. Use Exterior type for exterior locations and where indicated.
 2. Use Interior Type A unless otherwise indicated.
 3. For enclosed roof framing, framing in attic spaces, and where high-temperature fire-retardant treatment is indicated, provide material with design adjustment factors of not less than 0.85 for modulus of elasticity and 0.75 for extreme fiber in bending for Project's climatological zone.
 4. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.
 5. Identify with appropriate classification marking of a testing and inspecting agency acceptable to authorities having jurisdiction.
- D. Provide fire-retardant treated materials for items indicated.

2.3 FRAMING

- A. Dimension Lumber:
1. Maximum Moisture Content for framing: 19 percent. Do not extend exposure to moisture on site.
 2. Maximum Moisture Content for bottom and top plates: 12 percent. Do not extend exposure to moisture on site.
 3. Non-Load-Bearing Interior Partitions: Construction or No. 2: Western woods: WCLIB or WWPA.
 4. Framing Other Than Non-Load-Bearing Interior Partitions: No. 2: Douglas fir-larch: WCLIB, or WWPA. No. 1; Douglas fir-larch for 6x and larger.
 5. Exposed Framing: Provide material hand-selected for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.
 - a. Species: As specified for framing other than non-load-bearing interior partitions.
 - b. Grade: Select Structural No. 1.

- B. Laminated-Veneer Lumber: Manufactured with exterior-type adhesive complying with ASTM D2559. Allowable design values determined according to ASTM D 5456.
1. Manufacturers: Including but not limited to the following:
 - a. Boise Cascade Corporation.
 - b. Georgia-Pacific Building Products.
 - c. Louisiana-Pacific Corporation.
 - d. Weyerhaeuser Company.
 2. Extreme Fiber Stress in Bending, Edgewise: 2900 psi for 12-inch nominal-depth members.
 3. Modulus of Elasticity, Edgewise: 1,900,000 psi.
- C. Parallel-Strand Lumber: Structural composite lumber made from wood strand elements with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with exterior-type adhesive complying with ASTM D 2559.
1. Manufacturers: Including but not limited to the following:
 - a. Louisiana-Pacific Corporation.
 - b. Weyerhaeuser Company.
 2. Extreme Fiber Stress in Bending, Edgewise: 2900 psi for 12-inch nominal-depth members.
 3. Modulus of Elasticity, Edgewise: 2,200,000 psi.
- D. Wood-I-Joists: Prefabricated units complying with material requirements of and with structural capacities established and monitored according to ASTM D 5055.
1. Manufacturers: Including but not limited to the following:
 - a. Boise Cascade Corporation.
 - b. Georgia-Pacific Building Products.
 - c. Louisiana-Pacific Corporation.
 - d. Weyerhaeuser Company.
 2. Web Material: Either oriented strand board or plywood, complying with DOC PS 1 or DOC PS 2, Exposure 1.
 3. Structural Properties: Provide units with depths and design values not less than those indicated.
 4. Provide units complying with APA PRI-400, factory marked with nominal joist depth, joist class, span ratings, mill identification, and compliance with APA standard.
- E. Rim Boards: Product designed to be used as a load-bearing member and to brace wood-I-joists at bearing ends, complying with research/evaluation report for I-joists.
1. Manufacturer: Provide products by same manufacturer as I-joists.
 2. Material: All-veneer product.
 3. Thickness: 1-inch.

2.4 MISCELLANEOUS LUMBER

- A. Miscellaneous Dimension Lumber: Standard, Stud, or No. 3 grade with 19 percent maximum moisture content of any species. Provide for nailers, blocking, and similar members.
- B. Concealed Boards: Douglas Fir, No. 2, with 19 percent maximum moisture content.

2.5 PLYWOOD BACKING PANELS

- A. Equipment Backing Panels: Plywood, Exterior, AC, fire-retardant treated, not less than 3/4-inch nominal thickness.

2.6 MISCELLANEOUS PRODUCTS

- A. Fasteners: Size and type indicated. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Sill Sealer: Closed-cell neoprene foam, 1/4 inch thick.
- C. Flexible Flashing: Self-adhesive product consisting of a butyl rubber compound, bonded to a backing sheet to produce an overall thickness of not less than 0.025 inch.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- B. Securely attach rough carpentry to substrates, complying with the following:
 - 1. Table "Fastening Schedule," in the IBC.

END OF SECTION 061000

SECTION 061600 - SHEATHING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Evaluation reports acceptable to authorities having jurisdiction for preservative-treated plywood, and fasteners.
2. Safety Datasheets for all products containing chemicals, according to special procedure in Section 013000 "Administrative Requirements".

PART 2 - PRODUCTS

2.1 WOOD PANEL PRODUCTS, GENERAL

A. Plywood: DOC PS 1.

2.2 TREATED PLYWOOD

A. Preservative-Treated Plywood: AWWA U1; Use Category UC3B.

1. Use treatment containing no arsenic or chromium.
2. Kiln-dry plywood after treatment to a maximum moisture content of 19 percent.
3. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review and acceptable to the authorities having jurisdiction.

B. Provide preservative-treated plywood for items indicated on Drawings and plywood in contact with masonry or concrete, or used with roofing, flashing, vapor barriers, and waterproofing.

C. Fire-Retardant-Treated Materials: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Use Exterior type for exterior locations and where indicated.
2. Use Interior Type A unless otherwise indicated.
3. For roof sheathing and where high-temperature fire-retardant treatment is indicated, span ratings for temperatures up to 170 deg F shall be not less than span rating specified.
4. Identify with appropriate classification marking of a testing and inspecting agency acceptable to authorities having jurisdiction.

2.3 WALL SHEATHING

- A. Plywood Wall Sheathing: Exterior, Structural I Sheathing:
- B. Fire Rated Wall Sheathing: Exterior, Structural I Sheathing, LP Flameblock, coated 1-side. Design UL BXUV.U348 1-hour.

2.4 FLOOR SHEATHING

- A. Plywood Floor Sheathing: Structural I, Tongue and Groove. See Structural Drawings.

2.5 ROOF SHEATHING

- A. Plywood Roof Sheathing: Exterior, Structural I Sheathing. See Structural Drawings.

2.6 MISCELLANEOUS PRODUCTS

- A. Fasteners: Size and type indicated.
 - 1. For roof and wall sheathing with direct exposure to the elements, provide fasteners of type 304 stainless steel.
- B. Adhesives for Field Gluing Panels to Framing: APA AFG-01.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Securely attach to substrates, complying with the following:
 - 1. Table "Fastening Schedule," in the IBC.
 - 2. Evaluation reports for fasteners.
- B. Fastening Methods:
 - 1. Wall and Roof Sheathing:
 - a. Nail to wood framing.
 - b. Do not penetrate tongue and groove framing members with nails. Select nailing based on minimum requirements. Coordinate pressure of pneumatic nailers as required.

END OF SECTION 061000

SECTION 062000 - FINISH CARPENTRY

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Product Data, Shop Drawings, and Evaluation Reports for Fire-retardant-treated materials, from ICC-ES.
2. Material samples for exposed materials.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Lumber: DOC PS 20 and grading rules of inspection agencies certified by American Lumber Standards Committee Board of Review.
- B. Wood Products: Provide materials that comply with the requirements of referenced quality standard for each type of wood and quality grade specified unless otherwise indicated.
 1. Wood Moisture Content for Exterior Materials: 9 to 15 percent.
 2. Wood Moisture Content for Interior Materials: 5 to 10 percent.
- C. Water-Repellent Preservative Treated Materials: Comply with AWWA N1 (dip, spray, flood, or vacuum-pressure treatment) for exterior wood trim indicated to receive water-repellent preservative treatment.
- D. Extend of Water-Repellent Preservative Treatment: Treat all exterior wood trim unless otherwise indicated.

2.2 FIRE-RETARDANT-TREATED MATERIALS

- A. Fire-Retardant-Treated Materials, General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency. Use products that contain no added urea-formaldehyde.
 1. Identify fire-retardant-treated materials with appropriate classification marking of qualified testing agency in the form of a removable paper label or imprint on surfaces that will be concealed from view after installation.

- B. Fire-Retardant-Treated Lumber: Products with flame-spread index of 25 or less when tested according to ASTM E 84, with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not exceeding more than 10.5 feet beyond the centerline of the burners at any time during the test.
 - 1. For exterior applications, use materials that comply with the testing requirements after being subjected to accelerated weathering according to ASTM D 2898.
 - 2. Kiln dry lumber after treatment to a maximum moisture content of 19 percent.

2.3 EXTERIOR FINISH CARPENTRY AND TRIM FOR OPAQUE FINISH

- A. Wood Species: Western Red Cedar.

2.4 INTERIOR TRIM FOR TRANSPARENT FINISH

- A. Wood Species: Hemlock or Douglas fir.

2.5 INTERIOR TRIM FOR OPAQUE FINISH

- A. Wood Species: Hemlock or Douglas fir.

2.6 MISCELLANEOUS PRODUCTS

- A. Fasteners: for Exterior Finish Carpentry: 300-series stainless steel.
- B. Exterior Blocking, Shims, and Nailers: Softwood lumber, kiln dried to not less than 15 percent moisture content.
- C. Interior Blocking, Shims, and Nailers: Softwood lumber, kiln dried to not less than 15 percent moisture content.
- D. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use non-ferrous-metal anchors and inserts at inside face of exterior walls and at floors.
- E. VOC Limits for Installation Adhesives and Sealants: Complying with limits of authorities having jurisdiction.

2.7 FABRICATION

- A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
- B. Fabricate finish carpentry to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:

1. Edges of Solid-Wood (Lumber) Members: 1/16-inch unless otherwise indicated.

2.8 SHOP PRIMING

- A. Exterior Trim for Opaque Finish: Shop prime with one coat of wood primer specified in Section 099113 Exterior Painting.
- B. Interior Trim for Opaque Finish: Shop prime with one coat of wood primer specified in Section 099123 Interior Painting.
- C. Preparations for Finishing: Comply with finish manufacturers' instruction and sand, fill countersunk fasteners, seal concealed surfaces, and complete similar preparations for finishing wood items, as applicable to each unit of work.
 1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of wood trim. Apply two coats to surfaces installed in contact with concrete or masonry and to end-grain surfaces.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install finish carpentry level, plumb, true, and aligned with adjacent materials in accordance with applicable grading rules. Scribe and cut to fit adjoining work. Refinish and seal cuts.
 1. Install to tolerance of 1/8-inch in 96-inches for level and plumb. Install adjoining exterior finish carpentry with 1/32-inch maximum offset for flush installation and 1/16-inch maximum offset for reveal installation.
- B. Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24-inches long except where necessary. Stagger joints in adjacent and related pieces. Cope at returns and inside corners and miter at outside corners.
- C. Fire-Retardant-Treated Wood: Handle, store, and install fire-retardant-treated wood to comply with chemical treatment manufacturer's written instructions, including those for adhesives used to install woodwork.
- D. Preservative-Treated Wood: Where cut or drilled in field, treat cut ends and drilled holes according to AWPA M4.
- E. Refer to Section 099113 – Exterior Painting, and Section 099123 – Interior Painting for final finishing of installed opaque-finished wood.
- F. Refer to Section 099300 - Staining and Transparent Finishing, for final finishing of installed transparent-finished wood.

END OF SECTION 062000

SECTION 064116 - PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Plastic-laminate-faced architectural cabinets.
- B. Plastic-laminate-faced countertops.
- C. Adjustable shelving.

1.2 SECTION REQUIREMENTS

- A. Quality Standard: Comply with AWI, AWMAC, and WI's "Architectural Woodwork Standards" for grades of interior architectural woodwork, construction, finishes, and other requirements.
- B. Mockups to demonstrate typical architectural wood cabinets.
- C. Environmental Limitations: Do not deliver or install paneling until building is enclosed, wet work is completed, and HVAC system is operating.
- D. Coordinate backing and blocking required for cabinet installation with General Contractor.

1.3 SUBMITTALS

- A. Product Data: For each type of product, including high-pressure decorative laminate, interior liner material, cabinet hardware and accessories.
- B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
 - 1. Show details in full size.
 - 2. Show locations and sizes of furring, blocking, and hanging strips or cleats, including concealed blocking and reinforcement specified in other Sections.
 - 3. Show locations and sizes of cutouts and holes for electrical switches and outlets and other items installed in cabinets.
- C. Samples for Verification:
 - 1. Plastic laminates, 8 inches by 10 inches, for each type, color, pattern, and surface finish, with one sample applied to core material and specified edge material applied to one edge.
 - 2. Thermoset decorative panels (melamine), 8 inches by 10 inches, for each color, pattern, and surface finish, with edge banding on one edge.

3. Cabinet hardware and accessories, one of each type.

1.4 QUALITY ASSURANCE

- A. Quality Standard: Unless otherwise indicated, comply with the “Architectural Woodwork Standards” for grades of architectural plastic-laminate cabinets indicated for construction, finishes, installation, and other requirements.
 1. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.
- B. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
- C. Installer Qualifications: Fabricator of products.
- D. Mockups: Build partial mockup to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 1. Build partial mockup of typical plastic-laminate cabinets as shown on Drawings.
 2. Determine size required to demonstrate requirements stated above. Mockup should include; countertop, backsplash, corner section of cabinet, door front. Review with Architect before fabrication.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver cabinets until painting and similar operations that could damage woodwork have been completed at installation areas. If cabinets must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in “Field Conditions” Article.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying Work.
 1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements on Shop Drawings.

- C. Establish Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that the actual dimensions correspond to established dimensions.

1.7 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that cabinets can be supported and installed as indicated.
- B. Coordinate with plumbing and electrical work to be incorporated into cabinets.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

- A. Grade: Premium.
- B. Type of Construction: Frameless.
- C. Cabinet and Door and Drawer Front Interface Style: Flush overlay.
- D. Plastic Laminate Doors, Surfaces and Countertops: NEMA LD 3, grades as required by woodwork quality standard.
 - 1. Basis of Design: Wilsonart – Standard Laminate
- E. Laminate Cladding for Exposed Surfaces:
 - 1. Horizontal Surfaces: Grade HGS.
 - 2. Vertical Surfaces: Grade HGS or Grade VGS.
 - 3. Edges: Grade HGS
 - 4. Pattern Direction: Confirm on Shop Drawings.
- F. Material for Semi-exposed Surfaces:
 - 1. Surfaces other than Drawer Bodies: Thermoset decorative panels.
 - a. Edges of Thermoset Decorative Panel Shelves: PVC or polyester edge banding.
 - 2. Drawer Sides and Backs: Solid-hardwood lumber.
 - 3. Drawer Bottoms: Hardwood plywood.

- G. Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: High-pressure decorative laminate, NEMA LD 3, Grade BKL.
- H. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
 - 1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners or glued dovetail joints.

2.2 PLASTIC LAMINATE COUNTERTOPS

- A. Grade: Premium.
- B. High-Pressure Decorative Laminate: NEMA LD 3, Grade HGS
- C. Edge Treatment: Same as countertop.
- D. Core Material: $\frac{3}{4}$ -inch Marine Grade Plywood.
- E. Backer Sheet: Provide plastic-laminate backer sheet, NEMA LD 3, Grade BKL, on underside of countertop substrate.

2.3 WOOD MATERIALS

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.
- B. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.
 - 1. Particleboard: ANSI A208.1, Grade M-2.
 - 2. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper complying with requirements of NEMA LD 3, Grade VGL, for test methods 3.3, 3.4, 3.6, 3.8, and 3.10.

2.4 CABINET HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets except for items specified in Section 087100 – Door Hardware.
- B. Hinges: Concealed European-style self-closing hinges. Opening limits per application. Satin chrome finish.
- C. Wire Pulls: 4-inch, brushed Stainless Steel finish.
- D. Adjustable Shelf Supports: KV or approved; “anochrome” finish.
- E. Drawer Guides: BHMA A156.9; size and type per application.

- F. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A 156.18 for BHMA finish number indicated.
 - 1. Satin Chromium Plated: BHMA 626 for brass and bronze base; BHMA 652 for steel base.
 - 2. Satin Stainless Steel: BHMA 630.
- G. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

2.5 MISCELLANIOUS MATERIALS

- A. Adhesive for Bonding Plastic Laminate: Contact cement PVA or resorcinol.
 - 1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

2.6 FABRICATION

- A. Fabricate cabinets to dimensions, profiles, and details indicated.
- B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project Site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming and fitting.
 - 1. Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.
 - 2. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connections, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.
- C. Shop-cut openings to maximum extent possible to receive hardware, appliance, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

2.7 CABINET SCHEDULE

- A. Classroom Cabinet: CAB-1
 - 1. Countertop and Backsplash: TBD
 - 2. Lower Cabinet – Doors and Frames: TBD
 - 3. Upper Cabinet – Doors and Frames: TBD

- B. Change Area Sink Counter: CAB-2
 - 1. Countertop and Backsplash: TBD

2.8 MATERIALS

- A. Wood Moisture Content: 5 to 10 percent.
- B. Composite Wood Products: Urea formaldehyde free.
- C. Adhesives: Urea formaldehyde free.
- D. Cabinet Hardware and Accessories:
 - 1. Hinges: Frameless, concealed.
 - 2. Pulls: 4-inch SS Wirepulls.
 - 3. Adjustable shelf supports.
 - 4. Locks: Door and drawer.
 - 5. Exposed Hardware Finishes:
 - a. Satin Chrome
 - b. Brushed Stainless Steel

PART 3 - EXECUTION

3.1 PREPARTION

- A. Before installation, condition cabinets to average prevailing humidity conditions in installation areas.
- B. Before installing cabinets, examine shop-fabricated work for completion and complete work as required.

3.2 INSTALLATION

- A. Grade: Install cabinets to comply with same grade as item to be installed.
- B. Assemble cabinets and complete fabrication at Project site to the extent that it was not complete in the shop.
- C. Install cabinets level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance or 1/8-inch in 96-inches.
- D. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

- E. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
 - 1. Install cabinets with no more than 1/8-inch in 96-inch sag, bow, other variation from a straight line.
 - 2. Fasten wall cabinets through the back, near the top and bottom, and at ends not more than 16 inches on center with No. 10 wafer-head screws.

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean cabinets on exposed and semi-exposed surfaces.

END OF SECTION 064116

SECTION 064600 - WOOD TRIM

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Shop Drawings, Samples of each trim profile.
- B. Submit Safety Datasheets for all products containing chemicals, according to special procedure in Section 013000 "Administrative Requirements."
- C. Weather limitation for Exterior Work: Proceed with installation of exterior wood trim only when existing and forecasted weather conditions permit work to be performed and at least one coat of specified finish to be applied without exposure to rain, snow or dampness.
- D. Environmental Limitations for Interior Woodwork: Do not deliver or install interior woodwork until building is enclosed, wet work is completed, and HVAC system is operating.

PART 2 - PRODUCTS

2.1 WOOD TRIM, GENERAL

- A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of wood trim indicated for construction, finishes, installation, and other requirements.

2.2 EXTERIOR STANDING AND RUNNING TRIM FOR OPAQUE FINISH

- A. Wood Species: Western Red Cedar

2.3 INTERIOR STANDING AND RUNNING TRIM FOR OPAQUE FINISH

- A. Wood Species: Douglas-fir or Hemlock

2.4 INTERIOR STANDING AND RUNNING TRIM FOR TRANSPARENT FINISH

- A. Wood Species: Douglas-fir or Hemlock

2.5 WOOD MATERIALS

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of wood trim and quality grade specified unless otherwise indicated.

1. Wood Moisture Content for Interior Materials: 5 to 10 percent.

2.6 MISCELLANEOUS MATERIALS

- A. Interior Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.
- B. Provide self-drilling screws for metal-framing supports.
- C. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.
- D. Adhesives: Do not use adhesives that contain urea formaldehyde. Comply with VOC content limits of authorities having jurisdiction.

2.7 FABRICATION

- A. Fabricate wood trim to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 1. Edges of Solid-Wood (Lumber) Members: 1/16-inch unless otherwise indicated.
 2. Edges of Rails and Similar Members more than 3/4-inch thick: 1/8-inch.
- B. Backout or groove backs of flat trim members and kerf backs of other wide, flat members except for members with ends exposed in finished work.

2.8 SHOP FINISHING

- A. General: Finish wood trim at fabrication shop as specified.
- B. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing wood trim, as applicable to each unit of work.

2.9 SITE FINISHING EXTERIOR TRIM

- A. General: Prime wood trim at fabrication shop as specified. Use stain blocking primer on all cedar materials.
- B. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing wood trim, as applicable to each unit of work.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition wood trim to average prevailing humidity conditions in installation areas.

3.2 INSTALLATION

- A. Grade: Install wood trim to comply with same grade as item to be installed.
- B. Install wood trim level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
- C. Scribe and cut wood trim to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- D. Anchor wood trim to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.
- E. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 60 inches long except where shorter single-length pieces are necessary. Scarf running joints and stagger in adjacent and related members.
 - 1. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches.

END OF SECTION 064600

SECTION 071113 – BITUMINOUS DAMPPROOFING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Product Data.
2. Safety Datasheets for all products containing chemicals, according to special procedure in Section 013000 "Administrative Requirements".

PART 2 - PRODUCTS

2.1 BITUMINOUS DAMPPROOFING

A. Cold-applied, Emulsified-Asphalt Dampproofing:

1. Manufacturers: Including but not limited to the following:
 - a. BASF Construction Chemical – Building Systems: Sonneborn Brand Products.
 - b. ChemMasters, Inc.
 - c. Henry Company.
 - d. Karnak Corporation.
 - e. Koppers Inc.
 - f. Malarky Roofing Products.
 - g. Meadows, W.R., Inc.
2. Trowel Coats: ASTM D 1227, Type II, Class 1.
3. Fibered Brush and Spray Coats: ASTM D 1227, Type II, Class 1.
4. Brush and Spray Coats: ASTM D 1227, Type III, Class 1.

B. Protection Course: Fan Folded, extruded polystyrene.

C. Emulsified-Asphalt Primer: ASTM D 1227, Type III, Class 1, except diluted with water as recommended by manufacture.

D. Asphalt-Coated Glass Fabric: ASTM 1668, Type I.

PART 3 - EXECUTION

3.1 INSTALLATION

- ##### A. Clean substrates of projections and substances detrimental to work; fill voids, seal joints, and remove bond breakers if any, as recommended by prime material manufacturer.

- B. Comply with manufacturer's written recommendations unless more stringent requirements are indicated.
- C. Apply dampproofing to footings and foundation walls where opposite side of wall faces building interior.
 - 1. Apply from finished-grade line to top of footing, extend over top of footing, and down a minimum of 6-inches over the outside face of footing.
 - 2. Install flashing and corner protection stripping at internal and external corners, changes in plane, construction joints, cracks, and where shown as 'reinforced', by embedding an 8-inch-wide strip of asphalt-coated fabric in a heavy coat of dampproofing. Dampproofing coat for embedding fabric is in addition to other coats required.
- D. Cold-Applied Emulsified Dampproofing:
 - 1. On concrete foundation walls, apply two brush or spray coats, one fibered brush or spray coat, or one trowel coat.
- E. Where indicated, install protection course over completed-and-cured dampproofing.

END OF SECTION 071113

SECTION 072100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data.
- B. Surface-Burning Characteristics: According to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- C. Submit Safety Datasheets for all products containing chemicals, according to special procedure in Section 013000 "Administrative Requirements."

PART 2 - PRODUCTS

2.1 INSULATION PRODUCTS

- A. Insulation, General:
 - 1. Free of Formaldehyde: Insulation manufactured with 100 percent acrylic binders and no formaldehyde.
- B. Glass-Fiber-Blanket Insulation: ASTM C 665, Type I, unfaced with flame-spread and smoke-developed indexes of 25 and 450, respectively.
 - 1. Manufacturers: Including but not limited to the following:
 - a. CertainTeed Corporation.
 - b. Guardian Building Products, Inc.
 - c. Johns Manville; a Berkshire Hathaway company.
 - d. Knauf Insulation.
 - e. Owens Corning.
- C. Glass-Fiber-Blanket Insulation: ASTM C 665, Type II (nonreflective faced), Class C (faced surface not rated for flame propagation); Category I (membrane is a vapor barrier).
 - 1. Manufacturers: Including but not limited to the following:
 - a. CertainTeed Corporation.
 - b. Guardian Building Products, Inc.
 - c. Johns Manville; a Berkshire Hathaway company.
 - d. Knauf Insulation.
 - e. Owens Corning.

2.2 ACCESSORIES

- A. Vapor Retarder: Polyethylene, 6 mils thick.
 - 1. Raven Industries, Inc.: DRA-SKRIM 6WW.
 - 2. Reef Industries, Inc.: Griffolyn T-65.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install insulation in areas and in thicknesses indicated or required to produce R-values indicated. Cut and fit tightly around obstructions and fill voids with insulation.
- B. Blanket Insulation: Install in cavities where supplemental or replacement batt insulation is required.
- C. Continuous Insulation for Walls: Install continuous insulation panels as indicated to provide a continuous thermal barrier. Cover with WRB and seal edges with SAM and manufacturer's sealant tape products as detailed. Panel joists do not require sealing when continuous WRB has been applied.
- D. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
 - 1. Spray Foam Insulation: Apply according to manufacturer's written instructions. Apply in multiple passes to not exceed maximum thicknesses recommended by manufacturer. Do not spray into rising foam.
- E. Thermal Protection: Protect installed spray polyurethane foam insulation with qualified thermal or ignition barrier per applicable building codes.
- F. Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with adhesives or other anchorage. Locate seams at framing members, overlap, and seal with tape. Seal joints caused by pipes, conduits, electrical boxes, and similar items with tape.

END OF SECTION 072100

SECTION 072500 – WEATHER BARRIERS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data and Evaluation Reports.
- B. Samples: Representative samples of all-weather barrier system components.
- C. Mockup: For field quality control testing specified in Part 3 of this Section in coordination with other sections related to the building envelope.
- D. Warranty for Water-Resistive Barrier: Provide manufacturer's standard material warranty.

PART 2 - PRODUCTS

2.1 WATER-RESISTIVE BARRIER

- A. Building Wrap: ASTM E 1677, Type I air barrier, with flame-spread and Smoke-developed indexes of less than 25 and 450, respectively, when tested according to ASTM E 84, UV stabilized, and acceptable to authorities having jurisdiction.
 - 1. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Kingspan Insulation LLC
 - b. Obdyke Wall Systems
 - c. Fortifiber Building Systems Group
 - 2. Products: WRB Drainable House Wrap products, as listed but not limited to the following:
 - a. GreenGuard RainDrop 3D Building Wrap
 - b. HydroGap Drainable House Wrap
 - c. Fortifiber Building Systems Group
- B. Building Wrap Tape: Pressure-sensitive plastic tape recommended by building-wrap manufacturer for sealing of joints and penetrations in building wrap.
- C. Self-Adhered Membrane (SAM): Butyl Rubber, Flexible Flashing: Self-adhesive rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.030 inch.
 - 1. Products: Self-Adhered Sheet Flashing:
 - a. Grace Vycor

- b. Dupont FlexWrap NF

PART 3 - EXECUTION

3.1 MOCKUP

- A. Provide mockup of wall assembly. Coordinate Work with other trades as required to provide all components of the wall assembly as detailed. Make adjustments per Architect and General Contractor's direction.

3.2 WATER-RESISTIVE BARRIER (WRB) INSTALLATION

- A. Cover continuous insulation board with water-resistive barrier as follows:
 - 1. Apply continuous sheets of WRB. Fasten in place per manufacture's recommendations and requirements.
 - 2. Overlap joints per manufacture's recommendations and requirements.
 - 3. Wrap WRB corners and into openings as detailed.
 - 4. Seal penetrations with tape. Inspect to assure water and vapor tight installation.
 - 5. Apply flexible flashing at openings as detailed.

3.3 SELF ADHERING MEMBRANE (SAM) INSTALLATION

- A. Install flexible flashing at all openings and penetrations:
 - 1. Lap seams and junctures with other materials at least 4-inches except that flashing flanges or other construction, laps need not exceed flange width.
 - 2. Lap flashing over water-resistive barrier at bottom and sides of openings.
 - 3. Lap water-resistive barrier over flashing at heads or openings.

END OF SECTION 072500

SECTION 073113 – FIBERGLASS-REINFORCED ASPHALT SHINGLES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Asphalt shingles.
- B. Roofing underlayment.
- C. Self-adhering sheet underlayment

1.2 REFERENCES

A. ASTM International

1. ASTM D 226; Standard Specifications for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
2. ASTM D 1970; Standard specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
3. ASTM D 3161; Standard Test Method for Wind Resistance of Asphalt Shingles (Fan Induced Method)
4. ASTM D 3462; Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.
5. ASTM D 4586; Standard Specification for Asphalt Roof Cement, Asbestos-Free.
6. ASTM D 4869; Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing.
7. ASTM D 6757; Standard Specification for Underlayment Felt Containing Inorganic Fibers Used in Steep Slope Roofing.
8. ASTM D 7158; Standard Test Method for Wind Resistance of Asphalt Shingles (Uplift Force / Uplift Resistance Method)
9. ASTM F 1667; Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

B. Underwriters Laboratory, Inc.

1. UL 790 – Test for Fire Resistance of Roof Covering Materials.
2. CAN/ULC S107 – Methods of Fire Tests of Roof Coverings.

C. National Roofing Contractors Association:

1. The NRCA Roofing and Waterproofing Manual 5th Edition, 2001 (2003 Update)

1.3 Submittals:

- A. Refer to Section 013000 – Administrative Procedures.

- B. Product Data: Submit manufacturer's current technical literature for each roofing component.
- C. Samples for Initial Selection: For each type of asphalt shingle product indicated.
 - 1. Include similar samples of exposed trim and accessories involving color selection.
- D. Samples for Verification: For the following Products, of sizes indicated and to verify color selection.
 - 1. Asphalt Shingle: Full-size asphalt shingle strip.
 - 2. Roofing Underlayment: 12-inch square.
 - 3. Self-Adhering Underlayment: 12-inch square.
- E. Maintenance data: For asphalt shingles to include in maintenance manuals.
- F. Warranties: Samples of special warranties specified in this section.
- G. Closeout Submittals:
 - 1. Refer to Section 017000 – Execution and Closeout Requirements.

1.4 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Installer shall have successful installation experience with installation of Roofing Products under similar conditions.
 - 2. Installation shall be in accordance with asphalt shingle manufacturer's installation guidelines and recommendations.
- B. Source Limitations: Provide felt underlayment and self-adhering sheet underlayment through one source as recommended by asphalt shingle manufacturer.
- C. Fire Test Characteristics:
 - 1. Exterior Fire Test Exposure: Class A; UL 790 and CAN/ULC S-107 for application and roof slopes indicated. Identify materials with appropriate markings of applicable testing and inspection agency.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Refer to Section 016000 – Product Requirements.
- B. Deliver asphalt shingle materials and components in manufacturer's original, unopened, undamaged packages with identification labels intact.
- C. Store asphalt shingle materials as recommended by asphalt shingle manufacturer.

1.6 WARRANTY

- A. Refer to Section 017000 – Execution and Closeout Requirements
- B. Provide Manufacturer's Limited Warranty: Manufacture warrants that shingles are free from manufacturing defects that adversely affect their performance.
- C. Algae Resistance:
 - 1. Manufacturer's warrants that shingles will remain algae resistant for 10 years.

PART 2 - PRODUCTS

2.1 FIBERGLASS-REINFORCED ASPHALT SHINGLES

- A. Laminated Asphalt Singles: ASTM D 3462, laminated, multi-ply construction, glass-fiber reinforced, mineral-granule surfaced, and self-sealing.

2.2 MANUFACTURER

- A. Basis of Design Product: The design for fiber-glass-reinforced asphalt shingles is based on PABCO Prestige Series.
 - 1. PABCO Prestige: Color and pattern to match existing shingles to greatest extent possible.
 - 2. Approved Equal: Substitution request per Section 013000 – Administrative Requirements
- B. Accessories:
 - 1. Starter Course
- C. Roofing Underlayment: ASTM D 226, ASTM D 4869, or ASTM D 6757, applied per manufacturer's instructions.
- D. Self-Adhering Sheet Underlayment: ASTM D 1970.
- E. Asphalt Roofing Cement: ASTM D 4586, asbestos free.
- F. Fasteners:
 - 1. Roofing Nails: ASTM F 1667; aluminum, stainless steel, copper, or hot-dip galvanized-steel wire shingle nails, minimum 0.120-inch-diameter, barbed shank, sharp-pointed, with minimum 3/8-inch diameter flat head and of sufficient length to penetrate 3/4-inch into solid wood decking or through OSB or plywood sheathing.
 - 2. Where nails are in contact with metal flashing, use nails made from same metal as flashing.

G. Metal Flashing and Trim:

1. Sheet Metal Flashing and Trim: Comply with requirements of Section 076200 – Sheet Metal Flashing and Trim.
2. Drip Edges: Fabricate in lengths not exceeding 10-feet with a minimum 2-inch roof deck flange and a minimum 1-1/2-inch fascia flange with 3/8-inch drip at lower edge.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify substrate and surface conditions are in accordance with asphalt shingle manufacturer recommended tolerances prior to installation of asphalt shingles and accessories.

3.2 GENERAL INSTALLATION OF SHINGLES

- A. General: Install in accordance with manufacturer's written instructions and in compliance with local authorities having jurisdiction. To qualify for warranty protection and to obtain stated coverage, manufacturer's written instruction must be followed.
- B. From single course to single course upwards on roof deck, end joints must be maintained with a horizontal offset of 5-5/8 inches.
- C. Ventilation: Provide ventilation as detailed. Provide minimum of 1 square foot of total net free ventilating area for each 150 square feet of ceiling area, or 1 square foot for each 300 square feet of ceiling area if either a vapor barrier is installed on the warm side of the ceiling area or if approximately one-half the ventilation is provided near the roof ridge.

3.3 UNDERLAYMENT

- A. Roof decks with pitch of 4-inches per foot or greater, for new construction or when old roofing has been removed, apply a single layer of roofing underlayment complying with ASTM D 226, D 4869, or D 6757 and local building code.

3.4 EAVE FLASHING

- A. Install Drip Edges: Install eave drip edges prior to installation of self-adhering underlayment. Attach to roof deck.
- B. Install self-adhering underlayment at all eaves with gutters. Eave flashing overhangs drip edge by 1/4-inch and extends up roof surface to 24-inches inside interior wall line.

3.5 NAILING INSTRUCTIONS

- A. Use four nails per shingle for normal applications, positioned in the nail zone as recommended by shingle manufacturer. Nails length as recommended by shingle manufacturer. Nails must be driven flush with shingle surface. Nails must not be overdriven to cut into surface of shingle.

END OF SECTION 073113

SECTION 074646 – FIBER-CEMENT SIDING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Fiber cement lap siding and panels; James Hardie HZ10 Engineered for Climate Siding. Primed for application of paint finish.

1.2 RELATED SECTIONS

- A. Section 061000 – Rough Carpentry: Wood framing and sheathing.
- B. Section 064600 – Wood Trim: Exterior trim materials.

1.3 REFERENCES

- A. ASTM D3359 – Standard Test Method for Measuring Adhesion by Tape Test, Tool and Tape.
- B. ASTM E136 – Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.

1.4 SUBMITTALS

- A. Submit under provisions of Section 013000.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Provide detailed drawings of atypical non-standard applications of cementitious siding materials which are outside the scope of standard details and specifications provided by manufacturer.
- D. Verification Samples: For each product specified, provide two samples, minimum size 4 by 6 inches, representing actual product and patterns.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum of 2 years' experience with installation of similar products.

- B. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Provide mock-up in location approved by Architect.
 - 2. Coordinate with other trades as required to assemble full mock-up of wall system including framing, substrate, continuous insulation, WRB / SAM, window and trim.
 - 3. Review assembly with Architect, General Contractor, related Sub-contractors and Manufacturer Representatives. Make corrections as directed and required for final approval of assembly.
 - 4. Mock-up can be part of final building envelope or a separate temporary structure. If part of final building envelope, verify acceptable location with Architect. If part of final building envelope, mock-up can become final installation once accepted by Architect and Owner.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store siding on edge or lay flat on a smooth level surface. Protect edges and corners from chipping. Store sheets under cover and keep dry prior to installation.
- C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 WARRANTY

- A. Product Warranty: Limited non-pro-rated product warranty.
 - 1. Hardie Plank HZ10 lap siding for 30 years.
 - 2. Hardie Panel HX10 vertical siding for 30 years.
- B. Workmanship Warranty: Application limited warranty for 2 years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. James Hardie Building Products, Inc., 866-274-3464; www.jameshardiecommercial.com
- B. Request for approval of equal substitution will be considered in accordance with provisions of Section 016000.

2.2 SIDING

- A. HardiePlank HZ10 lap siding, HardiePanel HZ10 vertical siding requirements for materials:
 - 1. Fiber-cement Siding – complies with ASTM C 1186 Type A Grade II.
 - 2. Fiber-cement Siding – complies with ASTM E 136 as a noncombustible material.
 - 3. Fiber-cement Siding – complies with ASTM E 84 Flame Spread Index = 0, Smoke Developed index = 5.
 - 4. National Evaluation Report No. NER 405 (BOCA, ICBO, SBCCI, IBC, IRC).
- B. Lap Siding: HardiePlank HZ10 Lap Siding:
 - 1. Type: Smooth 7-1/4" with 6-inch exposure.
 - 2. Factory primed for the application of paint finish per Section 099113.
- C. Vertical Siding: HardiePanel HZ10 Siding Panel:
 - 1. Type: Cedarmill Vertical Siding Panel.
 - 2. 4 feet by 8 feet, 9 feet, and 10 feet as required for application.
 - 3. Factory primed for the application of paint finish per Section 099113.

2.3 FASTENERS

- A. Wood Framing Fasteners: Provide stainless steel fasteners per manufacturer's requirements for assemblies indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.

- B. Work with General Contractor to assure framing, sheathing, furring, exterior insulation, WRB / SAM are correctly installed and ready for application of siding materials per approved exterior wall assembly mock-up.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Install water-resistive barrier (WRB) and self-adhering membrane (SAM) as indicated and in accordance with local building code.
- D. Install exterior trim materials at openings and corner conditions as detailed.
- E. Install pre-finished metal flashing as detailed.

3.3 INSTALLATION – GENERAL

- A. Do not begin installation until substrates have been properly prepared.
- B. Work with General Contractor to assure framing, sheathing, furring, exterior insulation, WRB / SAM are correctly installed and ready for application of siding materials per approved exterior wall assembly mock-up.

3.4 INSTALLATION – LAP SIDING

- A. Fasteners to align with and penetrate vertical framing members.
- B. Install siding materials in pattern indicated.
- C. Provide metal flashing behind vertical joints. Stagger joints on adjacent siding sections a minimum of 48”.

3.5 INSTALLATION – BOARD AND BATT

- A. Install cedar batts to align with vertical wall framing. Fasteners to penetrate vertical framing members.

3.6 FINISHING

- A. Finish factory primed siding with a minimum of one coat high quality 100 percent acrylic or latex exterior grade paint within 180 days of installation. Follow paint manufacturer's written product recommendation and written application instructions.

3.7 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 074646

SECTION 076200 – SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data, Shop Drawings, and color Samples.
- B. Submit Safety Datasheets for all flashing containing chemicals, according to special procedures in Section 013000 – Administrative Requirements.
- C. Coordinate installation of sheet metal flashing and trim with adjoining roofing and wall materials, joints, and seams to provide a leakproof, secure and non-corrosive installation.
- D. Warranty on Finishes: Manufacturer agrees to repair or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within 20-years.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Standard: Comply with NRCA's "The NRCA Roofing Manual" and SMACN's "Architectural Sheet Metal Manual" unless otherwise indicated. Conform to dimensions and profiles shown unless more stringent requirements are indicated.

2.2 SHEET METAL

- A. Metallic-Coated Steel Sheet: Galvanized steel sheet, ASTM A 653/A 653M, G90, or aluminum-zinc alloy-coated sheet steel, ASTM A 972/A 792M, Class AZ50 coating designation, Grade 40; 0.028-inch nominal thickness.
 - 1. Finish: Manufacturer's standard two-coat fluoropolymer system with color coat containing not less than 70 percent PVDF resin by weight.
 - 2. Concealed Finish: Manufacturer's standard white or light-colored acrylic or polyester backer finish.

2.3 ACCESSORIES

- A. Felt Underlayment: ASTM D 226, Type II, asphalt-saturated organic felts.
- B. Self-Adhering Membrane (SAM) Underlayment: Butyl or SBS-modified asphalt; slip-resisting-polyethylene surfaces; with release paper backing; cold applied.
- C. Slipsheet: Rosin-sized building paper, 3-lb/100 sq. ft. minimum.

- D. Fasteners: Wood screws, annular-threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners.
 - 1. Exposed Fasteners: Heads matching color of sheet metal flashing and trim using factory applied finish.
 - 2. Fasteners for Metallic-Coated Steel Sheets: Hot-dip galvanized steel or Series 300 stainless steel.
- E. Butyl Sealant: ASTM C 1311, solvent-release butyl rubber sealant.
- F. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.4 FABRICATION

- A. Fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standards that apply to the design, dimensions, geometry, metal thickness, and other characteristics of item indicated.
- B. Expansion Provisions: Where lapped expansion provisions cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1-inch deep, filled with butyl sealant concealed in joints.
- C. Fabrication Tolerances: Fabricate sheet metal flashing and trim that are capable of installation to tolerances specified in SMACNA's "Architectural Sheet Metal Manual".

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with cited sheet metal standards. Allow for thermal expansion; set true-to-line and level. Install Work with laps, joints, and seams permanently watertight and weatherproof; conceal fasteners where possible.
- B. Sealant Joints: Where movable, non-expansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.
- C. Seams: Fabricate non-moving seams with flat-lock seams.
- D. Metal Protection: Where dissimilar metals contact each other, protect against galvanic action or corrosion by painting surfaces with bituminous coating.
- E. Mock-up: Participate in development of Exterior Wall mock-up. Coordinate installation of sheet metal flashing and trim with General Contractor and other trades related to the exterior wall assembly.
- F. Protect installed Work from other trades until completion of project.

END OF SECTION 076200

SECTION 077123 – GUTTERS AND DOWNSPOUTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Pre-finished aluminum gutters and downspouts.

1.2 RELATED REQUIREMENTS

- A. Section 064600 – Wood Trim
- B. Section 076200 – Sheet Metal Flashing and Trim

1.3 REFERENCE STANDARDS

- A. AAMA 2604 – Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2013.
- B. ASTM B209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- C. SMACNA (ASMM) – Architectural Sheet Metal Manual; 2012.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Connection of downspouts to stormwater drainage system.
- B. Conform to SMACNA for sizing components for rainfall intensity determined by a storm occurrence of 1 in 5 years.

1.5 SUBMITTALS

- A. See Section 013000 – Administrative Requirements.
- B. Product Data: Provide data on prefabricated components.
- C. Shop Drawings: Indicate locations, configurations, joining methods, fastening methods, locations, and installation details.
- D. Selection Samples: Submit color charts showing manufacturer's full range of colors available. For selection.

- E. Verification Samples: Submit two samples, three inches long illustrating component design, finish, color and configuration.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Handle fabricated material to prevent twisting, bending, or abrasion.
- B. Store fabricated materials and components fully supported on flat and dry surface. Protect from weather until installation.

PART 2 - PRODUCTS

2.1 FABRICATION

- A. Shop or site fabricate gutters and downspouts as detailed and as recommended by cited reference standard.

2.2 MATERIALS

- A. Pre-Finished Aluminum Sheet: ASTM B209; 0.032 inch thick.
 - 1. Finish: Plain, shop pre-coated with PVDF (polyvinylidene fluoride) coating.
 - 2. Color: As selected from manufacturer's full range.

2.3 COMPONENTS

- A. Gutters: SMACNA rectangular style profile.
 - 1. Minimum 6-inch width and depth.
 - 2. Seamless full-length run.
- B. Downspouts: Circular profile.
- C. Anchors and Supports: Profiles to suit gutters and downspouts.

2.4 ACCESSORIES

- A. Anchorage Devices: In accordance with SMACNA requirements.
 - 1. Gutter Supports: Screws and ferrules @ 24-inches on center.
 - 2. Downspout Supports: Bracket and Strap; SNACNA FIG 1-35E.
- B. Fasteners: Coated Steel or Aluminum
- C. Sealant: See Section 079200 – Joint Sealants.

2.5 FABRICATION

- A. Form gutters and downspouts of profiles and sizes indicated.
- B. Fabricate with required connection pieces.
- C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.
- D. Hem exposed edges of metal.
- E. Fabricate gutter and downspout accessories; seal watertight.

2.6 FINISHES

- A. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system; as specified.
- B. Primer Coat: Finish concealed side of metal sheets with primer compatible with finish system, as recommended by finish system manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that surfaces are ready to receive work.

3.2 INSTALLATION

- A. Install gutters, downspouts, and accessories in accordance with SMACNA's recommendations.
- B. Install gutters level and true.
- C. Connect downspouts to boots 6-inches above grade. Provide cleanout.
- D. Terminate upper downspouts 2-inches above flat roof surface.

END OF SECTION 077123

SECTION 079200 – JOINT SEALANTS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data and color Samples.
- B. Submit Safety Datasheets for all products containing chemicals, according to special procedures in Section 013000 – Administrative Requirements.
- C. Environmental Limitations: Do not proceed with installation of joint sealants when ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS

- A. Low-Emitting Materials: Complying with VOC limits or Authorities Having Jurisdiction.
- B. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under service and application conditions.
- C. Sealant for Use in Building Expansion Joints:
 - 1. Single-component, neutral-curing silicone sealant, ASTM C 920, Type S; Grade NS; Class 50; for Use NT.
 - a. Products: One of the following:
 - 1) Dow Corning Corporation; 791.
 - 2) GE Construction Sealants; SCS2000 SilPruf.
 - 3) May National Associates, Inc. a subsidiary of Sika Corporation US; Bondaflex Sil 265 LTS.
 - 4) Pecora Corporation; 864-NST.
 - 5) Sika Corporation U.S.; Sikasil WS-295.
 - 6) Tremco Incorporated; Spectrem 2.
- D. Sealant for General Exterior use Where Another Type Is Not Specified, One of the following:
 - 1. Single-component, neutral-curing silicone sealant, ASTM C 920, Type S; Grade NS; Class 25; for Use NT.
 - a. Products: One of the following:
 - 1) Dow Corning Corporation; 758.
 - 2) GE Construction Sealants: SCS2350.

- 3) Polymeric Systems, Inc.; PSI-631.
2. Single-component, non-sage urethane sealant, ASTM C 920, Type S; Grade NS; Class 25; for USE NT.
 - a. Products: One of the following:
 - 1) BASF Construction Chemicals, LLC, Building Systems; Sonalastic TX1.
 - 2) Bostik, Inc.; Chem-Calk GPS1.
 - 3) Pecora Corporation U.S.; Dynatrol I-XL.
 - 4) Sika Corporation U.S.; Sikaflex Textured Sealant.
 - 5) Tremco Incorporated; Dymonic.
- E. Sealant for Use in Interior Joints in Hard Surfaces in Countertops, Toilet Rooms and around plumbing fixtures:
1. Single-component, non-sage urethane sealant, ASTM C 920, Type S; Grade NS; Class 25; for USE NT; formulated with fungicide.
 - a. Products: One of the following:
 - 1) Dow Corning Coproation; 786-M White.
 - 2) GE Construction Sealants; SCS1700 Sanitary.
 - 3) May National Associates, Inc.; Bondaflex Sil 100WF.
 - 4) Soudal USA; RTV GP.
 - 5) Tremco Incorporated; Tremsil 200.
- F. Sealant for Interior Use at Perimeter of Door and Window Frames:
1. Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
 - a. Products: One of the following:
 - 1) BASF Construction Chemicals, LLC, Building Systems; Sonolac.
 - 2) May National Associates, Inc.; Bondaflex 600 or Bondaflex Sil-A 700.
 - 3) Pecora Corporation; AC-20.
 - 4) Sherwin-Williams Compaany; 850A, 950A or Powerhouse.
 - 5) Tremco Incorporated; Tremflex 834.
- G. Acoustical Sealant:
1. Nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 that effectively reduces airborne sound transmission as demonstrated by testing according to ASTM E 90.
 - a. Products: One of the following:
 - 1) Accumetric LLC; BOSS 826 Acoustical Sound Sealant.
 - 2) GE Construction Sealants; RCS20 Acoustical.

- 3) Grabber Construction Sealants; Acoustical Sealant GSC.
- 4) Henkel Corporation; OSI Pro-Series SC-175 Acoustical Sound Sealant.
- 5) Pecora Corporation; AC-20 FTR or AIS-919 as applicable.
- 6) Tremco Incorporated; Tremco Acoustical Sealant
- 7) USG Corporation; Sheetrock Acoustical Sealant.

2.2 MISCELLANEOUS MATERIALS

- A. Provide sealant backings of materials that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler materials or joint surfaces at back or joint. Provide self-adhesive tape where applicable.
- D. Primer: Material recommended by Joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that surfaces are ready to receive work.

3.2 INSTALLATION

- A. Comply with ASTM C 1193.
- B. Install sealant backings to support sealants during application and to produce cross-sectional shapes and depths of installed sealants that allow optimum sealant movement capability.
- C. Install bond-breaker tape and behind sealants where sealant backings are not used between sealants and backs of joints.

END OF SECTION 079200

SECTION 081416 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Samples for factory-finished doors.
- B. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
 - b. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
 - 2. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 FLUSH WOOD DOORS

- A. Manufacturers: Subject to compliance with requirements, provide products from one of the following, or substitution approved by Architect:
 - 1. Algoma Hardwoods, Inc.
 - 2. Eggers Industries.
 - 3. Marshfield Door Systems, Inc.
 - 4. Vancouver Door Company.

2.2 DOOR CONSTRUCTION, GENERAL

- A. Quality Standard: WDMA I.S.1-A.
- B. Low-Emitting Materials: Provide doors made with adhesives and composite wood products that do not contain urea formaldehyde.
- C. WDMA I.S.1-A Performance Grade:
 - 1. Standard Duty.

2.3 FLUSH WOOD DOORS

A. Doors for Opaque Finish:

1. Interior Solid-Core Doors: Custom grade, five-ply hot-pressed, particleboard cores.
 - a. Faces: Any closed-grain hardwood.

2.4 FABRICATION AND FINISHING

- A. Factory-fit doors to suit frame-opening sizes indicated and to comply with clearances specified.
- B. Factory-machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3.
- C. Factory-prime doors for field-painted finish.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install doors to comply with manufacturer's written instructions and WDMA I.S.1-A, and as indicated.
- B. Align doors in frames with uniform clearances and bevels.
- C. Clearances: As follows unless otherwise indicated:
 1. 1/8 inch at heads, jambs, and between pairs of doors.
 2. 1/8 inch from bottom of door to top of decorative floor finish or covering.
 3. 1/4 inch from bottom of door to top of threshold.

END OF SECTION 081416

SECTION 081613 - FIBERGLASS DOORS AND FRAMES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data and Shop Drawings.

1.2 RELATED SECTIONS

- A. SECTION 087100 – DOOR HARDWARE
- B. SECTION 099113 – EXTERIOR PAINTING

PART 2 - PRODUCTS

2.1 FIBERGLASS DOORS AND FRAMES

- A. Manufacturers: Subject to compliance with requirements, provide products from one of the following, or substitution submitted with complete comparative information 10 days prior to bid date and approved by Architect:
 - 1. Codel Dors, Inc., Tacoma, Washington
 - 2. Therma-Tru Corp.
 - 3. Equal
- B. Exterior Doors:
 - 1. Basis of Design: Codel SF611PC
 - 2. Face Style: Half Lite – 1-Panel
 - 3. Core: Polyurethane.
 - 4. Thickness: 1 3/4-inch.
 - 5. Construction: Machinable kiln-dried hardwood with lock edge reinforced with full-length integrated 3 1/2" wide engineered lumber core. Moisture-and-decay resistant composite door bottom edge.
 - 6. Face: 3/32" Fiberglass reinforced thermoset composite with smooth surface
 - 7. Glazing: Low-E Insulated Units.
 - 8. Finish: Site Finish - Paint
- C. Frames:
 - 1. Basis of Design: Codel – Weatherguard Composite with weatherstripping
- D. Hinges: Commercial ball-bearing with non-removable pins, SS.
- E. Hardware: See SECTION 087100 for lockset and threshold.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install pre-hung door and frame per manufacturer's recommendations.
- B. Coordinate door and frame preparation for installation of specified hardware.
- C. Paint door and frame per SECTION 099113.

END OF SECTION 081613

SECTION 085413 – FIBERGLASS WINDOWS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Fiberglass framed windows with nail-flange installation.
 - 1. Fixed Picture Units
 - 2. Single Hung Units
 - 3. Sliding Units

1.2 RELATED SECTIONS

- A. 072500 – WEATHER BARRIERS

- B. 079200 – JOINT SEALANTS

1.3 SUBMITTALS

- A. Reference Section 013000 – ADMINISTRATIVE REQUIREMENTS
 - 1. Product Data

 - 2. Shop Drawings: Include window schedule, elevations, sections. Details & multiple-window assembly details. Include head, sill & jamb conditions, operable parts & direction / handing; and special mullion reinforcement details.

 - 3. Samples: Submit selection samples for verification, including the following:
 - a. Exterior Color: Minimum 1" x 4" color chip on fiberglass substrate.
 - b. Glass, showing specified tint-color/coating

 - 4. Quality Assurance Submittals
 - a. Qualifications: Proof of Manufacturer's qualifications.
 - b. U-Factor and Structural Rating charts required for NFRC and AAMA labeling requirements.
 - c. Installation instructions: AAMA 2400 – Mounting Flange Installation.

5. Closeout Submittals: Reference Section 017823 – Operation and Maintenance Data
 - a. Owner's Manual / Maintenance Instructions
 - b. Warranty

1.4 QUALITY ASSURANCE

- A. Overall Standards: Comply with ANSI/AAMA/101/I.S.2
- B. Manufacturer Qualifications:
 1. Minimum 10 years' experience in producing fiberglass windows.
 2. Member AAMA & NFRC.
- C. Certifications for Insulated Glass Units
 1. Insulated glass units are certified to ASTM E2188/E2190 per Associated Laboratories Incorporated (ALI) guidelines.
- D. AAMA: Windows shall be Silver Label certified with label attached to frame per AAMA requirements.
- E. NFRC: Windows shall be NFRC certified with temporary U-factor label applied to glass and an NFRC tab added to permanent AAMA frame label.

1.5 DELIVERY, STORAGE AND HANDLING

- A. General: Reference Section 016000 – Product Requirements
- B. Comply with Manufacturer's / Dealer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery: Deliver materials in Manufacturer's standard packaging for protection of product.
- D. Storage and Protection: Store products away from exposure to environmental conditions that may be harmful to materials.
- E. Store off ground in an upright position. Provide cover from weather and construction activity.
- F. Follow Manufacturer's instructions on label applied to units.

1.6 WARRANTY

- A. Commercial Warranty
 1. 10 Year Warranty

2. Guarantee windows against defects in materials and workmanship including cost for replacement parts and labor.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Products supplied by the following manufacturer:
 1. Milgard Manufacturing, Inc., Patrick Duffy, 503-682-3270.
 - a. Window Series: Milgard Ultra
 - b. Basis of Design
 2. Pella Corporation, 877-979-6376
 - a. Window Series: Pella Impervia
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

2.2 MATERIALS

- A. Fiberglass: AAMA 305 glass fiber reinforced thermoset profile.
- B. Weather-stripping: Vinyl compression bulb seal.

2.3 SYSTEM DESCRIPTION

- A. General Performance Requirements: Products and systems provided must be manufactured, fabricated, and installed to the following performance criteria:
 1. Comply with ANSI/AAMA/NWWDA 101/I.S.2, except as noted herein
 2. Performance Class: LC
 3. Performance Grade: LC30
 4. U-Factor (NFRC 100): 0.40
 5. SHGC – Solar Heat Gain Coefficient (NFRC 200): 0.40 Minimum
- B. Structural Requirements: Products and systems provided must be capable of withstanding wind loads based on testing units representative of those indicated for Project that pass AAMA,NWWDA 101/I.S.2/NAFS, Uniform Structural Load Test:

1. Design Wind Loads: Determine design wind loads, according to ASCE, Section 6, applicable to Product from basic wind speeds (MPH) at 33 feet above grade, based upon mean roof heights indicated on Elevations / Drawings.
 - a. Basic Wind Speed: 130 MPH
 - b. Exposure Category: B
 - c. Wind Load Requirement:

2.4 WINDOW TYPES

A. Single Hung – 3210 Series – 1-3/8” nail fin setback

1. Frame: 4-1/4” minimum depth. Multi-chambered fiberglass pultrusion.
2. Sash: 1-9/16” minimum depth. Multi-chambered fiberglass pultrusion.
3. Color: Selected from manufacturer's standard colors.
4. Sightlines: Equal for operating and fixed sash.
5. Structural Class: H-C30
6. Hardware:
 - a. Positive action locking mechanism.
 - b. Nylon rollers with stainless steel axles, extruded aluminum monorail roller track.
7. Weatherstripping: Foam filled seal and fin seal polypropylene pile.

B. Horizontal Sliding – C650 Series – 1-3/8” nail fin setback

1. Frame: 3-1/4” minimum depth. Multi-chambered fiberglass pultrusion.
2. Sash: 2-3/8” minimum depth. Multi-chambered fiberglass pultrusion.
3. Color: Selected from manufacturer's standard colors.
4. Structural Class: C-C45.
5. Hardware:
 - a. Positive action locking system
6. Weatherstripping: Vinyl compression bulb seal.

2.5 GLAZING

- A. Insulated Glass Units: ASTM E 774, Class A
 - 1. Glazing Type: Dual Glazed
 - a. Cardinal Low-E/Clear
 - 2. Overall IG Unit Thickness:
 - a. 7/8".
 - 3. Spacer Type:
 - a. EdgeguardMAX.
 - 4. Glass Thickness:
 - a. Per Manufacturer's Specifications
 - 5. Tempered Glass Units:
 - a. Provide tempered glass units where indicated and as required by code.
 - b. Provide etched label on all tempered glass units.

2.6 INSECT SCREEN

- A. Screen Frame:
 - 1. Roll Formed Aluminum.
- B. Screen Mesh:
 - 1. Fiberglass Screen Mesh.

2.7 FABRICATION

- A. Fabricate frames and sash with milled and mitered joints and mechanically joined corners.
- B. Trim and finish corners and welds to match adjacent surfaces.
- C. Factory exterior wet silicone glaze with snap-on glazing stops matching exterior sash and frame finish. Insulating glass units shall be re-glazable without dismantling sash framing.

2.8 FINISH

- A. Frame, Sash, and Screen Frame Color: Match window color.

1. Baked-on Enamel: Interior and Exterior

B.

Hardware:

1. Brushed Chrome

2.9 SOURCE QUALITY CONTROL

- A. Inspect windows in accordance with Manufacture's Quality Control Program as required by AAMA Silver Label Certification.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine openings in which windows are to be installed.
 1. Verify that framing complies with AAMA 2400.
 2. Verify that fasteners in framed walls are fully driven and will not interfere with window installation.
 3. Verify openings are flashed and prepared, ready to receive window unit.
- B. Coordinate with responsible entity to correct unsatisfactory conditions.
- C. Commencement of work by installer is acceptance of substrate conditions.

3.2 INSTALLATION

- A. Examine openings in which windows are to be installed.
 1. Install windows in framed walls in accordance with AAMA 2400.
 2. Do not remove temporary labels.
 3. Install window screen on operable units at completion of construction.
 - a. Window supplier to hold delivery of window screens until contractor request delivery.

3.3 CLEANING AND FINISHING

- A. Reference Section 017000 – Execution and Closeout Requirements.

- B. Remove temporary labels and retain for Closeout Submittals.
- C. Clean soiled painted surfaces and glass with mild detergent and warm water solution with soft, clean cloths.

END OF SECTION 085413

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Hardware schedule and keying schedule.
- B. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated below:
 - a. Locks: Five years from date of Substantial Completion.
 - b. Exit Devices: Two years from date of Substantial Completion.
 - c. Manual Closers: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 HARDWARE

- A. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- B. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the DOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.
- C. Provide products for each door that comply with requirements indicated in Part 2 and door hardware schedule.
 - 1. Door hardware is scheduled on Drawings.
- D. Mechanical Locks and Latches:
 - 1. Lock Functions: As indicated in door hardware schedule.
 - 2. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
 - a. Mortise Locks: Minimum 3/4-inch latchbolt throw.
 - b. Deadbolts: Minimum 1.25-inch bolt throw.
 - 3. Lock Backset: 2-3/4 inches unless otherwise indicated.
 - 4. Lock Trim:
 - a. Description: As indicated on Drawings.

- b. Levers: Cast.
 - c. Escutcheons (Roses): Cast.
 - d. Dummy Trim: Match lever lock trim and escutcheons.
5. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.
6. Mortise Locks: BHMA A156.13; Operational Grade 1; stamped steel case with steel or brass parts; Series 1000.
- E. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver. Provide cylinder from same manufacturer of locking devices.
- F. Standard Lock Cylinders: BHMA A156.5; Grade 1 permanent cores; face finished to match lockset.
- 1. Core Type: Interchangeable.
- G. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide (2) construction master keys.
- H. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide (2) construction master Cores.

2.2 KEYING

- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, appendix. Provide one extra key blank for each lock. Incorporate decisions made in keying conference.
- 1. Master Key System: Change keys and a master key operate cylinders.
 - a. Provide three cylinder change keys and five master keys.
 - 2. Keyed Alike: Key all cylinders to same change key.
- B. Keys: Nickel silver.

2.3 OTHER HARDWARE ITEMS

- A. Operating Trim: BHMA A156.6; stainless steel unless otherwise indicated.
- B. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written instructions for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force. Opening force 5 lbs interior. Fire doors are exempt from the 5 lbs Closing speed will be measured from 90 degrees to 12 degrees will be 5 seconds minimum.

- C. Wall- and Floor-Mounted Stops: BHMA A156.16.
- D. Door Gasketing: BHMA A156.22; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
- E. Maximum Air Leakage: When tested according to ASTM E 283 with tested pressure differential of 0.3-inch wg, as follows:
 - 1. Smoke-Rated Gasketing: 0.3 cfm/sq. ft. of door opening.
 - 2. Gasketing on Single Doors: 0.3 cfm/sq. ft. of door opening.
 - 3. Gasketing on Double Doors: 0.50 cfm per foot of door opening.
- F. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.

2.4 FINISHES

- A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
 - 2. Custom Steel Doors and Frames: HMMA 831.
 - 3. Wood Doors: DHI's "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
- C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
- D. Lock Cylinders: Install construction cores to secure building and areas during construction period.
 - 1. Replace construction cores with permanent cores as directed by Owner.

- E. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."
- F. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.
- G. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
 - 1. Do not notch perimeter gasketing to install other surface-applied hardware.

3.2 ADJUSTING

- A. Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

PART 4 - HARDWARE GROUPS – SEE DRAWINGS

END OF SECTION 087100

SECTION 089000 – LOUVERS AND VENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Prefinished, fixed, extruded-aluminum louvers with insect screen.

1.2 DEFINITIONS

- A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section unless otherwise defined in this Section or in references standards.
- B. Horizontal Louver: Louver with horizontal blades; i.e., the axis of the blades are horizontal.
- C. Storm-Resistant Louver: Louver that provides specified wind-driven rain performance, as determined by testing according to AMCA 500-L.

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Louvers shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated without permanent deformation of louver components, noise or metal fatigue caused by louver blade rattle or flutter, or permanent damage to fasteners and anchors. Wind pressures shall be considered to act normal to the face of the building.
 - 1. Wind Loads: Determine loads based on a uniform pressure of 60 lbf/sq.ft., acting inward or outward.
- B. Louver Performance Rating: Provide louvers complying with requirements specified, as demonstrated by testing manufacturer's stock units identical to those provided, except for length and width according to AMCA 500-L.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Rating Seals.
- B. Shop Drawings: For louvers and accessories. Include plans, elevations, sections, details, and attachments to other work. Show frame profiles and blade profiles, angles, and spacing.
 - 1. Show weep paths, gaskets, flashing, sealant, and other means of preventing water intrusion.

2. Show mullion profiles and locations.

C. Samples for Initial Selection: For units with factory-applied color finishes.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain louvers and vents from single source from single manufacturer where indicated to be of same type, design, or factory-applied color finish.

B. Welding: Quality procedures and personnel according to the following:

1. AWS D1.2, "Structural Welding Code – Aluminum."

C. SMACNA Standard: Comply with recommendations in the SMACNA's "Architectural Sheet Metal Manual" for fabrication, construction details, and installation procedures.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum Extrusions: ASTM B 221, Alloy 6063-T5, T-52, or T6.

B. Aluminum Sheet: ASTM B 209, Alloy 3003 or 5005 tempered as required for forming, or as otherwise recommended by metal producer for required finish.

C. Fasteners: Use types and sizes to suit installed conditions.

1. Use tamper-resistant screws for exposed fasteners unless otherwise indicated.
2. For fastening aluminum, use aluminum or 300 series stainless steel fasteners.
3. For color-finished louvers, use fasteners with heads that match color of louvers.

2.2 FABRICATION

A. Assemble louvers in factory to minimize field spicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

B. Maintain equal louver blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.

- C. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrications and installation tolerances, adjoining material tolerances and perimeter sealant joints.
 - 1. Frame Type: Masonry
- D. Include supports, anchorages, and accessories required for complete assembly.
- E. Provide subsills made of same material as louver.
- F. Join frame members to each other and to fixed louver blades with fillet welds concealed from view unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

2.3 FIXED, EXTRUDED-ALUMINUM LOUVERS

- A. Horizontal Storm-Resistant Louver:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Greenheck Fan Corporation; Rain Resistant Louver EHH-501 or comparable product manufactured by one of the following companies:
 - a. Greenheck Fan Corporation
 - b. Airolite Company, LLC
 - c. All-Lite Architectural Products
 - d. Ruskin Company
 - 2. Louver Depth: 4-inches
 - 3. Frame and Blade Nominal Thickness: Not less than 0.081 inch.
 - 4. Louver Performance Ratings:
 - a. Free Area: 30%
 - b. Air Performance: Not more than 0.08-inch wg static pressure drop at 700-fpm free-area intake velocity.
 - c. Wind-Driven Rain Performance: Not less than 99 percent effectiveness when subjected to a rainfall rate of 3-inches per hour and a wind speed of 29 mph at a core-area intake velocity of 672 fpm.
 - 5. AMCA Seal: Mark units with AMCA Certified Rating Seal.
- B. Louver Screens:
 - 1. Provide screen at each exterior louver. Locate screen at interior face of louver blades.
 - 2. Secure screen frames to louver frames with stainless steel machine screws, spaced a maximum of 6-inches from each corner and 12-inches on center.
 - 3. Louver Screen Frames: Fabricate with mitered corners to louver size indicated.
 - 4. Screen Frame Metal: Same kind and form of metal as indicated for louver to which screens are attached. Reinforce extruded-aluminum screen frames at corners with clips.
 - 5. Screen Frame Finish: Mill finish.

C. Louver Screening for Aluminum Louvers:

1. Insect Screening: Aluminum, 18-by-16 mesh, 0.012-inch wire with rewirable frames with a driven spline or insert.

2.4 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Aluminum Finishes: Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and openings, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordinate setting drawings, diagram, templates, instructions, and directions for installation of the anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

3.3 INSTALLATION

- A. Locate and place louver and vents level, plumb, and at indicated alignment with adjacent work.
- B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make weathertight connection.
- C. Form closely fitted joints with exposed connections accurately located and secured.
- D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.
- E. Repair finishes damaged by cutting, welding, soldering, and grinding. Restore finishes so no evidence remains of corrective work. Return items that cannot be refinished in the field to the factory, make required alterations, and refinish entire unit or provide new units.

- F. Protect unpainted galvanized and nonferrous-metal surface that will be in contact with concrete, masonry, or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint or by separating surfaces with waterproof gaskets or nonmetallic flashing.
- G. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Section 079200 – Joint Sealants, for sealants applied during louver installation.
- H. Protect installed louvers and vents with protective coverings to minimize collection of dust and debris. Use tape that will not impact louver finish or adjacent finishes and materials.

3.4 ADJUSTING AND CLEANING

- A. Remove protective coverings.
- B. Clean exposed surfaces of louvers and vents. Remove fingerprints, dust and soiling that may have occurred during the construction period.
- C. Before final inspection, clean exposed surfaces with water and mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.
- D. Restore louvers and vents damaged during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by the Architect, remove damaged units and replace with new units.
- E. Touch-up minor abrasions in finish with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.

END OF SECTION 089000

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data.

PART 2 - PRODUCTS

2.1 PANEL PRODUCTS

- A. Provide in maximum lengths available to minimize end-to-end butt joints.
- B. Interior Gypsum Board: ASTM C 1396/C 1396M, in thickness indicated, with manufacturer's standard edges.
 - 1. Manufacturers: One of the following:
 - a. American Gypsum.
 - b. CertainTeed Corp.
 - c. Georgia-Pacific Gypsum LLC.
 - d. National Gypsum Company.
 - e. USG Corporation.
- C. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.
 - 1. Locations: Walls and ceilings in bathrooms, kitchens, and other wet area.
 - 2. Core: 1/2 inch.
 - 3. Long Edges: Tapered.
 - 4. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.2 ACCESSORIES

- A. Trim Accessories: ASTM C 1047, formed from galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet.
 - 1. Provide cornerbead at outside corners unless otherwise indicated.
 - 2. Provide LC-bead (J-bead) at exposed panel edges.
 - 3. Provide control joints where indicated.
- B. Joint-Treatment Materials: ASTM C 475/C 475M.
 - 1. Joint Tape: Paper unless otherwise recommended by panel manufacturer.

2. Joint Compounds: Drying-type, ready-mixed, all-purpose compounds.
 3. Skim Coat: For final coat of Level 5 finish, use setting-type, sandable topping compound, drying-type, all-purpose compound, or high-build interior coating product designed for application by airless sprayer and to be used instead of skim coat to produce Level 5 finish.
- C. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
1. Adhesive shall have a VOC content complying with limits of authorities having jurisdiction.
- D. Acoustical Sealant for Exposed and Concealed Joints: Nonsag, paintable, nonstaining latex sealant complying with ASTM C 834.
1. Sealants shall have a VOC content not greater than limits of authorities having jurisdiction.
- E. Sound-Attenuation Blankets: ASTM C 665, Type I (unfaced).

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install gypsum board to comply with ASTM C 840.
1. Single-Layer Fastening Methods: Fasten gypsum panels to supports with screws.
- B. Finishing Gypsum Board: ASTM C 840.
1. Unless otherwise indicated, provide light application of spray applied texture with orange peel finish. Provide samples prior to application.

END OF SECTION 092900

SECTION 096500 – RESILIENT FLOORING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Plank Flooring.
- B. Resilient Base.
- C. Installation Accessories

1.2 SUBMITTALS

- A. See Section 013000 – Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- C. Samples: Submit three (3) sets of samples of each type, color and finish of flooring and accessory products specified, with an indication of full range of color, pattern and texture variation. Provide samples with a minimum size of 6" x 9" for flooring products and 6" in length for accessories.
- D. Quality Assurance Submittals:
 - 1. Installer Qualifications: Submit three (3) copies of documentation showing a minimum of 5 Years' experience installing similar material in a similar setting.
 - 2. Submit three (3) copies of the manufacturer's Product Technical Data Sheet, specifying performance characteristics, criteria and physical requirements.
 - 3. Submit three (3) copies of manufacturer's written installation recommendations.
- E. Closeout Submittals
 - 1. Submit three (3) copies of the maintenance and operations data. This should include methods for maintaining the installed products and any precautions against cleaning materials or methods that are detrimental to the product and their performance.
 - 2. Submit three (3) copies of the warranty as specified herein.
 - 3. Installer Certification: Submit proof of certification from the manufacturer certifying that the installers comply with the specified requirements.
- F. Maintenance Materials: After completion of the Work, deliver to project site replacement materials from the same manufactured lot as material installed. Package materials with protective covering and identify each with descriptive labels. Furnish the following for Owner's use in maintenance of project.

1. See Section 016000 – Product Requirements.
2. Extra Flooring Material: 5 square feet minimum of each type and color.
3. Extra Wall Base: 10 linear feet for each 500 linear feet or fraction thereof, of each type and color.

1.3 DELIVERY, STORAGE AND HANDLING

- A. Deliver flooring materials only after building has been enclosed, heat system has been activated, and building interior environment has been stabilized.
- B. Upon receipt, immediately remove and shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
- C. Store all materials off of the floor in an acclimated, weather-tight space.
- D. Maintain temperatures in storage area between 55 degrees F and 90 degrees F.

1.4 FIELD CONDITIONS

- A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Plank Flooring:

1. Basis of Design: Patcraft Natural Slate Click Flooring – match existing.
2. Size: 6.92-inch x 48.03-inch.
3. Thickness: 20 mil.
4. Color and Pattern: 20 mil Click - Driftwood.
5. Substitutions: See Section 016000 – Product Requirements

B. Resilient Base:

1. Basis of Design: Roppe 700 Series Vinyl Wall Base.
2. Minimum Requirements: Comply with ASTM F 1861, Type TP.
3. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
4. Thickness: 0.125-inch.
5. Color / Height:
 - a. RB-1: Color 1 / 4-inch
 - b. RB-2: Color 2 / 4-inch
 - c. RB-3: Color 3 / 6-inch

6. Color: Color as selected from Manufacturer's standard colors.
7. Substitutions: See Section 016000 – Product Requirements

C. Accessories:

1. Subfloor Filler: White pre-mix latex; type recommended by adhesive material manufacturer.
2. Primers, Adhesives, and Seaming Materials: Waterproof; types recommended by flooring manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free from cracks that might telegraph through flooring, clean, dry and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- B. Verify that the wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

3.2 PREPARATION

- A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- B. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat hard surface.
- C. Prohibit traffic until filler has cured.
- D. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

3.3 INSTALLATION

- A. Starting installation constitutes acceptance of sub-floor conditions.
- B. Protect adjacent materials and surfaces. Cover as required.
- C. Install in accordance with manufacturer's instructions.
- D. Spread only enough adhesive to permit installation of materials before initial set.
- E. Fit joints tightly.
- F. Set flooring in place, press with heavy roller to attain full adhesion.

- G. Where type of floor finish, pattern, or color are different on opposite sides or door opening or passage, terminate flooring under center line of door or center of wall at passages.
- H. Install edge guards or reducers at flooring transitions. Select appropriate profile for application. Verify with Architect.
- I. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

3.4 PLANK FLOORING

- A. Verify layout pattern and orientation on-site with Architect and Owner.
- B. Patch existing plank flooring as required for removal of existing interior wall.
- C. Install per manufacturer's written specification and installation instructions.

3.5 RESILIENT BASE

- A. Fit Joints tightly and make vertical. Install in longest lengths possible.
- B. Install base on solid backing. Bond tightly to wall and floor surfaces.
- C. Scribe and fit to door frame, vertical trim and other interruptions.

3.6 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's instructions.

3.7 PROTECTION

- A. Prohibit traffic on resilient flooring for 48 hours after installation.
- B. Minimize traffic to greatest extent possible. Provide floor protection during subsequent construction activities. If tapes or other adhesives are utilized, verify compatibility with flooring manufacturer to avoid damaging floor surface or curing of adhesives.

END OF SECTION 096500

SECTION 099113 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data and Samples.
- B. Mockups: Full-coat finish Sample of each type of coating, color, and substrate, applied where directed.
- C. Extra Materials: Deliver to Owner 1 gal. of each color and type of finish-coat paint used on Project, in containers, properly labeled and sealed.

PART 2 - PRODUCTS

2.1 PAINT

- A. Manufacturers:
 - 1. Benjamin Moore & Co.
 - 2. Coronado Paint.
 - 3. Kelly-Moore Paints.
 - 4. Miller Paint.
 - 5. PPG Paints.
 - 6. Rodda Paint Co.
 - 7. Sherwin-Williams Company (The).
- B. Material Compatibility: Provide materials that are compatible with one another and with substrates.
 - 1. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- C. VOC content: Low / No VOC. Complying with limits of authorities having jurisdiction.
- D. Colors: As selected.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Comply with manufacturer's written recommendations applicable to substrates present.

- B. Remove hardware, lighting fixtures, and similar items that are not to be painted. Mask items that cannot be removed. Reinstall items in each area after painting is complete.
- C. Clean and prepare surfaces in an area before beginning painting in that area. Schedule painting so cleaning operations will not damage newly painted surfaces.

3.2 APPLICATION

- A. Comply with manufacturer's written recommendations applicable to substrates present.
- B. Paint exposed surfaces unless otherwise indicated.
 - 1. Do not paint prefinished items, items with an integral finish, operating parts, and labels unless otherwise indicated.
- C. Apply paints according to manufacturer's written instructions.
 - 1. Use brushes only where the use of other applicators is not practical.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
 - 1. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

3.3 EXTERIOR PAINT APPLICATION SCHEDULE

- A. Steel:
 - 1. Semigloss, Alkyd: Two coats over alkyd anticorrosive primer.
- B. Galvanized Metal:
 - 1. Semigloss, Alkyd: Two coats over primer recommended by topcoat manufacturer for exterior use on galvanized metal.
- C. Wood and Fiber Cement Siding:
 - 1. Semigloss Latex: Two coats over latex primer.

END OF SECTION 099113

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data and Samples.
- B. Mockups: Full-coat finish Sample of each type of coating, color, and substrate, applied where directed.
- C. Extra Materials: Deliver to Owner 1 gal. of each color and type of finish-coat paint used on Project, in containers, properly labeled and sealed.

PART 2 - PRODUCTS

2.1 PAINT

- A. Manufacturers:
 - 1. Benjamin Moore & Co.
 - 2. Coronado Paint.
 - 3. Kelly-Moore Paints.
 - 4. Miller Paint.
 - 5. PPG Paints.
 - 6. Rodda Paint Co.
 - 7. Sherwin-Williams Company (The).
- B. Material Compatibility: Provide materials that are compatible with one another and with substrates.
 - 1. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- C. VOC content: No / Low VOC. Complying with limits of authorities having jurisdiction.
- D. Colors: As selected.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Comply with manufacturer's written recommendations applicable to substrates present.

- B. Remove hardware, lighting fixtures, and similar items that are not to be painted. Mask items that cannot be removed. Reinstall items in each area after painting is complete.
- C. Clean and prepare surfaces in an area before beginning painting in that area. Schedule painting so cleaning operations will not damage newly painted surfaces.

3.2 APPLICATION

- A. Comply with manufacturer's written recommendations applicable to substrates present.
- B. Paint exposed surfaces unless otherwise indicated.
 - 1. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces.
 - 2. Paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 3. Paint the back side of access panels.
 - 4. Do not paint prefinished items, items with an integral finish, operating parts, and labels unless otherwise indicated.
- C. Apply paints according to manufacturer's written instructions.
 - 1. Use brushes only where the use of other applicators is not practical.
 - 2. Use rollers for finish coat on interior walls and ceilings.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
 - 1. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

3.3 INTERIOR PAINT APPLICATION SCHEDULE

- A. Wood: Including wood trim.
 - 1. Semigloss Institutional Low-Odor/VOC Latex: Two coats over latex primer for wood.
- B. Gypsum Board:
 - 1. Flat Latex: Two coats over latex primer/sealer.
 - 2. Gloss Level 2 Institutional Low-Odor/VOC Latex: Two coats over low-odor/VOC primer/sealer.

END OF SECTION 099123

SECTION 104400 – FIRE PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Fire-Protection Cabinets
- B. Fire Extinguishers

1.2 SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include styles, material descriptions, construction details, dimensions of individual components and their profiles, features, finishes, and operating instruction.

1.3 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.
- B. Store in conditioned space.

1.4 FIELD CONDITIONS

- A. Verify location of semi-recessed cabinets prior to installation of drywall materials. Confirm locations with Architect and Fire Marshal.

PART 2 - PRODUCTS

2.1 FIRE-PROTECTION CABINETS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Guardian Fire Equipment, Inc.
 - 2. JL Industries, Inc.
 - 3. Larsens Manufacturing Company.
- B. Cabinet Construction: Rated where indicated.

- C. Cabinet Material: Steel sheet.
 - 1. Trim Material: Steel.
- D. Door Material: Steel with view lite.
- E. Door Hardware: Manufacturer's standard door operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
 - 1. Door Latch: Roller catch.
 - 2. Hinge: Continuous
- F. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing and location.
 - 1. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER".
 - a. Location: Applied to cabinet door.
 - b. Application Process: Decal or vinyl lettering.
 - c. Lettering Color: Black.
 - d. Orientation: Vertical.
- G. Steel: Baked enamel or powder coat.
- H. Tempered Float Glass: ASTM C1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick.

2.2 FIRE EXTINGUISHERS

- A. Portable Fire Extinguishers: NFPA 10, listed and labeled for the type, rating, and classification of extinguisher.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Guardian Fire Equipment, Inc.
 - b. JL Industries, Inc.
 - c. Larsens Manufacturing Company.
 - 2. Multi-purpose Dry-Chemical Type: UL-rated 2-A:10-B:C, 5-lb nominal capacity, in enameled-steel container.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install fire-protection cabinets after walls have been painted.

- B. Install fire-protection cabinets true and plumb.
- C. Install fire-extinguishers after completion of project and prior to Substantial Completion and Occupancy.

END OF SECTION 104400

SECTION 122413 – ROLLER SHADES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Manually operated roller shades with single rollers.
 - 1. Privacy / Sun control

1.2 SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include styles, material descriptions, construction details, dimensions of individual components and their profiles, features, finishes, and operating instruction for roller shades.
- B. Shop Drawings: Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations.
- C. Samples: For each exposed product and for each color and texture specified:
 - 1. Fabric: 24-inches square.
 - 2. Other linear components: 10" length.

1.3 QUALITY ASSURANCE

- A. Mock-up:
 - 1. Provide a mock-up of one roller shade assembly for evaluation of mounting, appearance and accessories.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.
- B. Store in conditioned space.

1.5 FIELD CONDITIONS

- A. Environmental Laminations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at levels indicated for Project when occupied for its intended use.
- B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. MechoShade Systems, Inc.
 - 2. Or approved equal.
- B. Source Limitations: Obtain roller shades from on single source from a single manufacturer.

2.2 MANUALLY OPERATED SHADES WITH SINGLE ROLLERS

- A. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated.
 - 1. Bead Chains: Stainless Steel.
 - a. Loop Length: Full length of roller shade.
 - b. Limit Stops: Provide upper and lower ball stops.
 - 2. Spring Lift-Assist Mechanisms: Manufacture's standard for balancing roller-shade weight and lifting heavy roller shades.
 - a. Provide for shadebands that weigh more than 10 lb or for shades as recommended by manufacture, whichever criteria is more stringent.
- B. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thickness required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of the shadeband for service.
- C. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting locations and conditions indicated.

D. Shadebands:

1. Shadeband Material: Privacy (light filtering) or blackout fabric, as indicated.
2. Shadeband Bottom (Hem) Bar: Steel or Aluminum.
 - a. Type: Enclosed in sealed pocket of shadeband material.

E. Installation Accessories:

1. Provide full aluminum headbox and fascia for overhead mounting.
 - a. Height: Manufacturer's standard height required to conceal roller and shadeband when shade in fully open.
2. Installation Accessories Color and Finish: As selected from manufacturer's full range.

2.3 SHADEBAND MATERIALS

- A. Shadeband Material Flame Resistance Rating: Comply with NFPA 701. Testing by qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- B. Privacy (Light-Filtering) Fabric: Woven fabric, stain and fade resistant.
 1. Basis of Design Product: Mechoshade EcoVeil 1350 Series
 2. Type: Woven TPO.
 3. Weave: Mesh.
 4. Openness Factor: 5 percent.
 5. Color: As selected by Architect from manufacturer's full range.

2.4 ROLLER-SHADE FABRICATION

- A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.
- B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F.
 1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which shade is installed less 1/4-inch per each side or 1/2-inch total, plus or minus 1/8-inch. Length equal to head-to-sill or -floor dimension of opening in which shade is installed less 1/4-inch, plus or minus 1/8-inch.
 2. Outside of Jamb Installation: Width and length as indicated, with terminations between shades of end-to-end installations at centerlines of mullion or other defined vertical separations between openings.
- C. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible except as follows:

1. Railroaded Materials: Railroad material where material roll width is less than the required width of shadeband and where indicated. Provide battens and seams as required by railroaded material to produce shadebands with full roll-width panel(s) plus, if required, one partial roll-width panel located at the top of the shadeband.

2.5 ROLLER-SHADE SCHEDULE

- A. Provide privacy (light-filtering fabric) roller-shades at all window openings and glazed doors.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ROLLER-SHADE INSTALLATION

- A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.

3.3 ADJUSTING

- A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

- A. Clean roller-shade surfaces after installation, according to manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that the roller shades are without damage or deterioration at time of Substantial Completion.
- C. Replace damaged roller shades that cannot be repaired, in a manor approved by Architect, before time of Substantial Completion.

END OF SECTION 122413

SECTION 22 00 00 - BASIC PLUMBING REQUIREMENTS

PART 1 - GENERAL

1.1 OTHER REQUIREMENTS

- A. The Bidding, General and Supplementary of this project manual and specific sections as noted apply to the work specified in Plumbing Division 22 which encompasses Sections 22 00 00 through 22 42 00. This Section 22 00 00 applies to all sections of Division 22 Plumbing.

1.2 SCOPE

- A. It is the intent of these specifications and the accompanying drawings to describe complete plumbing systems installations for all building areas, new and renovation.
- B. Furnish and install all material, labor, and equipment in accordance with these documents.
- C. Include all incidental items and work not specifically shown or specified but required by good practice in a complete system.
- D. The drawings and specifications are complementary. What is called for in one shall be called for in both.
- E. The drawings are diagrammatic but should be followed as closely as possible. Where required by jobsite conditions, relocate and provide fittings, etc., as required. Provide an allowance in the contract bid to furnish additional pipe and fittings required for coordination with structure and other construction trades.

1.3 DEFINITIONS

- A. Or approved equal: Requires approval prior to bid date.
- B. Indicated:
 - 1. The term "indicated" is a cross reference to details, notes, or schedules on the drawings, other paragraphs or schedules in the specifications, and similar means of recording requirements in the Contract Documents.
 - 2. Where terms such as "shown," "noted," "scheduled," and "specified" are used instead of "indicated," it is for the purpose of helping the reader locate the cross reference, and no limitation of location is intended except as specifically noted.
- C. Directed, Requested, Etc.: Where not otherwise explained, terms such as "directed," "requested," "authorized," "selected," "approved," "required," "accepted," and "permitted" mean "directed by the Engineer," "requested by the Engineer," etc. However, no such implied meaning will be interpreted to extend the Engineer's responsibility into the Contractor's area of construction supervision.

- D. Site or Project Site: The space available to the Contractor for the performance of the work, either exclusively or in conjunction with others performing the work as part of the project. The extent of the project site is shown on the plumbing drawings and is not identical with the description of the land upon which the project is to be built.
- E. Approved:
1. Where used in conjunction with the Architect's response to submittals, requests, applications, inquiries, reports and claims by the Contractor, the meaning of the term "approved" will be held to the limitations of the Architect's responsibilities and duties as specified in the General and Supplementary Conditions.
 2. In no case will "approval" by the Architect be interpreted as a release of the Contractor from responsibilities to fulfill requirements of the Contract Documents.
- F. Provide: The term "provide" means to furnish and install, complete and ready for the intended use.

1.4 STANDARDS AND CODES

- A. Provide all equipment and material and perform all work in accordance with all local, state and national codes and regulations.
- B. For work on this project, comply with appropriate standards published by the following:
- | | |
|---|------|
| 1. American Gas Association AGA | |
| 2. American National Standards Institute | ANSI |
| 3. American Society of Mechanical Engineers | ASME |
| 4. American Society of Plumbing Engineers | ASPE |
| 5. American Society for Testing and Materials | ASTM |
| 6. National Electrical Manufacturers Association | NEMA |
| 7. National Fire Protection Association | NFPA |
| 8. Underwriters' Laboratories UL | |
| 9. International Building Code (w/State of Oregon Amendments) | IBC |
| 10. International Fire Code | IFC |
| 11. Oregon Mechanical Specialty Code | OMSC |
| 12. Oregon Plumbing Specialty Code | OPSC |
| 13. Oregon Zero Energy Ready Commercial Code | |

1.5 APPROVAL OF EQUIPMENT AND MATERIALS

- A. Manufacturer's trade names, catalog numbers, and material specifications used in this specification are intended to establish the quality of equipment or materials expected. Materials and manufacturers not listed require approval prior to the bid date.
- B. Approval of substitute equipment or materials will be based upon performance, quality and other factors deemed important by the Architect. The Contractor will be responsible for making all changes in this and other associated work required as a result of the substitution. Additional or modified structural calculations and roof penetrations required to accommodate the substitution will be the responsibility of the contractor.

1.6 SUBMITTALS

- A. Transmit five sets of submittals to the Architect for review. The submittals shall be bound in three-ring binders, have major topic tabs and an index. In order to expedite approval of certain items, it is not necessary to transmit complete submittals initially. The initial transmittal will include the binder, expected tabs and an index indicating which items are included, the date each is transmitted, and which items are yet to be transmitted. Future transmittals shall include a revised index.
- B. Furnish performance data and technical information on all materials and equipment to be used on the project.
- C. Include shop drawings with the submittals where necessary to determine clearance, where the Contractor proposes alternate equipment or material arrangements, and when requested by the Architect.
- D. Items transmitted for approval must be received in the Architect's office within 45 days of contract award. The Architect prior to installation must approve all material and equipment.
- E. Review of submittals or shop drawings by the Architect does not relieve the Contractor from the requirements of the Contract Documents unless specific approval has been requested for a given deviation.

1.7 QUALITY ASSURANCE

- A. Maintain the highest standards of workmanship throughout the project.
- B. Use the latest editions of applicable and specifically referenced standards.
- C. Inspect all material and equipment upon arrival at the site and return any which is not in new condition.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 COORDINATION

- A. Cooperate with other trades to assure that construction proceeds in an orderly and timely manner. Contract cost increases due to improperly sequenced work with other trades will not be allowed.
- B. Study the new and existing architectural, structural, electrical, shop, and any specialty drawings as appropriate and specifications to determine required coordination.
- C. Prepare detailed shop drawings where necessary to assure proper fit and necessary clearance.

- D. Refer to electrical drawings to verify voltage and phase of plumbing equipment.

3.2 PERMITS, FEES AND INSPECTIONS

- A. Obtain all required permits and pay for all fees and connection charges.
- B. Schedule any required inspections.

3.3 MATERIALS AND WORKMANSHIP

- A. Furnish all materials and equipment in new condition, free from defects and of size, make, type and quality specified. Installation shall be in a neat and workmanlike manner.
- B. When two or more items of the same kind, type, or class are required, use items of a single manufacturer.

3.4 MEASUREMENTS

- A. Take all measurements from reference datums established by the plumbing contractor.

3.5 DELIVERY, HANDLING AND STORAGE

- A. Receive all material and equipment at the jobsite or shop.
- B. Use proper and sufficient equipment to handle all products employed in the project.
- C. Where storage of material or equipment is necessary, it shall be a clean and weatherproof area. Seal any openings and cover the product to assure that there will be no corrosion or foreign matter introduced. Assure that it will be in new condition when placed in service.

3.6 EQUIPMENT INSTALLATION, BRACING AND SUPPORT

- A. Install all equipment in strict accordance with the manufacturer's instructions unless otherwise indicated.
- B. The drawings in general are based upon one of the specific manufacturers listed for a particular equipment item. The other specified manufacturers and additional approved manufacturers of equipment may require deviations from the drawings to properly install the particular equipment in accordance with the manufacturer's recommendations and to provide the system results required. Provide all work necessary in the base bid price to install this equipment.
- C. Where the installation shown or specified is contrary to the manufacturer's instructions, advise the Architect in writing of the differences before proceeding with the installation.
- D. Anchorage to Floors, Roofs, etc., Sway Bracing and Seismic Restraints:
 - 1. Provide supports for all apparatus as specified, detailed, as required by the manufacturers of specific equipment and the project governing code authorities. Anchor all roof and base/floor mounted equipment with size and spacing of anchor bolts or other attachment means as recommended by the respective equipment manufacturer.

2. Provide supports for all apparatus as specified, detailed, as required by the manufacturers of specific equipment and the project governing code authorities. Anchor all roof and base/floor mounted equipment with size and spacing of anchor bolts or other attachment means as recommended by the respective equipment manufacturer. Provide seismic restraints on all mechanical equipment in conformance with the Oregon Structural Specialty Code Section 1613 Earthquake Loads. Costs for seismic calculations shall be included in the bid price.
3. Provide deferred submittals directly to the governing code jurisdiction for anchorage to floors, roofs, etc., sway bracing and seismic restraints. Submittals shall show locations and sufficient support details as required by the governing code jurisdiction.
4. Maintain a copy of the manufacturer's installation instructions at the jobsite for all equipment.

3.7 SLEEVES AND INSERTS

- A. Provide sleeves at all locations where piping and ductwork passes through building construction.
- B. Sleeves for interior walls and floors shall be 22-gauge galvanized or heavier as required. Sleeves for exterior walls shall be cast iron, wall thickness as required.
 1. Wall sleeves shall be installed in all exterior walls and all interior masonry or fire-rated walls in a manner that preserves the fire-rated or watertight integrity of the wall.
 2. Interior wall sleeves for uninsulated pipe shall allow minimum 1/4 inch clearance all around pipe for pipe movement. Allow 1-inch clearance around pipe at building expansion joints.
 3. Interior wall sleeves for insulated piping shall be selected to encompass the pipe and insulation and allow minimum 1/4 inch clearance around insulation for pipe movement. Allow 1-inch clearance around pipe and insulation at building expansion joints.
 4. Floor sleeves shall extend 4 inches above the floor and shall be sealed watertight. Floor sleeves shall be oversized to allow 1/2 inch minimum space all around pipe or pipe and insulation where applicable. Seal space between pipe and sleeve with Dow Corning Fire Stop System, 3M brand CP25 or approved equal. Sealant must be between pipe and sleeve. Sealant between insulation and sleeve is not acceptable. Install firestop materials in complete accordance with the manufacturer's instructions and in compliance to applicable UL listings.
- C. Seal space between pipe and sleeve with Dow Corning Fire Stop System, 3M Brand CP25 or approved equal where piping penetrates firewall or floors. Sealant must be between pipe and sleeve; sealant between insulation and sleeve is not acceptable. Install firestop materials in complete accordance with the manufacturer's instructions and in compliance to applicable UL listings.
- D. Utilize Linkseals or similar closures on core-drilled penetrations through below grade walls. Repair existing below grade waterproofing systems as applicable.

3.8 FLOOR, WALL AND CEILING PLATES

- A. Provide escutcheon plates where all exposed piping passes through finished walls, floors and ceilings, including accessible cabinet spaces.
- B. Floor plates: deep recessed, cast brass, chrome plated.
- C. Wall and ceiling plates: spun aluminum, chrome plated.
- D. Secure plates to pipe or structure. Plates shall not penetrate insulation vapor barriers. Size plates to sufficiently cover pipe sleeves and openings in finish materials.

3.9 ACCESS DOORS AND PANELS

- A. Manufacturers: Cesco, Milcor, Elmdor. Cesco used as basis of selection.
- B. Non-rated panels: Style W, SR-1, SR-2, P, PX as required for wall or ceiling construction, 12 inch x 12 inch or larger as required for ease of access.
- C. Fire-rated panels: Style FB, UL listed for 1-1/2 hr for fire rated stud and masonry wall systems.
- D. Provide access panels where shown on the drawings or as required for proper access to mechanical appurtenances. Coordinate the installation of access panels is with the specific building construction penetrated. Coordinate access panel installation with Manufacturers instructions.
- E. Locate and size access doors to facilitate equipment service and optimize the safety of the maintenance personnel. Minimum access door size shall be 18 inch x 18 inch.

3.10 PROTECTION

- A. Protect all work, material and equipment from loss or damage until the Owner accepts the project.
- B. As the work progresses, keep all equipment covered and cap all piping that may temporarily be left unconnected.
- C. Notify all other trades of any required precautions necessary to protect the work.

3.11 ACCESSIBILITY

- A. Plumbing equipment, piping, and all other related appurtenances shall be installed in such a way that facilitates servicing, repair, and/or replacement of equipment. Piping shall not obstruct access or removal of equipment.
- B. Provide convenient access by location or access panel to all equipment requiring periodic service.

3.12 ELECTRICAL WORK

- A. Materials and work provided as a part of this Plumbing Division 22 are:
 - 1. Equipment control wiring.

2. Interlock wiring.
 3. Motor starters.
- B. Wherever possible, provide all interconnect wiring within or on a piece of equipment with the equipment unless shown or specified otherwise. An electrician licensed to perform this type of work shall perform all field wiring.

3.13 RELATED WORK

- A. The following work and materials are specified elsewhere:
1. Pipe chases, equipment pads and foundations, trenches, painting, air louvers, louvered penthouse, and access panels except as otherwise specified in this division.
 2. Framed openings, wood grounds and nailing strips, masonry, concrete and other architectural and structural elements.
- B. The following work and materials are specified in Electrical Division:
1. Power wiring.
 2. Disconnect switches.
 3. Furnishing and installation of disconnect switches.
 4. Installation of magnetic starters.

3.14 CLEANING

- A. Maintain premises and public properties free from accumulations of waste, debris, and rubbish during construction.
- B. Clean all plumbing equipment of dust, grease, iron cuttings, unnecessary stamps, or shipping labels, etc.
- C. Touch up factory-painted surfaces, as necessary, with paint of matching color.

3.15 RECORD DRAWINGS

- A. Maintain one set of construction drawings at the jobsite for the sole purpose of recording work of the plumbing contract, as actually installed. Upon request, the Architect will make the original tracings available to the plumbing contractor for printing the drawings. The Contractor shall pay the reproduction costs.
- B. Record all piping by dimensions from gridlines, below grade, above floor, etc. Show location of all access panels, cleanouts, rough-in for future, etc.
- C. Make record drawings available to the Architect for review or reproduction during construction. The Architect will pay any printing costs.
- D. Deliver record drawings to the Architect promptly upon completion of the project.

3.16 OPERATION AND MAINTENANCE MANUALS:

- A. Submit five copies of the Operation and Maintenance Manuals to the Architect for approval before project completion. Bind the instruction books with three-ring 8-1/2 inch x 11 inch side binders with plastic covers. Include an index and tabs for major systems and equipment. Operation and Maintenance Manuals shall include the following:
- B. Directories:
 - 1. Supplier Directory: Alphabetical list of principal subcontractors and suppliers of equipment giving names, addresses, and telephone numbers.
 - 2. Equipment Directory: List of plumbing equipment installed such as, pumps, water heaters, plumbing fixtures, etc., giving drawing reference numbers, location, area served, manufacturer with model number, and supplier.
- C. Manufacturer's Literature:
 - 1. Show name, address, and phone number of the nearest service facility authorized by the manufacturer.
 - 2. Include illustrations, diagrams, and instructions for installation, startup, operation, inspections, maintenance, parts list, data sheets, and other necessary materials.
 - 3. Include complete electrical, schematic and connection diagrams for each equipment item.
 - 4. Include the name, address, and phone number of contractor(s) who furnished and who installed equipment and systems.
 - 5. Where the literature covers more than one model, check off neatly in ink correct model number and data for the model number including all specified options.
 - 6. In those instances where the equipment, its mode of control, or both, is job assembled for special functions, then provide written operating and maintenance instructions prepared by the assembler on 8-1/2 inch x 11 inch sheets.
- D. Maintenance Instructions:
 - 1. Where instructions for maintenance are not included in the manufacturer's literature, provide supplemental data to enable proper maintenance of the equipment installed.
 - 2. Include specific lubrication methods and recommended frequencies along with procedures and precautions for inspection and routine service.
- E. Copy of Written Guarantee.
- F. Recommended Spare Parts Stock.

3.17 OWNER MEETING

- A. Schedule a meeting between the Contractor's representative and the Owner for the purpose of reviewing operation and maintenance of the building mechanical systems. The Contractor's representative shall be well qualified and knowledgeable of the systems in this facility.
- B. The meeting shall be scheduled to allow the Owner and appropriate subcontractors and equipment suppliers to attend.

- C. The meeting shall be scheduled promptly upon completion of the project and approval of the Operation and Maintenance Manuals.
- D. The Contractor shall review the Operation and Maintenance Manuals and record drawings in detail with the Owner.

3.18 CUTTING AND PATCHING

- A. Cut work as required for installation and patch to match original conditions as directed and approved by Architect. Do not cut structural portion without Architect's approval.
- B. When masonry construction must be penetrated, provide a steel pipe sleeve in opening and grout in place in a neat manner. Leave grout surface to match existing finish.
- C. Prior to cutting any existing work, locate all concealed utilities to eliminate any possible service interruption or damage.

3.19 FIRESTOPPING PENETRATIONS IN FIRE-RATED WALL/FLOOR ASSEMBLIES

- A. Contractors shall provide proper sizing when providing sleeves or core-drilled holes to accommodate the through penetrating items. All voids between sleeve or core-drilled hole and pipe passing through, shall be firestopped to meet the requirements of ASTM E814.
- B. Fire stop penetrations in accordance with the UL listed assemblies provided by the manufacturers of the products used.

3.20 CONTRACT COST DATA

- A. Furnish to the Architect a cost breakdown of the Plumbing Contract with major systems and equipment broken out with itemized costs.

3.21 CHANGE ORDERS

- A. All supplemental cost proposals by the Contractor shall be accompanied with a complete itemized breakdown of labor and materials cost without exception.
- B. Contractor's estimating sheets for the supplemental cost proposals shall be made available to the Architect. Labor must be separated and allocated for each item of work.

3.22 VERIFICATION OF EXISTING CONDITIONS

- A. Verify field conditions and measurements prior to the manufacture or order of materials and equipment.
- B. Produce shop drawings with details as required verifying proper installation of materials and equipment in conformance with applicable codes and the manufacturer's requirements.

3.23 SYSTEMS WIRING

	ITEM	FURNISHED BY	INSTALL BY	POWER WIRING	CONTROL WIRING
1.	Division 22 Equipment Motors	Div. 22	Div. 22	Div. 26	Div. 22
2.	Motor Starters, Contactors and Overload Heaters – Integral	Div. 22	Div. 26	Div. 26	Div. 22
3.	Motor Control Centers	Div. 26	Div. 26	Div. 26	Div. 22
4.	Fused & Unfused Disconnect Switches	Div. 26	Div. 26	Div. 26	-----
5.	Manual Operation Switches	Div. 26	Div. 26	Div. 26	Div. 26
6.	Control Relays & Transformers	Div. 22	Div. 22	Div. 22	Div. 22
7.	Energy Management Control Panels	Div. 22	Div. 22	Div. 22	Div. 22
8.	Motorized Solenoid Valves	Div. 22	Div. 22	Div. 22	Div. 22

END OF SECTION

SECTION 22 05 23 - GENERAL DUTY VALVES FOR PLUMBING

PART 1 - GENERAL

1.1 SUMMARY

- A. Work included: Providing of all required valves, cocks, and faucets.

1.2 SUBMITTALS

- A. Provide submittals in accordance with Section 22 00 00.
- B. Submittals shall include manufacturer's catalog or technical data showing performance, dimensions, materials of construction, and recommended methods of installation.

1.3 OPERATION AND MAINTENANCE DATA

- A. Provide O&M data in accordance with Section 22 00 00.
- B. O&M data will include manufacturer's literature and maintenance instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Gate Valves, Ball Valves and Drain Valves: Hammond, Stockham, Nibco, Milwaukee or approved equal. Hammond used as basis of selection.

2.2 DESCRIPTION

- A. All valves used in potable water applications are to be third party certified by a state recognized certifying agency to comply with 2014 Federal Lead free act.
- B. Gate Valves (Domestic Water Service): Hammond part UP-647, Class 125, 200 PSI non-shock cold water rated solder type bronze body gate valve with solid wedge disc, integral seat, threaded bonnet, non-rising stem, iron hand wheel.
- C. Ball Valves (Domestic Water Service): Ball valves for domestic water service shall be Hammond part 8604 (threaded ends) / 8614 (soldered ends), 150 SWP / 600 WOG, 400 PSI non-shock cold water rated 3-piece bronze body ball valve with full port, blow out proof stem, RTFE seats and PTFE packing, free floating chrome plated brass ball.
- D. Drain Valves: Hose end valve, 150 WWP, adjustable packing nut and stuffing box, Buna-N seats, iron hand wheel. Provide cap and chain.
- E. Horizontal Swing Check Valves: Hammond part UP-943, 125 lb. screwed, swing check valve with renewable Teflon composition disc.
- F. Vertical/Spring and Silent Check Valves: Acceptable Manufacturers: Metra-Flex or Crane Duo-Chek II, ASA 150 Class, semi-steel or cast iron body, bronze trim.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Provide valves at connections to equipment, where shown on the drawings or as required.
- B. Install all valves with stem horizontal or above, accessible and same size as connected piping.
- C. Provide separate support for valves where necessary.
- D. Install check valves in horizontal position only.

END OF SECTION

SECTION 22 05 29 - HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Work included: Providing of all required hangers and supports for piping and equipment.

1.2 SUBMITTALS

- A. Provide submittals in accordance with Section 22 00 00.
- B. Submittals shall include:
1. Manufacturer's technical literature for all products used indicating service for each type of hanger.
 2. Include proposed pre-manufactured piping and duct vibration isolation products.
 3. Submit literature or describe duct-supporting method.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Nvent, Eaton, or ABB Installation Products. Nvent is used for a basis for selection.
- B. Vibration Isolators:
1. Type of isolator, base, and minimum static deflection shall be as required for each specific equipment application as recommended by isolator or equipment manufacturer but subject to minimum requirements indicated herein.
 2. Uniform Loading: Select and locate isolators to produce uniform loading and deflection even when equipment weight is not evenly distributed.
 3. Mason Industries products used as basis of selection.

2.2 DESCRIPTION

- A. Pipe Attachments:
1. Non-insulated ferrous pipe (1/2 to 1-1/2 inch): model 115.
 2. Non-insulated ferrous pipe (2 inch and larger): model 400.
 3. Non-insulated copper pipe: models 101 and 104.
 4. Insulated pipe: models 103 and 403.
 5. Riser clamp, ferrous pipe: model 510.
 6. Riser clamp, plastic DWV: model 520.
- B. Upper Attachments: Attachment to wood structures where weights permit shall be models 325 or 328.
- C. Structural Attachments: Provide all necessary structural attachments such as concrete anchors, beam clamps, hanger flanges and brackets. Hangers shall not be suspended from other piping, equipment, etc.

- D. Miscellaneous items such as hanger rod, rod couplings, turnbuckles, etc. shall be standard model numbers of the same manufacturer as the attachments.
- E. All-threaded rods for pipe supports shall be no less than 3/8 inch diameter.
- F. All floor mounted equipment to be placed on a 4-inch-high concrete housekeeping pad.
- G. Rooftop pipe supports:
 - 1. B-line DBR series or equal.
 - 2. Rubber block supports: DBP Series 6 inch W x 4 inch T x 4.8 inch L.
 - a. Accessories fastened directly into rubber material with weather resistant type 12 lag screws.
 - b. 14 ga galv. channel.
 - c. Roller supports.
 - 3. Electro-plated steel brackets, axle, and hardware.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Provide hangers and supports in accordance with the instructions furnished by the manufacturers of these devices.
- B. For horizontal pipe lines, install pipe hangers with maximum hanger spacing and maximum hanger rods as recommended in Table 6 of the ASHRAE Guide and Data Book, Systems and Equipment Chapter 41. Where concentrated loads of valves, fittings, etc. occur, closer spacing will be necessary and shall be based on the weight to be supported and the maximum recommended loads for the hanger components. Cast iron soil pipe shall be supported at every joint.
- C. Horizontal banks of piping for plumbing piping only, i.e. domestic hot and cold water, may be supported on a common steel channel strut member spaced not more than the shortest allowable span required on the individual pipe. Piping to be maintained at these relative lateral positions using clamps, slips, or free to roll axially or slide using an insulated protector at all points of support for insulated lines.
- D. Provide additional structural members where required to support piping or ductwork.
- E. Provide hangers and support devices in accordance with the equipment manufacturer's instructions for all equipment.
- F. Anchorage to Floors, Roofs, Etc., Sway Bracing and Seismic Restraints:
 - 1. The contractor is responsible to determine the means and methods of equipment installation and support.
 - 2. Provide supports for all apparatus as specified, detailed, as required by the manufacturers of specific equipment and the project governing code authorities. Anchor all roof and base/floor mounted equipment with size and spacing of anchor bolts or other attachment means as recommended by the respective equipment manufacturer
 - 3. Always consult roofing manufacturer for roof membrane compression capacities.

4. Gas pipe spacing is subject to local gas authorities.
5. Use properly sized pipe clamps to suit pipe size(s).
6. Provide seismic restraints on all mechanical equipment in conformance with the Oregon Structural Specialty Code Section 1613 "Earthquake Loads." Costs for seismic calculations shall be included in the bid price.
7. Provide deferred submittals directly to the governing code jurisdiction for anchorage to floors, roofs, etc., sway bracing and seismic restraints. Submittals shall show locations and sufficient support details as required by the governing code jurisdiction.
8. Provide supplementary drawings and calculations as required by governing code jurisdictions noting seismic support data/calculations as required for permit purposes.

END OF SECTION

SECTION 22 05 48 - VIBRATION AND SEISMIC CONTROLS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Providing of all seismic restraints and vibration isolation for plumbing equipment.

1.2 QUALITY ASSURANCE

- A. Equipment: All plumbing equipment mounted on vibration isolators shall be provided with seismic restraints capable of resisting a horizontal force of 100 percent of the weight of the equipment furnished.
- B. Piping: Refer to specification section 22 05 29, Hangers and Supports for Plumbing Piping and Equipment.

1.3 SUBMITTALS

- A. Provide submittals in accordance with Section 22 00 00.
- B. Submittals shall include:
 - 1. Manufacturer's technical literature for all products used including weights, dimensions and standard connections.
 - 2. Indicate service for each type of hanger.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

- A. Type of isolator, base, and minimum static deflection shall be as required for each specific equipment application as recommended by isolator or equipment manufacturer but subject to minimum requirements indicated herein.
- B. Uniform Loading: Select and locate isolators to produce uniform loading and deflection even when equipment weight is not evenly distributed.
- C. Mason Industries products used as basis of selection.

2.2 VIBRATION ISOLATORS

- A. Piping Systems:
 - 1. Provide isolation by either floor mount or hangers with 3/4 inch deflection.
 - 2. Provide oversized wall penetrations, line with neoprene and seal with resilient caulk or firestop material as appropriate.
 - 3. Isolate domestic water piping from structure with Holdrite. Attach to one side of double stud wall.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Provide vibration isolation above for the noted plumbing systems. Install all vibration isolation devices in accordance with manufacturer's installation instructions. Provide additional support members, strut bracing, etc as required for proper installation of isolation devices.
- B. Inspection and Adjustments: Check for vibration and noise transmission through connections and floor. Adjust, repair, or replace isolators as required to reduce vibration and noise transmissions to specified levels.
- C. On all sides of suspended equipment, provide bracing for rigid supports and provide restraints for resiliently supported equipment. The slack cable restraint method, Mason Industries, or equal, is acceptable.

3.2 ADJUSTING

- A. Adjust vibration isolators after equipment is at operating weight.
- B. Adjust limit stops on restrained spring isolators to mount equipment at normal operating height. After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.
- C. Adjust active height of spring isolators.
- D. Adjust seismic restraints to permit free movement of equipment within normal mode of operation.
- E. Torque anchor bolts according to equipment manufacturer's recommendations to resist seismic forces.

END OF SECTION

SECTION 22 05 53 - IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Work included: Providing of all required identification systems for equipment and piping.

1.2 SUBMITTALS

- A. Provide submittals in accordance with Section 22 00 00.
- B. Submittals shall include:
 - 1. List of proposed equipment and valve tags.
 - 2. Product information on piping markers.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. W. H. Brady Co. or Seton.

2.2 DESCRIPTION

- A. Equipment Identification: Equipment identification tags shall be three-ply, white center, black face plastic plates with 1/2-inch-high letters for major and 1/4-inch-high letters for minor equipment.
- B. Piping Markers:
 - 1. All vinyl self-sticking labels.
 - 2. Markers shall comply with Table 6-1 of the Oregon Plumbing Specialty Code for width of color field, size of letters, etc. Markers shall comply with the following color convention:

<u>Service</u>	<u>Color</u>
Steam	Aluminum
Hot Water Heating	Tan
Cooling Water	White
Chilled Water	Green
Domestic Cold Water	Blue
Domestic Hot Water	Gold
Natural Gas	Yellow
Compressed Air	Black
Fire Service Water	Red
Waste and Vent	Brown

- 3. Labels shall indicate “supply”, “return” or “recirculation” as applicable to the piping system.
- C. Valve Tags: Tags shall be not less than 1 inch in diameter, 0.64 brass. Information included on the tag shall be:

1. Valve Type.
 2. Service Line (i.e. Hot Water).
 3. Sequential number associated with the project.
- D. Utility Markers: Brady Identoline plastic tape, 6 inch.
- E. Ceiling Markers: Standard label tape type.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Provide each piece of roof equipment with a manufacturer's standard nameplate indicating manufacturer's name, model number, capacities and characteristics.
- B. In addition, provide each piece of equipment with a plastic tag indicating its designation on this project and the area served. Mount this tag with screws, where possible, in a clearly visible location.
- C. Affix piping markers to pipe or insulation in locations that make them clearly visible. Secure markers with two wraps of "Scotch Reinforced Tape" at each end.
- D. Locate markers at intervals of 15 to no more than 50 feet allowing visual identification of a line from any point along that line and as follows: At each valve, where a pipe passes through a wall, direction of flow on each leg of a "T" and on lower quarters of the line on horizontal runs where view is not obstructed.
- E. Provide arrow markers to indicate direction of flow away from each pipe identification marker.
- F. Affix valve tags to valves using brass chain.
1. Provide an approved copy of the valve schedule in each Operation and Maintenance Manual.
 2. Furnish one copy of the schedule framed under glass to the owner's representative
 3. Information will include:
 - a. Valve locations by plan room number.
 - b. Function of the valve (i.e. equipment isolated).
 - c. Service Line (i.e. Hot Water).
- G. Provide plastic tape utility markers over all buried piping. Provide identification on tape. Install over the entire length of the underground piping utilities. Install plastic tape along both sides and the centerline of the trenches, at the elevation of approximately 12 inches above the top of utility.
- H. Provide ceiling labels for all equipment located above drop or hard ceilings. The markers shall indicate the equipment symbol associated with the contract documents and the type of equipment. Locate the labels per the following:
1. Lay-in Ceiling - Locate the label on the ceiling grid member closest to the equipment location.

2. Hard Ceiling - Locate the label on the access panel servicing the unit or closest access point.

END OF SECTION

SECTION 22 05 93 - TESTING OF PLUMBING

PART 1 - GENERAL

1.1 SUMMARY

- A. Work Included: Pressure testing of piping.

1.2 OPERATION AND MAINTENANCE DATA

- A. Provide O&M data in accordance with Section 22 00 00.
- B. O&M data shall include certificate of completion, inspection and test by authority having jurisdiction on required piping systems.

1.3 QUALITY ASSURANCE

- A. Code Compliance: Perform required tests in the presence of the authority having jurisdiction.

PART 2 - PRODUCTS

2.1 DESCRIPTION

- A. The Contractor shall furnish instruments, gauges, meters, and necessary connection points for performance of the tests.

PART 3 - EXECUTION

3.1 GENERAL

- A. Piping: Test prior to concealment, insulation being applied, and connection to equipment, fixtures, or specialties. Conduct tests with all valves but those used to isolate the test section 10% closed.
- B. Leaks: Repair all leaks or replace defective pipe or fittings and retest until stipulated results are achieved.
- C. Notification: Advise the Architect 48 hours in advance of each test. Failure to so notify will require test to be rescheduled.
- D. Testing Equipment: Provide all necessary pumps, gauges, connections, and similar items required to perform the tests.

3.2 TESTING REQUIREMENTS

- A. Sanitary Systems: Test entire system or sections of system by closing all openings in piping except the highest opening and filling system with water to the point of overflow. If the system is tested in sections, plug each opening except the highest opening of the section under test and fill each section with water, but none with less than 6 feet head of water above the maximum estimated ground water level. Keep the water in system, or in portions under test, for 24 hours before testing begins. Test for six (6) hours with a maximum of 0.3 gallon per hour per inch diameter per 100 feet run of loss allowed. Locate and repair leaks. The maximum pressure on the lowest system invert is not to exceed 16 feet of head.
- B. Piping - General: Test all piping as noted below, with no leaks or loss in pressure for the time indicated. Repair or replace defective piping until tests are completed successfully.

<u>System</u>	<u>Pressure</u>	<u>Medium</u>	<u>Duration</u>
Domestic Water Systems	150 psig	water	4 hours
Misc. Piping	1.5x normal oper. pressure	nitrogen or water as appropriate	4 hours

END OF SECTION

SECTION 22 07 19 - PLUMBING INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Work included: Providing of all required insulation for equipment.

1.2 SUBMITTALS

- A. Provide submittals in accordance with Section 22 00 00.
- B. Submittals shall include:
 - 1. Data showing compliance with flame and smoke rating.
 - 2. Manufacturer's catalog or technical data showing performance, dimensions, materials of construction, and recommended methods of installation.

1.3 QUALITY ASSURANCE

- A. Insulation materials and accessories such as adhesives, cement, etc. shall have composite fire and smoke hazard ratings, as tested by procedures indicated in NFPA 255 and UL 723, not to exceed a flame spread index of 25 and a smoke developed index of 50. Products or their shipping cartons shall have identification of the flame spread and smoke developed index.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Johns Manville, Knauf, Owens-Corning, Certain-teed, or approved equal. Johns Manville used as a basis for selection.

2.2 DESCRIPTION

- A. Domestic Water Insulation
 - 1. Manville Micro-Lok AP-T molded fiberglass.
 - 2. Pipe fittings: Manville Zeston one-piece premolded PVC covers with fiberglass blanket insulation.
 - 3. Foam filled elbows are not acceptable.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Piping:
 - 1. Domestic Cold Water: Provide 1/2 inch minimum pipe insulation on domestic cold water piping.
 - 2. Domestic Hot Water and Hot Water Return:
 - a. Provide 1 inch pipe insulation on domestic hot water and domestic hot water return less than or equal to 2 inches diameter.
 - b. Provide 1-1/2 inch pipe insulation on domestic hot water and domestic hot water return greater than 2 inches.

3. Insulate fittings on piping utilizing preformed pipe covering.
4. Insulate all valve bodies, fittings, unions, flanges and equipment with insulation equal to the attached service piping.
5. Seal all insulation to maintain a vapor barrier.
6. Provide 1 inch pipe insulation on horizontal storm/overflow storm drain piping and roof/overflow roof drain bodies. Seal all insulation to maintain a vapor barrier.

END OF SECTION

SECTION 22 11 00 - FACILITY WATER DISTRIBUTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Work included: Providing of all required pipes and pipe fittings.

1.2 OPERATION AND MAINTENANCE DATA

- A. Submit certificates of inspections and tests to owner.

1.3 QUALITY ASSURANCE

- A. Piping material and installation shall meet requirements of the local plumbing, fire, and building codes and serving utility requirements.
- B. Pipe Cleaning: Should any pipe be plugged, the piping shall be disconnected, cleaned, and reconnected without additional cost to Owner.
- C. Damage to the building or systems resulting from failure to properly clean the system shall be corrected without additional expense to the Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Pipe and fittings: Standard product of manufacturer.
- B. Flexible connectors: Anaconda, Aeroquip or approved equal.
- C. Seismic/expansion joint flex piping: Unisource, Metraflex, Mason. For other manufacturers, submit substitution request.

2.2 DESCRIPTION

- A. Copper Pipe - Plumbing:
 - 1. Pipe: Hard drawn copper type "L" above grade and hard drawn copper type "K" below grade, ASTM B88.
 - 2. Fittings: Wrought copper solder type.
 - 3. Solder
 - a. Above ground:
 - 1) 2 inch and smaller: Lead free 95-5, tin silver and flux.
 - 2) 2-1/2 inch and larger: Lead free brazing alloy and flux.
 - b. Below ground: Lead free brazing alloy and flux.
- B. Cross linked polyethylene (PEX) domestic water tubing and fittings:
 - 1. Pipe and fittings: Wirsbo Aquapex for potable water distribution conforming to ASTM F876/ASTM F877 and certified to NSF standards 14 and 61.
 - 2. Wirsbo Propex copper, lead free brass, and polysulfone (PLS) manifolds and fittings.

3. All pipe, manifolds and fittings shall be of same manufacturer and designed to be fitted together.
- C. Seismic/Expansion joint flex piping
 1. 150 psi rating, capable of + or – 4 inches movement in any direction.
 2. Sweat, weld, or flanged ends as applicable to system connected.
 3. Copper for domestic piping.
 4. FM and NFPA rating for fire service.
 5. Domestic water piping expansion loops to be specifically UL listed for use in potable water systems.
 6. Unisource V-SF21 seismic expansion. Materials and connections shall match system piping material construction and size.

PART 3 - EXECUTION

3.1 PREPARATION - MEASUREMENTS, LINES AND LEVELS

- A. Check dimensions at the building site and establish lines and levels for the work specified in this Division.

3.2 PIPING INSTALLATION

- A. Install water distribution system sized in conformance with the drawings.
- B. Install unions in all non-flanged piping connections to apparatus and adjacent to all screwed control valves, traps, and appurtenances requiring removal for servicing, so located that piping may be disconnected without disturbing the general system.
- C. Provide easily accessible shut off valves on each branch of piping, to facilitate maintenance and repair without shutting down supply to large sections of the building.
- D. Install all piping as to vent and drain.
- E. Support all piping independently at apparatus so that the equipment shall not carry its weight.
- F. Dielectric Fittings: Provide dielectric couplings, unions or flanges between dissimilar metals. Additionally, provide dielectric couplings as required to isolate cathodically protected piping and equipment. Fittings shall be suitable for the pressure and temperature to be encountered.
- G. Domestic water piping joints
 1. Above ground:
 - a. 2 inch and smaller - soldered.
 - b. 2-1/2 inch and larger - brazed.
 2. Below ground: Brazed.
- H. Screwed Joints: Ream pipe ends. Apply dope or tape to male threads only. Brass joints shall be made with Teflon tape only. Make up fitting with not over two threads showing beyond the fitting end. Make junctions of galvanized pipe to cast iron with tapped spigots or half couplings screwed to the end of galvanized pipe to form a spigot end.

- I. Solder Type Joints:
 - 1. Clean the copper tubing and fittings thoroughly with steel wool before applying the flux. The copper tubing shall have all burrs removed, be reamed to full bore, and be true and round for all joints.
 - 2. Apply heat uniformly to secure penetration of the filler material. Leave full bead around the entire circumference of the joint to show proper penetration and sealing.
 - 3. Flux shall not be used for copper-to-copper joints. Flux shall be used for joining copper to brass or bronze. In those cases where flux is used, particular care shall be exercised in applying the flux to avoid leaving any excess inside the completed joints.
- J. Provide flexible connectors at all piping connections to mechanical equipment.
- K. Provide seismic bracing and support per SMACNA "Seismic Restraint Manual Guidelines for Mechanical Systems," see drawings for Seismic Hazard Level.
- L. Provide expansion loops/fittings as noted on the drawings and where piping passes through building expansion/seismic joints. Install the loops in accordance with the manufacturer's instructions. Provide hangers and guides as recommended.
- M. Flush piping system of all construction dirt.
- N. Chlorination: Disinfect the domestic hot and cold water piping as follows:
 - 1. Fill systems with a solution of 50 ppm available chlorine for four hours
 - 2. During this time, open and close all valves at least twice.
 - 3. Flush the system with water until the residual chlorine content is not more than 1 ppm.
- O. Test piping system per Section 22 05 93.

3.3 SPECIALTIES INSTALLATION

- A. Install all piping specialties where shown on the drawings and in accordance with manufacturer's recommendations.

END OF SECTION

SECTION 22 11 19 - DOMESTIC WATER PIPING SPECIALTIES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section prescribes the requirements for materials and methods of installation of piping specialties for piping systems where indicated required by code or as good practice dictates.

1.2 SUBMITTALS

- A. Catalog or technical data on automatic flow control valves for proposed manufacturer.
- B. Operating and maintenance data.

PART 2 - PRODUCTS

2.1 UNIONS

- A. Type: 150 malleable iron, brass to iron seat, ground joint, black or galvanized to match pipe. 200-psi wog bronze, ground joint, solder type for copper tubing. Where dissimilar metals join, dielectric unions, couplings or flanges shall be installed.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL

- A. Provide unions at all mechanical equipment connections as required allowing equipment removal from piping without destruction or cutting of piping or pipe joints.

END OF SECTION

SECTION 22 13 00 - FACILITY SANITARY SEWERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Work included: Providing of all required sanitary waste and vent systems' piping, and utility connections for all services specified or shown on the drawings or required by demolition.

1.2 OPERATION AND MAINTENANCE DATA

- A. Submit certificates of inspections and tests to owner.

1.3 QUALITY ASSURANCE

- A. Piping material and installation shall meet requirements of the local plumbing, fire, and building codes and serving utility requirements.
- B. Pipe Cleaning: Should any pipe be plugged, the piping shall be disconnected, cleaned, and reconnected without additional cost to Owner.
- C. Damage to the building or systems resulting from failure to properly clean the system shall be corrected without additional expense to the Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Pipe and fittings: Standard product of manufacturer.
- B. Flexible connectors: Anaconda, Aeroquip or approved equal.

2.2 PIPE AND PIPE FITTINGS

- A. General: The following generally describes piping materials for plumbing and mechanical systems.
 - 1. Sanitary Waste Systems: Cast iron pipe above grade and below grade to five feet beyond building lines and below grade where depth of bury is less than 24 inches.
 - 2. Vent Systems: Cast iron pipe.
 - 3. Miscellaneous Condensate and Indirect Drains: Type "L" hard drawn copper tubing for plumbing service.

2.3 MATERIAL DESCRIPTION:

- A. Galvanized Steel Pipe:
 - 1. Pipe: Schedule 40 galvanized steel pipe conforming to A120.
 - 2. Fittings: Galvanized screwed cast iron.
- B. Cast Iron Pipe:
 - 1. Pipe: Hubless cast iron soil pipe, CISPI 301 / ASTM A888.
 - 2. Fittings:

- a. Hubless cast iron fittings - CISPI 310 or cast iron hub and spigot fittings ASTM A74.
 - b. Underground couplings - Clamp-all Corporation, Husky SD4000 or approved equal.
 - c. Aboveground couplings - couplings meeting CISPI designation 310 except rain drain couplings in systems greater than 25 feet of water column (use Husky SD4000.)
 - d. Couplings to steel or plastic pipe - Fernco "lowflex" or approved equal.
- C. Polyvinyl Chloride-PVC-DWV pipe and fittings:
1. Pipe: Schedule 40 solid wall conforming to ASTM D2665.
 2. Fittings: Schedule 40 solid wall conforming to ASTM D2665. Provide fittings matching pipe manufacture. Provide fittings as recommended by the piping and/or equipment manufacturer.
 3. Provide piping and fitting connections with the proper primer conforming to ASTM F656 and solvent cement conforming to ASTM D2564 and as recommended by pipe manufacture.
- D. Acrylonitrile-Butadiene-Styrene-ABS-DWV Pipe and Fittings:
1. Pipe and Fittings: Schedule 40 Acrylonitrile-Butadiene-Styrene (ABS) DWV plastic drain, waste and vent having a cellular core conforming to ASTM D3965 and with the National Sanitation Foundation standard 14. Pipe shall be iron pipe size and conforming to ASTM F628. Fittings shall conform to ASTM D2662. Glued fittings only.
 2. Provide tracer wire 1 foot above all underground waste and sewer lines outside building.
 3. All pipe, manifolds and fittings to be of same manufacturer and install in accordance with manufacturer's recommendations.
 4. Solvent cements shall conform to ASTM D2535.
- E. Copper Pipe - Plumbing:
1. Pipe: Hard drawn copper type "L" above grade and hard drawn copper type "K" below grade, ASTM B88.
 2. Fittings: Wrought copper solder type.
 3. Solder
 - a. Above ground: 2 inch and smaller - Lead free, 95-5, tin silver and flux.
 - b. Below ground: 2-1/2 inch and larger - Lead free, brazing alloy and flux.

PART 3 - EXECUTION

3.1 PREPARATION - MEASUREMENTS, LINES AND LEVELS

- A. Check dimensions at the building site and establish lines and levels for the work specified in this Division.

3.2 PIPING INSTALLATION

- A. Install unions in all non-flanged piping connections to apparatus and adjacent to all screwed control valves, traps, and appurtenances requiring removal for servicing, so located that piping may be disconnected without disturbing the general system.

- B. Install all piping as to vent and drain.
- C. Cleanouts in underground or acid waste systems shall be line size for mains up to 4 inch diameter. For mains having a diameter of greater than 4 inch, cleanouts shall be 4 inch diameter.
- D. Support all piping independently at apparatus so that the equipment shall not carry its weight.
- E. Dielectric Fittings: Provide dielectric couplings, unions or flanges between dissimilar metals. Additionally, provide dielectric couplings as required to isolate cathodically protected piping and equipment. Fittings shall be suitable for the pressure and temperature to be encountered.
- F. Screwed Joints: Ream pipe ends. Apply dope or tape to male threads only. Brass joints shall be made with Teflon tape only. Make up fitting with not over two threads showing beyond the fitting end. Make junctions of galvanized pipe to cast iron with tapped spigots or half couplings screwed to the end of galvanized pipe to form a spigot end.
- G. Solder Type Joints:
 - 1. Clean the copper tubing and fittings thoroughly with steel wool before applying the flux. The copper tubing shall have all burrs removed, be reamed to full bore, and be true and round for all joints.
 - 2. Apply heat uniformly to secure penetration of the filler material. Leave full bead around the entire circumference of the joint to show proper penetration and sealing.
- H. Flux shall be used for copper-to-copper joints. Flux shall be used for joining copper to brass or bronze. In those cases where flux is used, particular care shall be exercised in applying the flux to avoid leaving any excess inside the completed joints.
- I. Provide flexible connectors at all piping connections to mechanical equipment.
- J. Waste and Vent Systems
 - 1. Install waste, storm, overflow storm, and vent piping system sized in conformance with the drawings.
 - 2. Grade horizontal waste runs 1/4 inch per foot where possible. Piping 4 inch and greater may be run at 1/8 inch per foot minimum when approved by the Administrative Authority.
 - 3. Make all changes in direction with appropriate fittings.
 - 4. Collect vents together in ceiling space and extend through roof for minimum penetrations.
 - 5. Flash and counterflash all vents through the roof.
 - 6. Verify exact location of all fixtures from architectural drawings.
 - 7. Test piping system per Section 22 05 93.
- K. Miscellaneous Condensate and Drain Systems:
 - 1. Install condensate system sized in conformance with the drawings.
 - 2. Slope lines in direction of flow.
 - 3. Install indirect waste fittings as shown on the Drawings, providing access as required by code.

4. Indirect drains in kitchen area are to spill to floor sinks above the flood level of the floor sink and in location that allows removal of grate and does not create splashing during discharge.
5. Test piping system per Section 22 05 93.

3.3 FIRESTOPPING PENETRATIONS IN FIRE-RATED WALL/FLOOR ASSEMBLIES

- A. Contractors shall provide proper sizing when providing sleeves or core-drilled holes to accommodate their through penetrating items. All voids between sleeve or core-drilled hole and pipe passing through, shall be firestopped to meet the requirements of ASTM E814.

END OF SECTION

SECTION 22 42 00 - COMMERCIAL PLUMBING FIXTURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Work included: Providing of all plumbing fixtures, fixture trim, cleanouts and appurtenances as shown or required.
- B. Product Certification: Provide only products certified for use in the State of Oregon.

1.2 SUBMITTALS

- A. Provide submittals in accordance with Section 22 00 00.
- B. Submittals shall include manufacturer's catalog literature for all products used.

1.3 OPERATION AND MAINTENANCE DATA

- A. Provide O&M data in accordance with Section 22 000 0.
- B. O&M data shall include:
 - 1. Manufacturer's literature
 - 2. Maintenance instructions

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Vitreous china plumbing fixtures: Kohler, American Standard, or approved equal.
- B. Flushometer: Sloan only.
- C. Toilet seats: American Stancard, Kohler, Olsonite, Bemis, Church, or Beneke.
- D. Supplies and stops: Speedway, McQuire, Zurn, or Eastman.
- E. Clothes Washer Valve Boxes: Guy Grey, Oatey or approved equal
- F. Cleanouts: Jay R. Smith, Wade, Watts, or Zurn.
- G. Carriers: Jay R. Smith, Wade, Watts, or Zurn.
- H. Priming valves: Precision Plumbing Products only.
- I. Water hammer arrestors: Smith or Precision Plumbing Products.

2.2 DESCRIPTION

- A. Water closet (WC-1):

1. American Standard 2315.228 Baby Devoro Flowise toilet, white vitreous china, 10-1/4 inch high bowl, floor mounted.
 2. Olsonite No. 126CAMT, white extra heavy-duty plastic open front seat less cover for Baby Bowl with stainless steel hinge posts.
- B. Clothes Washer Valve Box (CW-1): Oatey Washing machine valve box, ¼ turn hot and cold water valves, 2" drain hub.
- C. Priming Valves: Precision Plumbing Products, Inc., Oregon P1 or P2.
- D. Water Hammer Arrestors: Jay R. Smith, 5000 series, all stainless steel construction with heavy-duty bellows.
- E. Supplies and Stops: Flexible supplies with loose key angle stops to wall with canopy flanges and all exposed surfaces chrome plated.
- F. Traps:
1. Exposed Traps: 17-gauge chrome plated tubing adjustable P-trap with slip bushing.
 2. Concealed or Below Grade: Coated cast iron P-trap, recessed screw joint or to match cast iron pipe.
 3. Support Rims: Stainless steel rims, if sink not furnished with integral rim.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Provide plumbing fixture trim where applicable on fixture.
- B. Plumbing Fixtures:
1. Plumbing Fixtures Mounting Heights:
 - a. All fixtures standard rough-in catalogued heights unless specified or shown otherwise on the architectural drawings.
 2. Cleanout:
 - a. Where required for purposes intended.
 - b. Cover set flush with finished surface.
 - c. Urinal cleanouts shall be below fixture on centerline.
- C. Priming Valves:
1. Provide automatic priming for every floor drain, deck drain, floor sink, and similar fixture in the project.
 2. Floor drain and floor sink traps primed with priming valves with 3/8 inch copper pipe.
 3. Four traps maximum primed from one priming valve.
 4. Where priming valves are installed in finished rooms, conceal in wall and provide access door.
 5. Install shutoff valve ahead of priming valve.

- D. Water Hammer Arrestors (WHA): Provide where shown and where recommended by Plumbing Drainage Institute (PDI). Furnish access panel to allow repair or replacement.
- E. Drawings are diagrammatic and may not show all required cleanouts and fittings. Provide additional required items at no additional cost.

END OF SECTION

SECTION 23 00 00 BASIC HVAC REQUIREMENTS

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. The Bidding, General and Supplementary of this project manual and specific sections as noted apply to the work specified in Mechanical Division 23 which encompasses Sections 23 00 00 through 23 34 00. This Section 23 00 00 applies to all sections of Mechanical Division 23.
- B. Coordinate the design and construction work with the building architectural elements, structure and systems installed by other contractors. Field verify site conditions during construction as required for new systems design and installation.

1.2 SCOPE

- A. It is the intent of these specifications and the accompanying drawings to describe complete and functional mechanical systems.
- B. Furnish and install all material, labor and equipment in accordance with these documents.
- C. Include all incidental items and work not specifically noted or specified but required by good practice in a complete system.
- D. Provide all miscellaneous seismic restraints and equipment mounting details as required by applicable codes for the plumbing, HVAC and fire sprinkler systems.
- E. The mechanical drawings and these specifications are complementary. What is called for in one shall be called for in both.
- F. The drawings are diagrammatic but should be followed as closely as possible. Where required by jobsite conditions, relocate and provide fittings, etc., as required. Provide an allowance in the contract bid to furnish additional pipe and ductwork fittings required for coordination with structure and other construction trades. .

PART 2 PRODUCTS

2.1 DEFINITIONS

- A. Or approved equal: Requires approval prior to bid date.
- B. Indicated:
 - 1. The term "indicated" is a cross reference to details, notes, or schedules on the drawings, other paragraphs or schedules in the specifications, and similar means of recording requirements in the Contract Documents.
 - 2. Where terms such as "shown," "noted," "scheduled," and "specified" are used instead of "indicated," it is for the purpose of helping the reader locate the cross reference, and no limitation of location is intended except as specifically noted.

- C. Directed, Requested, Etc.: Where not otherwise explained, terms such as "directed," "requested," "authorized," "selected," "approved," "required," "accepted," and "permitted" mean "directed by the Engineer," "requested by the Engineer," etc. However, no such implied meaning will be interpreted to extend the Engineer's responsibility into the Contractor's area of construction supervision.
- D. Site or Project Site: The space available to the Contractor for the performance of the work, either exclusively or in conjunction with others performing the work as part of the project. The extent of the project site is shown on the Mechanical drawings and is not identical with the description of the land upon which the project is to be built.
- E. Approved:
 - 1. Where used in conjunction with the Architect's response to submittals, requests, applications, inquiries, reports and claims by the Contractor, the meaning of the term "approved" will be held to the limitations of the Architect's responsibilities and duties as specified in the General and Supplementary Conditions.
 - 2. In no case will "approval" by the Architect be interpreted as a release of the Contractor from responsibilities to fulfill requirements of the Contract Documents.
- F. Provide: The term "provide" means to furnish and install, complete and ready for the intended use.

2.2 STANDARDS AND CODES

- A. Provide all equipment and material and perform all work in accordance with all local, state and national codes and regulations.
- B. For work on this project, comply with appropriate standards published by the following:
 - 1. Air Diffusion Council ADC
 - 2. American Gas Association AGA
 - 3. Air Movement and Control Association AMCA
 - 4. American National Standards Institute ANSI
 - 5. Air-Conditioning and Refrigeration Institute ARI
 - 6. Acoustical Society of America ASA
 - 7. American Society of Heating, Refrigerating and Air-Conditioning ASHRAE
 - 8. American Society of Mechanical Engineers ASME
 - 9. American Society for Testing and Materials ASTM
 - 10. National Environmental Balancing Bureau NEBB
 - 11. National Electrical Manufacturers Association NEMA
 - 12. National Fire Protection Association NFPA
 - 13. Sheet Metal and Air Conditioning Contractors' National Association SMACNA
 - 14. Underwriters' Laboratories UL
 - 15. Local City and County requirements

2.3 APPROVAL OF EQUIPMENT AND MATERIALS

- A. Manufacturer's trade names, catalog numbers and material specifications used in this specification are intended to establish the quality of equipment or materials expected. Materials and manufacturers not listed require approval prior to the bid date.

- B. Approval of substitute equipment or materials will be based upon performance, quality and other factors deemed important by the Architect. The Contractor will be responsible for making all changes in this and other associated work required as a result of the substitution. Additional or modified structural calculations and roof penetrations required to accommodate the substitution will be the responsibility of the contractor.

2.4 SUBMITTALS

- A. Transmit five sets of submittals to the Architect for review. The submittals shall be bound in three-ring binders, have major topic tabs and an index. In order to expedite approval of certain items, it is not necessary to transmit complete submittals initially. The initial transmittal will include the binder, expected tabs and an index indicating which items are included, the date each is transmitted, and which items are yet to be transmitted. Future transmittals shall include a revised index.
- B. Furnish performance data and technical information on all materials and equipment to be used on the project.
- C. Include shop drawings with the submittals where necessary to determine clearance, where the Contractor proposes alternate equipment or material arrangements, and when requested by the Architect.
- D. Items transmitted for approval must be received in the Architect's office within 45 days of contract award. The Architect prior to installation must approve all material and equipment.
- E. Review of submittals or shop drawings by the Architect does not relieve the Contractor from the requirements of the Contract Documents unless specific approval has been requested for a given deviation.

2.5 QUALITY ASSURANCE

- A. Maintain the highest standards of workmanship throughout the project.
- B. Use the latest editions of applicable and specifically referenced standards.
- C. Inspect all material and equipment upon arrival at the site and return any which is not in new condition.

PART 3 EXECUTION

3.1 COORDINATION

- A. Cooperate with other trades to assure that construction proceeds in an orderly and timely manner. Contract cost increases due to improperly sequenced work with other trades will not be allowed.
- B. Study the new and existing architectural, structural, electrical, shop and any specialty drawings as appropriate and specifications to determine required coordination.
- C. Prepare detailed shop drawings where necessary to assure proper fit and necessary clearance.
- D. Refer to electrical drawings to verify voltage and phase of mechanical equipment.

3.2 PERMITS, FEES AND INSPECTIONS

- A. Obtain all required permits and pay for all fees and connection charges.
- B. Schedule any required inspections.

3.3 MATERIALS AND WORKMANSHIP

- A. Furnish all materials and equipment in new condition, free from defects and of size, make, type and quality specified. Installation shall be in a neat and workmanlike manner.
- B. When two or more items of the same kind, type or class are required, use items of a single manufacturer.

3.4 MEASUREMENTS

- A. Take all measurements from reference datums established by the mechanical contractor.

3.5 DELIVERY, HANDLING AND STORAGE

- A. Receive all material and equipment at the jobsite or shop.
- B. Use proper and sufficient equipment to handle all products employed in the project.
- C. Where storage of material or equipment is necessary, it shall be a clean and weatherproof area. Seal any openings and cover the product to assure that there will be no corrosion or foreign matter introduced. Assure that it will be in new condition when placed in service.

3.6 EQUIPMENT INSTALLATION, BRACING AND SUPPORT

- A. Install all equipment in strict accordance with the manufacturer's instructions unless otherwise indicated.
- B. The contractor is responsible to determine the means and methods of equipment installation and support. Seismic restraints for mechanical and plumbing equipment and piping shall bear the seal and signature of a structural engineer registered in the state of California, and shall be submitted to the architect prior to fabrication. Calculations are to be included for all connections to the structure, considering localized effects.
- C. Maintain a copy of the manufacturer's installation instructions at the jobsite for all equipment.

3.7 SLEEVES AND INSERTS

- A. Provide sleeves at all locations where piping and ductwork passes through building construction.
- B. Sleeves for interior walls and floors shall be 22 gauge galvanized or heavier as required. Sleeves for exterior walls shall be cast iron, wall thickness as required.
 - 1. Wall sleeves shall be installed in all exterior walls and all interior masonry or fire-rated walls in a manner that preserves the fire-rated or watertight integrity of the wall.
 - 2. Interior wall sleeves for uninsulated pipe shall allow minimum 1/4-inch clearance all around pipe for pipe movement. Allow 1-inch clearance around pipe at building expansion joints.

3. Interior wall sleeves for insulated piping shall be selected to encompass the pipe and insulation and allow minimum 1/4-inch clearance around insulation for pipe movement. Allow 1-inch clearance around pipe and insulation at building expansion joints.
 4. Floor sleeves shall extend 1/2-inch above the floor and shall be sealed watertight.
 5. Floor sleeves shall be oversized to allow 1/2-inch minimum space all around pipe or pipe and insulation where applicable. Seal space between pipe and sleeve with Dow Corning Fire Stop System, 3M brand CP25 or approved equal. Sealant must be between pipe and sleeve. Sealant between insulation and sleeve is not acceptable. Install firestop materials in complete accordance with the manufacturer's instructions and in compliance to applicable UL listings.
- C. Seal space between pipe and sleeve with Dow Corning Fire Stop System, 3M Brand CP25 or approved equal where piping penetrates firewall or floors. Sealant must be between pipe and sleeve; sealant between insulation and sleeve is not acceptable. Install firestop materials in complete accordance with the manufacturer's instructions and in compliance to applicable UL listings.

3.8 FLOOR, WALL AND CEILING PLATES

- A. Provide escutcheon plates where all exposed piping and ductwork passes through finished walls, floors and ceilings, including accessible cabinet spaces.
- B. Floor plates: deep recessed, cast brass, chrome plated.
- C. Wall and ceiling plates: spun aluminum, chrome plated.
- D. Secure plates to pipe or structure. Plates shall not penetrate insulation vapor barriers. Size plates to sufficiently cover pipe sleeves and openings in finish materials.

3.9 PROTECTION

- A. Protect all work, material and equipment from loss or damage until the Owner accepts the project.
- B. As the work progresses, keep all equipment covered and cap all ducts and piping that may temporarily be left unconnected.
- C. Notify all other trades of any required precautions necessary to protect the work.

3.10 ACCESSIBILITY

- A. Provide convenient access by location or access panel to all equipment requiring periodic service.

3.11 ELECTRICAL WORK

- A. Materials and work to be provided as a part of this Mechanical Division 23000 are:
 1. Equipment control wiring.
 2. Interlock wiring.
 3. Motor starters.

- B. Wherever possible, provide all interconnect wiring within or on a piece of equipment with the equipment unless shown or specified otherwise. An electrician licensed to perform this type of work shall perform all field wiring.

3.12 RELATED WORK

- A. The following work and materials are specified elsewhere:
 - 1. Pipe chases, equipment pads and foundations, trenches, painting, air louvers, louvered penthouse and access panels except as otherwise specified in this division.
 - 2. Framed openings, wood grounds and nailing strips, masonry, concrete and other architectural and structural elements.
- B. The following work and materials are specified in Electrical Specification Divisions:
 - 1. Power wiring.
 - 2. Disconnect switches.
 - 3. Furnishing and installation of disconnect switches.
 - 4. Installation of magnetic starters.

3.13 CLEANING

- A. Maintain premises and public properties free from accumulations of waste, debris and rubbish during construction.
- B. Clean all mechanical equipment of dust, grease, iron cuttings, unnecessary stamps or shipping labels, etc.
- C. Touch up factory-painted surfaces, as necessary, with paint of matching color.

3.14 RECORD DRAWINGS

- A. Maintain one set of construction drawings at the jobsite for the sole purpose of recording work of the mechanical contract, as actually installed. Upon request, the Architect will make the original tracings available to the mechanical contractor for printing the drawings. The Contractor shall pay the reproduction costs.
- B. Record all piping and ductwork by dimensions from gridlines, below grade, above floor, etc. Show location of all access panels, cleanouts, rough-in for future, etc.
- C. Make record drawings available to the Architect for review or reproduction during construction. The Architect will pay any printing costs.
- D. Deliver record drawings to the Architect promptly upon completion of the project.

3.15 OPERATION AND MAINTENANCE MANUALS:

- A. Submit five copies of the Operation and Maintenance Manuals to the Architect for approval before project completion. Bind the instruction books with three-ring 8-1/2" x 11" side binders with plastic covers. Include an index and tabs for major systems and equipment. Operation and Maintenance Manuals shall include the following:
 - 1. Supplier Directory: Alphabetical list of principal subcontractors and suppliers of equipment giving names, addresses and telephone numbers.
- B. Directories:
 - 1. Supplier Directory: Alphabetical list of principal subcontractors and suppliers of equipment giving names, addresses and telephone numbers.

2. Equipment Directory: List of equipment installed such as fans, air supply units, pumps, heating and cooling equipment, plumbing fixtures, etc., giving drawing reference numbers, location, area served, manufacturer with model number and supplier.

C. Manufacturer's Literature:

1. Show name, address and phone number of the nearest service facility authorized by the manufacturer.
2. Include illustrations, diagrams, and instructions for installation, startup, operation, inspections, maintenance, parts list, data sheets and other necessary materials.
3. Include complete electrical, schematic and connection diagrams for each equipment item.
4. Include the name, address and phone number of contractor(s) who furnished and who installed equipment and systems.
5. Where the literature covers more than one model, check off neatly in ink correct model number and data for the model number including all specified options.
6. In those instances where the equipment, its mode of control, or both, is job assembled for special functions, then provide written operating and maintenance instructions prepared by the assembler on 8-1/2" x 11" sheets.

D. Maintenance Instructions:

1. Where instructions for maintenance are not included in the manufacturer's literature, provide supplemental data to enable proper maintenance of the equipment installed.
2. Include specific lubrication methods and recommended frequencies along with procedures and precautions for inspection and routine service.

E. Copy of Written Guarantee.

F. Recommended Spare Parts Stock.

3.16 OWNER MEETING

- A. Schedule a meeting between the Contractor's representative and the Owner for the purpose of reviewing operation and maintenance of the building mechanical systems. The Contractor's representative shall be well qualified and knowledgeable of the systems in this facility.
- B. The meeting shall be scheduled to allow the Owner and appropriate subcontractors and equipment suppliers to attend.
- C. The meeting shall be scheduled promptly upon completion of the project and approval of the Operation and Maintenance Manuals.
- D. The Contractor shall review the Operation and Maintenance Manuals and record drawings in detail with the Owner.

3.17 CUTTING AND PATCHING

- A. Cut work as required for installation and patch to match original conditions as directed and approved by Architect. Do not cut structural portion without Architect's approval.
- B. When masonry construction must be penetrated, provide a steel pipe sleeve in opening and grout in place in a neat manner. Leave grout surface to match existing finish.
- C. Prior to cutting any existing work, locate all concealed utilities to eliminate any possible service interruption or damage.

3.18 FIRESTOPPING PENETRATIONS IN FIRE-RATED WALL/FLOOR ASSEMBLIES

- A. Contractors shall provide proper sizing when providing sleeves or core-drilled holes to accommodate the through penetrating items. All voids between sleeve or core-drilled hole and pipe passing through, shall be firestopped to meet the requirements of ASTM E-814.
- B. Fire stop penetrations in accordance with the U.L. listed assemblies provided by the manufacturers of the products used.

3.19 CHANGE ORDERS

- A. All supplemental cost proposals by the Contractor shall be accompanied with a complete itemized breakdown of labor and materials cost without exception.
- B. Contractor's estimating sheets for the supplemental cost proposals shall be made available to the Architect. Labor must be separated and allocated for each item of work.

3.20 VERIFICATION OF EXISTING CONDITIONS

- A. Verify field conditions and measurements prior to the manufacture or order of materials and equipment.
- B. Produce shop drawings with details as required to verify proper installation of materials & equipment in conformance with applicable codes and the manufacturer's requirements.

3.21 SYSTEMS WIRING

	ITEM	FURNISHED BY	INSTALL BY	POWER WIRING	CONTROL WIRING
1.	Division 23 Equipment Motors	Div. 23	Div. 23	Div. 26	Div. 23
2.	Motor Starters, Contactors and Overload Heaters – Integral	Div. 23	Div. 26	Div. 26	Div. 23
3.	Motor Control Centers	Div. 26	Div. 26	Div. 26	Div. 23
4.	Fused & Unfused Disconnect Switches	Div. 26	Div. 26	Div. 26	-----
5.	Manual Operation Switches	Div. 26	Div. 26	Div. 26	Div. 26
6.	Control Relays & Transformers	Div. 23	Div. 23	Div. 23	Div. 23
7.	Energy Management Control Panels	Div. 23	Div. 23	Div. 23	Div. 23
8.	Duct Mounted smoke Detectors	Div. 23	Div. 23	Div. 26	Div. 23 Equipment shutdown Div. 26 – Fire Alarm
9.	Fire/Smoke and Smoke Dampers	Div. 23	Div. 23	Div. 26	Div. 23

END OF SECTION

SECTION 23 05 05 SLEEVES

PART 1 GENERAL

1.1 SUMMARY

- A. Work Included:
 - 1. Providing of sleeves at all locations where piping and ductwork passes through building construction.
 - 2. Providing of inserts where needed to support piping, ductwork, equipment, etc.

1.2 RELATED WORK

- A. Basic HVAC Requirements, Section 23 05 00.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Sleeves: Proset Systems or approved substitution.
- B. Inserts: M-Co., Grinnell, Super-Strut or approved substitution.

2.2 DESCRIPTION

- A. Sleeves for interior walls and floors shall be "Firestop Penetrator" model to meet floor rating.
- B. Sleeves for exterior walls shall be cast iron, wall thickness as required.
- C. Inserts shall be as required for the purpose.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Wall sleeves shall be installed in all exterior walls and all interior masonry or fire-rated walls in a manner that preserves the fire-rated or watertight integrity of the wall.
- B. Interior wall sleeves for uninsulated pipe shall allow minimum 1/4-inch clearance all around pipe for pipe movement. Allow 1-inch clearance around pipe at building expansion joints.
- C. Interior wall sleeves for insulated piping shall be selected to encompass the pipe and insulation and allow minimum 1/4-inch clearance around insulation for pipe movement. Allow 1-inch clearance around pipe and insulation at building expansion joints.
- D. Seal space between pipe and sleeve with Proset System Caulk, or approved equal where piping penetrates fire wall or floors. Sealant must be between pipe and sleeve; sealant between insulation and sleeve is not acceptable. Install firestop materials in complete accordance with the manufacturer's instructions and in compliance to applicable UL listings.
- E. Floor sleeves shall extend 1/2-inch above the floor and shall be sealed watertight.
- F. Install inserts in accordance with the manufacturer's instructions.

END OF SECTION

SECTION 23 05 29 HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Work included: Providing of all required hangers and supports for piping, ductwork and equipment.

1.2 RELATED WORK

- A. Basic HVAC Requirements, Section 23 00 00.
- B. HVAC Ducts and Casings, Section 23 31 00.
- C. Air Duct Accessories, Section 23 33 00

1.3 SUBMITTALS

- A. Provide submittals in accordance with Section 23 00 00.
- B. Submittals shall include:
 - 1. Manufacturer's technical literature for all products used indicating service for each type of hanger.
 - 2. Include proposed pre-manufactured piping and duct vibration isolation products.
 - 3. Submit literature or describe duct-supporting method.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. M-CO, Erico, Grinnell, Super Strut. M-CO used for selection.

2.2 DESCRIPTION

- A. Pipe Attachments:
 - 1. Non-insulated ferrous pipe (1/2 to 1-1/2 inch): Figure 100.
 - 2. Non-insulated ferrous pipe (2 inch and larger): Figure 400.
 - 3. Riser clamp, ferrous pipe: Figure 510.
- B. Upper Attachments: Attachment to wood structures where weights permit shall be Figure 325 or 328.
- C. Structural Attachments: Provide all necessary structural attachments such as concrete anchors, beam clamps, hanger flanges and brackets. Hangers shall not be suspended from other piping, equipment, etc.
- D. Miscellaneous items such as hanger rod, rod couplings, turnbuckles, etc. shall be standard figure numbers of the same manufacturer as the attachments.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Provide hangers and supports in accordance with the instructions furnished by the manufacturers of these devices. Support ductwork as required by SMACNA recommendations.
- B. Provide additional structural members where required to support piping or ductwork.
- C. Provide hangers and support devices in accordance with the equipment manufacturer's instructions for all equipment.
- D. The contractor is responsible to determine the means and methods of equipment installation and support. Seismic restraints for mechanical and plumbing piping shall bear the seal and signature of a structural engineer registered in the state of California, and shall be submitted to the architect prior to fabrication. Calculations are to be included for all connections to the structure, considering localized effects. Seismic design criteria for mechanical components shall be in conformance with Component Seismic Design Requirements". Costs for seismic calculations are to be included in the bid price.
- E. Provide supplementary drawings and calculations as required by governing code jurisdictions noting seismic support data/calculations as required for permit purposes.

END OF SECTION

SECTION 23 05 53 IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Work included: Providing of all required identification systems for HVAC equipment and piping.

1.2 RELATED WORK

- A. Basic HVAC Requirements, Section 23 00 00.
- B. Fans, Section 23 34 00.
- C. Unit Heaters, Section 23 55 33.

1.3 SUBMITTALS

- A. Provide submittals in accordance with Section 23 00 00.
- B. Submittals shall include:
 - 1. List of proposed equipment and valve tags.
 - 2. Product information on piping markers.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. W. H. Brady Co. or Seton.

2.2 DESCRIPTION

- A. Equipment Identification: Equipment identification tags shall be three-ply, white center, black face plastic plates with 1/2" high letters for major and 1/4" high letters for minor equipment.
- B. Piping Markers:
 - 1. All vinyl self-sticking labels.
 - 2. Markers shall comply with ANSI A 13.1 for width, size of letters, background colors, etc.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Provide each piece of equipment with a manufacturer's standard nameplate indicating manufacturer's name, model number, capacities and characteristics.
- B. In addition, provide each piece of equipment with a plastic tag indicating its designation on this project (such as EF-1,) and the area served. Mount this tag with screws, where possible, in a clearly visible location.
- C. Affix piping markers to pipe or insulation in locations that make them clearly visible. Secure markers with two wraps of "Scotch Reinforced Tape" at each end.

- D. Locate markers at intervals of 15 to no more than 50 feet allowing visual identification of a line from any point along that line and as follows: At each valve, where a pipe passes through a wall, direction of flow on each leg of a "T" and on lower quarters of the line on horizontal runs where view is not obstructed.
- E. Provide arrow markers to indicate direction of flow away from each pipe identification marker.

END OF SECTION

SECTION 23 05 93 TESTING ADJUSTING AND BALANCING FOR HVAC

PART 1 GENERAL

1.1 SUMMARY

- A. Work Included: Providing system balance work as specified.

1.2 RELATED WORK

- A. Basic HVAC Requirements, Section 23 00 00.
- B. Fans, Section 23 34 00

1.3 OPERATION AND MAINTENANCE DATA

- A. Provide O&M data in accordance with Section 23 00 00.
- B. O&M data shall include copies of system balance data.

1.4 QUALITY ASSURANCE

- A. Contract with an approved balancing agency with a minimum of 5 years experience in the field of Air Balancing.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 GENERAL

- A. Conduct the systems balance work in accordance with standard procedures and recognized practices outlined by ASHRAE and Associated Air Balance Council. Record all actual equipment nameplate, drive and operating data at the site.
- B. After all adjustments are made, check the space for noise, vibration and drafts and eliminate if possible.
- C. Document any problems or operating difficulties that could not be rectified.
- D. Upon completion of balancing work, submit one copy of final report to Engineer for approval. Make corrections as requested. Submit four (4) copies of final report to the contractor for inclusion in the O&M manuals Engineer.
- E. Provide sets of marked balancing drawings showing air opening numbers that correspond to the numbering system in the balancing logs with the final reports.

3.2 EXECUTION

- A. Fans:
 - 1. Adjust air volumes to within plus or minus 5% of the values shown on the plans.
 - 2. Fan speed or RPM.

3. Actual motor voltage, amperage, RPM and overload heater sizes.

3.3 CONTROLS AND SEQUENCE COMMISSIONING

- A. Cycle exhaust fans and automatic dampers through the entire range of functions and verify proper operation and sequencing fans and air dampers, thermostat programming operation, etc.
- B. Provide the following as a separate portion of the test and balance log:
 1. Type and characteristics of the individual controls serving each unique system in the building.
 2. Written verification that the equipment controls and sequencing appears to be correct and functioning properly at the time of performance of the system test and balance work.

END OF SECTION

SECTION 23 31 00 HVAC DUCTS AND CASINGS

PART 1 GENERAL

1.1 SUMMARY

- A. Work included: Providing of all required sheet metal ductwork specified or shown on the drawings.

1.2 RELATED WORK

- A. Basic HVAC Requirements, Section 23 00 00.
- B. Air Duct Accessories, Section 23 33 00.
- C. Fans, Section 23 34 00.

1.3 SUBMITTALS

- A. Submittals shall include Shop Drawings of any proposed revisions to the ductwork as shown on the drawings.

PART 2 PRODUCTS

2.1 DESCRIPTION

- A. Provide galvanized sheet metal ductwork for outside air and general exhaust air systems except as specified or shown on the drawings. Provide minimum gauge and reinforcing in accordance with Chapter 16 of the 2004 Edition of the ASHRAE Handbook and as recommended by the latest edition of the "HVAC Duct Construction Standard" published by SMACNA.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Construct and assemble all supply, return, outside air and general exhaust duct systems in accordance with latest edition of the "HVAC Duct Construction Standards" published by SMACNA, Chapter Sixteen, "Duct Construction" of the Chapter 16 of the 2004 ASHRAE Handbook and the appropriate chapters of the latest edition of the applicable State Mechanical Specialty Code.
- B. Cross brace and reinforce ductwork and plenums with structural steel members to prevent breathing or ballooning.
- C. All joints in the air distribution system shall be sealed airtight with Hardcast or 3-M Duct Sealer 800.
- D. All supply & return ductwork is low pressure.
- E. Duct construction pressure classifications (SMACNA):
 - 1. -1 inch w.g. for all for return air ductwork.
 - 2. +1 inch w.g. for all for supply air ductwork.

END OF SECTION

SECTION 23 33 00 AIR DUCT ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

- A. Work included: Providing of all required air duct accessories specified or shown on the drawings.

1.2 RELATED WORK

- A. Basic HVAC Requirements, Section 23 00 00.
- B. HVAC Ducts and Casings, Section 23 31 00.
- C. Fans, Section 23 34 00.

1.3 SUBMITTALS

- A. Provide submittals in accordance with Section 23 33 00.
- B. Submittals shall include: Manufacturer's catalog or technical data showing performance, dimensions, materials of construction and recommended methods of installation.

1.4 OPERATION AND MAINTENANCE DATA

- A. Provide O&M data in accordance with Section 23 33 00.
- B. O&M data shall include: Manufacturer's literature and maintenance instructions.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Control Dampers (motorized): Greenheck, Ruskin, Cesco or approved equal.
- B. Fire Dampers: Greenheck, Ruskin, Cesco or approved equal.
- C. Flexible connections: Duro-Dyne or approved substitution. Duro-Dyne used as basis of selection.

2.2 DESCRIPTION

- A. Control Dampers: Greenheck VCD-23 Low-Leakage Control Dampers.
 - 1. 16-gauge galvanized hat channel with corner braces.
 - 2. Galvanized steel, V-groove blade construction. Extruded vinyl blade seals.
 - 3. Edge seals and flexible metal compressible jamb seals.
 - 4. Synthetic bearings.
 - 5. Plated steel axles.
 - 6. Opposed blade operation.
 - 7. Frame mounted actuator support.
 - 8. Factory installed jackshaft for all multiple section dampers.

9. Maximum leakage rate of 4 CFM/sq. ft. at 1.0 inches w.g. when tested in accordance with AMCA Standard 500.
- B. Fire dampers (FLD): Dynamic style, continuous spring steel curtain closing by its own inertia from any position. Positive lock in closed position. Damper opening to be 100% of duct free area. Fire damper to meet all U.L. and NFPA requirements.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install motorized dampers at exhaust fans and roof relief vents as required.
- B. Provide controls and interlocks as necessary to open and close dampers as follows:
 1. Roof exhaust fans: Open when fan is on, close when fan is off.
 2. Roof Intake Vents: Open when associated fan starts, close when off.
 3. Roof Relief Vents: See section 23 37 23.
- C. Install fire dampers where noted on the drawings. Provide installation in accordance with the manufacturer's instructions, NFPA requirements and the U.L. listing.
- D. Coordinate with the building architectural drawings to determine construction ratings and locations required.

END OF SECTION

SECTION 23 34 00 HVAC FANS

PART 1 – GENERAL

1.1 SUMMARY

- A. Work Included: Providing of all required fans as noted in the contract documents.

1.2 SUBMITTALS

- A. Provide submittals in accordance with Section 230000.
- B. Submittals shall include: Manufacturer's catalog or technical data showing performance, dimensions, materials of construction, and recommended methods of installation.

1.3 OPERATION AND MAINTENANCE DATA

- A. Provide O&M data in accordance with Section 230000.
- B. O&M data shall include manufacturer's literature and maintenance instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Ceiling Fans: Greenheck, Cook, ACME, Twin City, PennBarry or approved equal.

2.2 DESCRIPTION

- A. Direct Drive Ceiling Fans.
 - 1. Packaged forward curved, direct driven ceiling designed for horizontal application.
 - 2. Internally isolated fan and motor assembly.
 - 3. Removable standard grille.
 - 4. One-half inch thickness fiberglass type insulation securely fastened to inside surfaces of cabinet.
 - 5. Single point power connection with mounted internal speed controller.
- B. Provide solid-state speed control factory mounted inside of fan cabinet accessible through the grille.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. All installations shall be in accordance with manufacturer's instructions.
- B. Mount the ceiling fans where noted on the drawings.
- C. Provide flexible connection at fan outlet.
- D. Coordinate with electrical sub-contractor for power and control installation.
- E. Connect ductwork.

END OF SECTION

SECTION 23 37 00 AIR OUTLETS AND INLETS

PART 1 GENERAL

1.1 SUMMARY

- A. Work included: Providing of all required grilles specified or shown on the drawings.

1.2 SUBMITTALS

- A. Provide submittals in accordance with Section 230000.
- B. Submittals shall include manufacturer's catalog or technical data showing performance, dimensions, materials of construction and recommended methods of installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Price, Krueger, Anemostat, Titus, Nailor or approved equal. Price used as a basis for selection unless specified.

2.2 DESCRIPTION

- A. Supply Air Diffuser - Ceiling Surface Mount: Model SMCD louver face diffuser with outer frame, duct collar and modular inner core assembly allowing directional blade assembly revisions by rotating core modules. Diffuser to be of steel construction and standard white powder finish with Border 6 beveled mount frame for flat surface mounting.
- B. Supply Air Diffuser - Lay-In T-bar Mount: Model SMCD louver face diffuser with outer frame, duct collar and modular inner core assembly allowing directional blade assembly revisions by rotating core modules. Diffuser to be of steel construction and standard white powder finish with Border 36 for flush mounting in standard 24"X24" lay-in T-bar ceiling.
- C. Return and Exhaust Air Grilles – Ceiling Surface Mount: Model 10 grille with perforated face of neck size shown on the drawings with standard finish with Border F for flush mounting hard ceiling.
- D. Return and Exhaust Air Grilles - Lay-in T-Bar Mount: Model PDDR grille with perforated face of neck size shown on the drawings with standard finish with Border 3 for flush mounting in standard 24"X24" lay-in T-bar ceiling.
- E. Sidewall Supply Air Grille: Model 520 rectangular steel construction grille, double deflection with horizontal face bars, spaced at 3/4", 1-1/4" margins and standard finish.
- F. Standard Construction Sidewall Return Air Grille: Model 535 rectangular steel construction grille, 45-degree blade setting on 1/2-inch centers, 1-1/4" margins and standard finish.
- G. Linear Slot Supply (Extruded Aluminum) - Model SDS (supply air) aluminum slot diffusers. Supply grille to have bi-directional, adjustable pattern controllers capable of deflecting the air pattern from horizontal to straight down. The vanes allow control of the air volume without altering the throw pattern

- H. Spiral Duct Sidewall Supply Air Register - Model SDG steel duct with closed cell foam seal for installation directly into a round duct, horizontal and vertical adjustable blades, standard finish. Provide air scoop and/or opposed blade dampers as noted on the drawings.
- I. Provide opposed blade dampers (OBD) as noted on the drawings.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install grilles where shown on the drawings and in accordance with manufacturer's instructions.
- B. Install a gasket to assure an airtight seal between ductwork or ceiling and grille.
- C. Install all grilles tight to their respective mounting surfaces.
- D. Install plumb and true with room dimensions and accurately centered on projections as shown on architectural reflected ceiling plans.

3.2 COMMISSIONING

- A. The equipment and systems referenced in this section are to be commissioned.
- B. The contractor has specific responsibilities for scheduling, coordination, startup, test development, testing and documentation. Coordinate all commissioning activities with the Commissioning Authority.

END OF SECTION

SECTION 23 81 26 SPLIT SYSTEM AIR CONDITIONING

PART 1 GENERAL

1.1 SUMMARY

- A. Work included: Providing a split system heat pump / air handler units as specified and shown on the drawings.

1.2 SUBMITTALS

- A. Provide submittals in accordance with Section 230000.
- B. Submittals shall include:
 - 1. Manufacturer's catalog or technical data showing performance, dimensions, materials of construction and recommended methods of installation.
 - 2. Control diagrams.

1.3 OPERATION AND MAINTENANCE DATA

- A. Provide O&M data in accordance with Section 230000.
- B. O&M data shall include:
 - 1. Manufacturer's literature.
 - 2. Maintenance instructions.

PART 2 PRODUCTS

- 2.1 Manufacturers: LG, Daiken, Mitsubishi, Sanyo or approved equal. Mitsubishi / TRANE used as basis of design.

- A. Heat Pump unit for Air Handler fan coils to include compressor(s), condenser coils, condenser fans and motors, refrigerant reservoir, charging valve, all controls, refrigerant line sets, and a holding charge of R410A.
 - 1. Galvanized steel cabinet coated with weather resistant powder paint.
 - 2. Compressors: Hermetic sealed scroll compressor with integral vibration isolation, overload and inherent winding thermostat protection to prevent burnout, crankcase heater. Horizontal condenser fan discharge. Reversing valve as required (heat pumps).
 - 3. Refrigeration Circuits: Inverter driven, variable flow refrigerant unit shall include brass external liquid line solenoid valve with service gage port connections, suction line service valve with service gage connection port, service gage port connections on the compressor suction and discharge lines with Schrader type fittings with brass caps, accumulator, pressure relief, and full charge of refrigerant.
 - 4. Condenser Coil: Non-ferrous construction consisting of aluminum plate fins mechanically bonded to seamless copper tubes.
 - 5. Condenser Fans and Motors: Direct drive, resiliently mounted propeller fan arranged for horizontal discharge.
 - 6. Accessories to include liquid solenoid valves and winter start control.
 - 7. Internal Refrigeration Controls and Safeties: Provide time delay restart, automatic restart on power failure, safety lockout if unit safety is open, time delay control sequence, high and low pressure cutouts, internal overload protection on all motors.

- B. Air Handling Unit
 - 1. Indoor air handling unit with direct expansion refrigerant cooling coil, fan motor, piping connections, electrical controls and hanging brackets vertical or horizontal installation.
 - 2. Fan to be centrifugal type with adjustable discharge louvers.
 - 3. Construction consisting of a refrigerant coil with aluminum plate fins mechanically bonded to seamless copper tubes. Integral drip pan and drain connection.
 - 4. Integral condensate pump.
 - 5. Refrigerant metering piston and body.
 - 6. Filter.

- C. Controls: Provide a programmable electronic night setback thermostat. Provide all adaptor boards, relays and miscellaneous components for a complete system. Thermostat shall perform the following functions.
 - 1. Staging as required for economizer and heating / cooling stages as noted in the Mechanical Equipment Schedule.
 - 2. Integral logic to automatically coordinate heating, economizer operation and cooling operation in appropriate sequence / changeover.
 - 3. Non-volatile memory to retain settings during power failure.
 - 4. Keypad lockout.
 - 5. All days programmable with vacation mode.
 - 6. 5-degree minimum deadband between heating and cooling modes.
 - 7. Programmable setup / setback temperature.
 - 8. Outdoor air temperature sensor inputs.
 - 9. Fan operation continuous during days, intermittent during nights.
 - 10. Economizer: Actuator and reference dry bulb controls in accordance with Oregon Energy Code. First stage cooling must be economizer and integrated into thermostat logic..

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install units per manufacturer's installation instructions.
- B. Provide flexible pipe connectors at condensing unit connections.
- C. Refrigerant Piping – Refer to Specification Section 232000:
- D. Install air handling unit to allow access to interior components as recommended by the manufacturer.
- E. Provide condensate trap per manufacturer's recommendations and drain line as noted on the drawings. Route condensate line as noted on the drawings. Provide condensate pumps as required.
- F. Mount the heat pump unit on an outdoor housekeeping pad as noted on the drawings.
- G. Provide seismic restraints as required in accordance with code requirements and manufacturer's instructions. Securely mount the heat pump / condensing unit to the mounting surface.
- H. Provide complete charge of refrigerant and oil required for operation. Provide any additional refrigerant or oil required during first year of operation.

- I. Furnish startup, adjustment and initial service by factory representative.

END OF SECTION

SECTION 26 00 00 GENERAL PROVISIONS

PART 1 GENERAL

1.1 DESCRIPTION

- A. The General and Supplemental Conditions apply to this Division, including but not limited to:
 - 1. Drawings and Specifications.
 - 2. Public ordinances, permits. Including but not limited to electrical and fire alarm permits.
 - 3. Payments and fees required by governing authorities for work included in this Division.
 - 4. Change orders.
- B. Division 1, General Requirements apply to this Division, including but not limited to:
 - 1. Summary of Work.
 - 2. Coordination.
 - 3. Cutting and Patching.
 - 4. Section 01 20 00 Alternates.
 - 5. Submittals, including Shop Drawings, Product Data and Samples.
 - 6. Construction facilities and Temporary Controls.
 - 7. Materials and Equipment, Substitution and Product Options.
 - 8. Contract Closeout:
 - a. Project Record Documents.
 - b. Operating and Maintenance Data.
 - c. Systems Demonstrations.

1.2 CONTRACT DOCUMENTS

- A. The Electrical Drawings and Specifications are complementary and what is called for by one shall be as binding as if called for by both. Items shown on the Drawings are not necessarily included in the Specifications. All directives and instructions to furnish, provide, install, complete, test and methods described in these Specifications and Drawings shall be interpreted as directives to the Electrical Contractor unless clearly specified otherwise. It is the intent of these specifications and the accompanying drawings to describe complete and functional electrical systems. If errors or discrepancies are discovered, notify the Architect immediately.

1.3 SITE VISITATION

- A. The contractor shall visit the site prior to bidding to familiarize himself with existing conditions and all other factors which may affect the execution of the work.

1.4 CODES, ORDINANCES AND REGULATIONS

- A. The completed installation shall conform to all applicable Federal, State and Local Codes, Ordinances and Regulations.
- B. Obtain all necessary permits and inspections required by the governing authorities having jurisdiction over this work.
- C. Furnish to the Architect a certificate of approval from the inspection authority at the completion of the work, prior to the application for final payment.

1.5 SCOPE OF WORK

- A. The work covered by this Specification shall include furnishing all labor, materials, equipment and services to construct and install the complete electrical system as shown on the Drawings and specified herein. Verify all conditions on the job site and lay out work accordingly.
- B. The work shall include, but is not necessarily limited to, the following systems:
 - 1. Secondary service and distribution systems.
 - 2. Complete power system.
 - 3. Complete lighting system.
 - 4. Grounding continuity.
 - 5. Connection of electrical equipment furnished under other Divisions of work.
 - 6. Telephone provisions.
 - 7. Data provisions.
 - 8. Television provisions.
 - 9. Security provisions.
 - 10. Fire alarm systems.
 - 11. Intercom systems
 - 12. Demolition as required.

1.6 MECHANICAL WIRING

- A. Refer to 26 00 00-3.9 for the delineation of work and responsibilities between Division 23 and Division 26.

1.7 WARRANTY

- A. Provide a written one-year warranty covering the work done under this Division as required by the General Conditions. Incandescent lamps will be excluded from this warranty.
- B. Systems and Apparatus:
 - 1. Free of defects of material and workmanship and in accord with the Contract Documents.
 - 2. Built and installed to deliver its full rated capacity at the efficiency for which it was designed.
 - 3. Operate at full capacity without objectionable noise or vibration.

1.8 SUBMITTALS

- A. Refer to Division 1 requirements.
- B. Submit all electrical data in 3-point covered binders, indexed by section number, covering all items of equipment and systems. Submit all electrical items at one time.
- C. The installation and Record Drawings called for under submittals shall show all outlets, devices, terminal cabinets, conduits, wiring and connections required for the complete system described. Prints of these drawings shall be submitted prior to starting installation. The Contractor submitted drawings, when approved, will then form the basis for installation.
- D. Submittals will not be permitted by fax.
- E. Submittals will not be reviewed unless equipment is specifically indicated.

PART 2 PRODUCTS

2.1 APPROVALS AND SUBSTITUTIONS

- A. The use of manufacturer's names, models and numbers in this Specification is intended to establish style, quality, appearance and usefulness. Items noted "or equal" do not require prior approval. Items noted "approved equivalent" or "approved substitute" require prior approval.
- B. Submit for the Architect's approval, manufacturer's detailed specifications and data sheets for all proposed substitutions. Submittals shall consist of a single sheet, or sheets, if required, for each piece of equipment and shall give the specific data needed for consideration of approval. All pertinent data listed in the Specifications and in Schedules shall be furnished, including all special features. See that all submittals are in proper order, and that all equipment will fit in the space provided.
- C. The Architect reserves the right to require the submission of an actual sample before the acceptance of any product as an equal to that specified.

2.2 MATERIAL APPROVALS AND SHOP DRAWINGS

- A. Submit all electrical data in 3-point covered binders, indexed by Section number, covering all items of equipment and systems. Include wiring diagrams where called for.
- B. Review and recommendations by the Architect or Engineer are not to be construed as change authorizations. If discrepancies between the shop drawings submitted and the Contract Documents are discovered either prior to or after the data is processed, the Contract Documents will govern. Shop drawing review will not occur without contract cost data as outlined below.

PART 3 EXECUTION

3.1 CONTRACT COST DATA

- A. Furnish to the Architect a cost breakdown of the Electrical Contract.
- B. The cost breakdown shall include separate amounts for material and labor for each category (as applicable to this project) listed below. Include costs data with the shop drawings submittal.
 - 1. Panels.
 - 2. Feeders.
 - 3. Disconnects, starters and equipment connections.
 - 4. Branch circuit wiring and devices.
 - 5. Data provisions.
 - 6. Telephone provisions.
 - 7. Television provisions.
 - 8. Security provisions.
 - 9. Fire alarm system.
 - 10. Lighting control, luminaires and lamps.
 - 11. Intercom system.

3.2 CHANGE ORDERS

- A. All supplemental cost proposals by the Contractor shall be accompanied with a complete itemized breakdown of labor and materials cost. Contractor's estimating sheets for the supplemental cost proposals shall be included. Labor must be separated and allocated for each item of work. Material cost, as used in this section, to be Contractor's actual "invoice" cost. All discounts shall be detailed and shown on the invoice. Labor cost shall be the actual cost per manhour including all taxes and fees. The total estimated cost for any change will be considered a not-to-exceed price. The supplemental cost approval will be based on this estimate but actual change order request for payment will be based on the contractors actual cost to perform this work and shall be accompanied with a complete itemized breakdown of labor and materials cost with backup invoices, without exception.

3.3 OPERATING AND MAINTENANCE DATA

- A. The Contractor shall provide operating instructions and maintenance data, in 3-point covered binders, for all equipment and materials called for under this Division.
- B. Submit five copies of operating and maintenance data books for review at least four weeks before final review of the Project. Assemble all data in a completely indexed volume or volumes and identify the size, model, and features indicated for each item.
- C. Maintenance instruction manuals shall include complete cleaning and servicing data compiled in clearly and easily understandable form. Data shall show serial numbers of each piece of equipment and complete lists of replacement parts.

3.4 ELECTRONIC INFORMATION

- A. Electronic record information in AutoCAD format will be provided to the electrical contractor upon request. A drawing release form will be sent to the contractor and upon its return a compact disk will be made available to be picked up at System Design Consultants, Inc office. One (1) copy of the base project construction document files will be made available to the contractor at no charge, each additional request will be provided at a cost of \$150 per request.
- B. All electrical subcontractors will make their request for the construction documents through the electrical contractor.

3.5 RECORD INFORMATION

- A. Maintain one set of construction documents marked up (red-lined) on a daily basis as the work progresses, showing all changes, deviations, change orders, omissions, or other variations from the contract drawings.
- B. Record all conduits, stubups and equipment by dimensions from gridlines, below grade, above floor, etc. Show location of all access panels, rough-in for future, etc.
- C. Make record documents available to the Architect for review or printing during construction.
- D. On acceptance of the contractor record drawings by the Architect, the contractor will transfer the record information in AutoCAD" format to the electronic AutoCAD" drawing files. Refer to 26 00 00-3.4(A) for obtaining documents and applicable charges.
- E. Deliver record drawings files on CD or other suitable electronic media to the Architect promptly upon completion of the project. Record information added to the AutoCAD drawing files is to have compatible format, linework and lettering as the original files. All

new work done by the contractor on the original drawing files is to be on a single layer noted in the revised drawing file as "RECORD".

3.6 ALTERNATES

- A. Refer to Division 1.
- B. Refer to Electrical Drawings for detailed information relating to the appropriate alternates.

3.7 PROTECTION OF WORK

- A. Protect all electrical work and equipment installed under this Division against damage by other trades, weather conditions or any other causes. Equipment found damaged or in other than new condition will be rejected as defective.
- B. Switchgear, transformers, panels, light fixtures and all electrical equipment shall be kept covered or closed to exclude dust, dirt and splashes of plaster, cement or paint and shall be free of all such contamination before acceptance. Enclosures and trims shall be in new condition, free of rust, scratches and other finish defects. Properly refinish in a manner acceptable to the Architect, if damaged.

3.8 MAINTENANCE OF SERVICE

- A. Electrical service shall be maintained to all functioning portions of the building throughout construction, except as noted below, during all normal working hours of the building occupants. Outages to occupied areas shall be kept to a minimum and be prearranged with the Architect or Owner's Representative. This Contractor will be liable for any damages resulting from unscheduled outages or for those not confined to the pre-arranged times.
- B. Signal and communication systems and equipment shall be kept in operation wherever these serve occupied or functional portions of the building. Outages of these facilities shall be treated the same as electrical power outages.
- C. Telephone services where required during the construction work will be maintained by the telephone company. This work shall be coordinated with the telephone company in such a manner that service, as required by the building occupants, can be readily installed and maintained.
- D. Include all costs for temporary facilities, overtime labor and necessary provisions to maintain electrical services in the initial bid proposal. Temporary wiring and facilities, if used, shall be removed and the site left clean before final acceptance.

3.9 MECHANICAL WIRING – DELINEATION OF RESPONSIBILITY

A. The following schedule is intended to summarize the division of work and responsibilities between Division 23 and Division 26. Not all items listed are applicable to this project.

ITEM	FURNISHED BY	INSTALLED BY	POWER WIRING	CONTROL WIRING
1. Division 23 Equipment Motors	Div. 23	Div. 23	Div. 26	Div. 23
2. Motor Starters, Contactors and Overload Heaters – Integral	Div. 23	Div. 26	Div. 26	Div. 23
3. Variable Frequency Drives (VFD’s)	Div. 23	Div. 26	Div. 26	Div. 23
4. Motor Control Centers	Div. 26	Div. 26	Div. 26	Div. 23
5. Fused & Unfused Disconnect Switches	Div. 26	Div. 26	Div. 26	-----
6. Manual Operation Switches	Div. 26	Div. 26	Div. 26	Div. 26
7. Control Relays & Transformers	Div. 23	Div. 23	Div. 23	Div. 23
8. Energy Management Control Panels	Div. 23	Div. 23	Div. 23	Div. 23
9. Motorized Solenoid Valves	Div. 23	Div. 23	Div. 23	Div. 23
10. Duct Mounted smoke Detectors	Div. 23	Div. 23	Div. 26	Div. 23 – Equipment Shutdown Div. 26 – Fire Alarm

ITEM	FURNISHED BY	INSTALLED BY	POWER WIRING	CONTROL WIRING
11. Fire/Smoke and Smoke Dampers	Div. 23	Div. 23	Div. 26	Div. 26
12. Boiler Kill Switch	Div. 23	Div. 26	Div. 26	Div. 23

END OF SECTION

SECTION 26 05 00 BASIC MATERIALS AND METHODS

PART 1 GENERAL

1.1 DESCRIPTION

- A. Conditions of the Contract and Section 26 00 00 apply to this Section.

1.2 COORDINATION OF WORK

- A. Conduct work in a manner to cooperate with all other trades for proper installation of all items of equipment. Consult the Drawings of all other trades or crafts to avoid conflicts with cabinets, counters, equipment, structural members, etc. In general, the architectural drawings govern but conflicts shall be resolved with the Architect prior to rough-in.
- B. Verify the physical dimension of each item of electrical equipment to fit the available space. Coordination of the equipment to fit into the available space and the access routes through the construction shall be the Contractor's responsibility.
- C. Coordinate rough-in and wiring requirements for all mechanical equipment with mechanical contractor and equipment supplier. Make installation in accordance with rough-in and wiring diagrams provided by equipment supplier for Contractor's use. Report immediately to architect any deviation between contract documents and actual equipment requirements.
- D. Coordinate all aspects of the electrical, telephone and other utility services with the appropriate serving utility. No additional compensation will be allowed the Contractor for connection fees or additional work or equipment not covered in the Drawings or Specifications which are a result of policies of the serving utility.
- E. Coordinate underground work with other contractors working on the site. Particular coordination shall be performed with contractors installing storm sewer, sanitary sewer, water and irrigation lines, to avoid conflicts. Common trenches may be used with other trades, providing clearances required by codes and ordinances are maintained.

1.3 ELECTRICAL DRAWINGS

- A. The Electrical Drawings accompanying these Specifications are design drawings and generally are diagrammatic indicating approximate locations of outlets and wiring. They do not show every offset, bend, junction box, etc., which may be required for installation to complete the system. Minor deviations in methods, circuiting and branch circuit distribution or arrangements to suit construction conditions are permissible.
- B. The intent of the branch circuiting and control shown shall not be changed nor homeruns combined without the approval of the Engineer. Feeder runs shall not be combined or changed.
- C. Cross or hash marks on conduit runs indicate quantity of copper branch circuit conductors, size as indicated, in addition to a grounding conductor. Where no size is indicated, provide minimum no. 12 or sized for loads and/or equipment being served. Where such marks do not appear, provide minimum of two conductors with ground, minimum no. 12, or size as required for loads and/or equipment being served. The contractor shall review panel schedule to verify wire/conduit size required.
- D. Conduit sizes shown or listed on the drawings are for reference only. It is the responsibility of the contractor to provide and install conduit sized per current NEC requirements.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Electrical products installed in this project shall be listed by a recognized testing laboratory or approved in writing by the local inspection authority as required by governing codes and ordinances.
- B. Materials shall be new, of the best quality. The materials shall be manufactured in accordance with NEMA, ANSI, UL or other applicable standards.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Provide a completely properly operating system for each item of equipment called for under this work. Installations shall be in accord with the equipment manufacturer's instructions, the best industry practices and the contract documents. Where a conflict in these guides appear, the Architect shall be requested to provide proper clarification before work is roughed in and his decision will be final. Work installed without such clarification shall be removed and corrected by the Contractor at no cost to the Owner.
- B. Make installation in a neat, finished and safe manner, according to the latest published NECA Standard of Installation under competent supervision.

3.2 MOUNTING HEIGHTS

- A. Mount electrical devices per current ADA requirements.
- B. Unless otherwise specified on Architectural drawings, mounting heights are:
 - 1. Lighting Switches 48" AFF (center line)
 - 2. Receptacles 17" AFF (center line)
 - 3. Data/Telephone 17" AFF (center line)
 - 4. Wall Telephones 48" AFF (to top of unit)
 - 5. FA Pull Stations 48" AFF (to top of unit)
 - 6. FA Audible/Visual 84" AFF (to top of unit)
 - 7. FA Visual Devices 84" AFF (to top of unit)
 - 8. Clocks Per Architectural Elevation
 - 9. Speakers Per Architectural Elevation
- C. "ACT" (above countertop) denotes 6" above highest countertop, height not to exceed 46" AFF to center line. Refer also to architectural elevations.

3.3 LONG RUNS

- A. Exact routing and conduit lengths are the responsibility of the contractor. Contractor is responsible to size the conductors to assure that the maximum voltage drop on any circuit does not exceed 5% at the load.

3.4 ARC-FLASH HAZARD WARNING

- A. Electrical equipment such as switchboards, switchgear, panelboards, meter socket enclosures, control panels and motor control centers shall be field or factory marked to warn qualified personnel of the potential arc flash hazards per NEC 110.16. The markings shall be located so

as to be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment.

3.5 EXCAVATION AND BACKFILL

- A. Perform all necessary excavation and backfill for the installation of electrical work in compliance with Section 02220.
- B. For direct burial cable or non-metallic conduit, a minimum 3-inch cover of sand or clean earth fill shall be placed all around the cable or conduit on a leveled trench bottom. Lay all steel conduit on a smooth level trench bottom, so that contact is made for its entire length. Water shall not be present in the trench when electrical conduit is being laid.
- C. Place backfill in layers not exceeding 8-inches deep and compact to 95% of maximum density at optimum moisture to preclude settlement.
 1. Interior: Bank sand or pea gravel.
 2. Exterior: Excavated material with final 8-inches clean soil.
- D. Following backfilling, grade all trenches to the level of surrounding soil. All excess soil shall be disposed of at the site as directed.
- E. Provide 6-inch wide vinyl tape marked "ELECTRICAL" in backfill, 12-inches below finished grade, above all conduit runs.
- F. Coordinate patching of all asphalt or concrete surfaces disturbed by this work with General Contractor.

3.6 NOISE CONTROL

- A. Outlet boxes at opposite sides of partitions shall not be placed back-to-back nor straight through boxes be employed, except where specifically permitted on the Drawings by note, to minimize transmission of noise between occupied spaces.
- B. Contactors, transformers, starters and similar noise producing devices shall not be placed on walls which are common to occupied spaces unless specifically called for on the Drawings. Where such devices must be mounted on walls, common to occupied spaces, they shall be shock mounted or isolated in such a manner as to effectively prevent the transmission of their inherent noise to the occupied space.
- C. Ballasts, contactors, starters, transformers and like equipment which are found to be noticeably noisier than other similar equipment on the project will be deemed defective and shall be replaced.

3.7 EQUIPMENT CONNECTIONS

- A. Provide complete electrical connections for all items of equipment requiring such connections, including incidental wiring, materials, devices and labor necessary for a finished working installation.
- B. Verify the location and method for connecting to each item of equipment prior to roughing-in. Check the voltage and phase of each item of equipment before connecting.
- C. Coordinate power requirements and final locations of all equipment with final equipment selection, i.e., actual equipment installed, and install all necessary devices allowing for end terminations/connections.

- D. Make motor connections for the proper direction of rotation. Minimum size flex for mechanical equipment shall be 1/2-inch except at small control devices where 3/8-inch may be used. Exposed motor wiring shall be jacketed metallic flex with 6-inches minimum slack loop. Pump motors shall not be test run until liquid is in the system.
- E. Control devices and wiring relating to the HVAC systems will be furnished and installed under Division 23 except for provisions or items specifically shown on the Electrical Drawings or specified herein. Refer to 26 00 00-3.9
- F. Furnish all code required disconnects under this work, whether specifically shown or not.

3.8 EQUIPMENT SUPPORT

- A. Anchoring and bracing to the building structural elements in accord with all codes and regulations regarding seismic design conditions. The contractor is responsible to determine the means and methods of equipment installation and support. Seismic restraints for electrical and communication equipment shall bear the seal and signature of a structural engineer registered in the state of Oregon, and shall be submitted to the Architect prior to fabrication. Calculations are to be included for all connections to the structure, considering localized effects.
- B. Each fastening device and support for electrical equipment, fixtures, panels, outlets and cabinets shall be capable of supporting not less than four times the ultimate weight of the object or objects fastened or suspended from the building structure.
- C. Properly and adequately support fixtures installed under this work from the building structure. Supports shall provide proper alignment and leveling of fixtures. Flexible connections where permitted to exposed fixtures shall be neat and straight, without excess slack, attached to the support device.
- D. Support all junction boxes, pull boxes or other conduit terminating housings located above the suspended ceiling from the floor above, roof or penthouse floor structure to prevent sagging or swaying.
- E. Conduits:
 - 1. Support suspended conduits 1-inch and larger from the overhead structural system with metal ring or trapeze hangers with threaded steel rod having a safety factor of 4.
 - 2. Conduit installed in poured concrete shall be anchored to the reinforcing steel with No. 14 black iron wire.

3.9 ALIGNMENT

- A. Install panels, cabinets and equipment level and plumb, parallel with structural building lines. Switchgear panels and all electrical enclosures shall fit neatly without gaps, openings or distortion. Properly and neatly close all unused openings with approved devices.
- B. Fit surface panels, devices and outlets with neat, appropriate trims, plates or covers, without overhanging edges, protruding corners or raw edges, to leave a finished appearance.

3.10 CUTTING AND PATCHING

- A. Include cutting, patching and restoration of finishes necessary for this work. Surfaces damaged by this work and spaces around conduits passing through floors and walls shall be neatly patched and finished to match the adjacent construction, including painting or other

finishes. Clean up and remove all dirt and debris. This work shall all be performed to the satisfaction of the Architect. Refer to Section 01 73 29.

3.11 FIRESTOPPING PENETRATIONS IN FIRE-RATED WALL/FLOOR ASSEMBLIES

- A. Contractors shall provide proper sizing when providing sleeves or core-drilled holes to accommodate their through penetrating items. All voids between sleeve or core-drilled hole and pipe passing through, shall be firestopped to meet the requirements of ASTM E814, in accordance with Section 07 84 00 - Firestopping.

3.12 BUILDING EXPANSION JOINTS

- A. Provide properly sized expansion fittings for all conduits crossing over building expansion joints. Refer to Architectural plans for expansion joint locations.

END OF SECTION

SECTION 26 05 19 CONDUCTORS AND CONNECTORS

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work Included:
 - 1. Deliver conductors to the job site in cartons, protective covers or on reels.
 - 2. Conductors for special systems shall be as recommended by the equipment manufacturer except as noted.

1.2 RELATED WORK

- A. Section 26 00 00: General Provisions
- B. Section 26 05 00: Basic Materials and Methods.

1.3 SUBMITTALS

- A. Shop Drawings.
- B. Product Data.

PART 2 PRODUCTS

2.1 CONDUCTORS - 600 V

- A. Type:
 - 1. No. 12 AWG minimum size unless noted otherwise.
 - 2. No. 8 and larger, stranded, Class B.
- B. Stranding: Copper, concentric or compressed
- C. Insulation: THHN, THWN, XHHW unless noted or specified otherwise.
- D. Through wiring in fluorescent fixtures shall be rated for 90 degree C.
- E. Manufacturers: Southwire, General Cable, Cerro Wire or equal.

2.2 CORD DROPS AND PORTABLE CORDS

- A. Copper type "S" or "SO" heavy duty, rubber insulated unless otherwise noted.

2.3 CONNECTORS

- A. Branch Circuit Conductor Splices: Live spring type, Scotch-Lok, Ideal Wing Nut or self-stripping type, 3M Series 560.
- B. Cable Splices: Compression tool applied sleeves, Kearney, Burndy or equal with 600V heat shrink insulation.
- C. Copper Conductor Lugs: Conductors no. 6 and larger, except on molded case circuit breakers, two hole, long barrel pressure tool set Thomas & Betts No. 54,000 series, Burndy "Hydent", Anderson Electric VCEL, or approved.
- D. Aluminum Conductor Lugs: Conductors no. 6 and larger, except on molded case circuit breakers, one or two hole, long barrel pressure tool set. Molded case circuit breaker

termination shall be via Terminal Plug pressure tool applied, Thomas & Betts No. 54,000 series, Burndy "Hydent", Anderson Electric VCEL, or approved.

PART 3 EXECUTION

3.1 CONDUCTORS

- A. Pulling compounds may be used with the residue cleaned from the conductors and raceway entrances after the pull is made.
- B. Pulleys or blocks shall be used for alignment of the conductors when pulling. Pulling shall be in accordance with manufacturer's specifications regarding pulling tensions, bending radii of the cable and compounds.
- C. Conductors entering terminal or junction boxes mounted on hermetically sealed refrigeration compressor motors shall be copper.
- D. Make up and insulate wiring promptly after installation of conductors. Wire shall not be pulled in until all bushings are installed and raceways terminations are completed. Wire shall not be pulled into conduit embedded in concrete until after the concrete is poured and forms are stripped.
- E. Conductor sizes shown on the Drawings are for copper only.

3.2 CONNECTORS

- A. Control and special systems wires shall be terminated with a tool applied spade flared lug when terminating at a screw connection.
- B. All screw and bolt type connectors shall be made up tight and retightened after an eight hour period.
- C. All tool-applied compression connectors shall be applied per manufacturer's recommendations and physically checked for tightness.

3.3 COLOR CODING

- A. Phase color code to be consistent at all feeder terminations, A-B-C left-to-right or A-B-C top-to-bottom.
- B. Switchlegs, travelers, etc. to be consistent with the phases to which connected or a color distinctive from that listed.
- C. Under 250 Volts Phase-to-Phase:
 - 1. Phase A - Black
 - 2. Phase B – Red (Wild leg in 240V Delta – Orange)
 - 3. Phase C – Blue
 - 4. Neutral - White
 - 5. Ground - Green

END OF SECTION

SECTION 26 05 26 GROUNDING AND BONDING

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work Included:
 - 1. Provide complete building grounding system.
 - 2. Provide ground bus bar at each telephone demarcation and data distribution location.

1.2 RELATED WORK

- A. Section 26 00 00: General Provisions,
- B. Section 26 05 00: Basic Materials and Methods,
- C. Section 26 05 19: Conductors and Connectors
- D. Section 26 27 26: Wiring Devices and Plates

PART 2 PRODUCTS

2.1 GROUND CONDUCTORS

- A. Bare or green insulated copper.

2.2 GROUND ROD CONNECTORS

- A. Cast, set screw or bolted type.

2.3 ELECTRODES

- A. Copper clad steel minimum 3/4-inch diameter by 8 feet long.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Grounding system will consist of the following:
 - 1. Minimum of 20' bare no. 4 copper concrete-encase grounding conductor.
 - 2. Provide bond to building steel.
 - 3. provide bond to cold water piping within 5' of building entry.
 - 4. Provide bond to minimum of 2 ground rods.
- B. Establish a ground for each separately derived system, e.g., transformers and generators, per NEC 250.30.
- C. All grounding conductors shall be sized in accord with the National Electrical Code.
- D. Grounding conductor connectors shall be made up tight and located for future servicing and to ensure low impedance.
- E. Ground the electrical system, the cold water service, structural steel, and transformers to the building ground grid.

- F. All feeder and service raceways shall be grounded.
- G. All plug-in receptacles shall be bonded to the boxes, raceways and grounding conductor.
- H. Provide equipment grounding conductor in all branch circuit, feeder and service raceways.
- I. Provide bonding jumper between ground and neutral bus at main service.

3.2 GROUND BUS BAR (TELEPHONE DEMARCATION AND DATA DISTRIBUTION)

- A. Provide & install copper ground bus bar on isolators, 6" x 2" minimum. Install 1 - #6 insulated conductor to the building grounding connection at the main distribution panel.

END OF SECTION

SECTION 26 05 33 CONDUITS, RACEWAYS, BOXES AND FITTINGS

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work Included:
 - 1. Provide raceways and conduits of specified types for all electrical systems wiring, except where clearly shown or specified otherwise. All fittings, boxes, hangers and appurtenances shall be included.
 - 2. Size raceways and conduits as indicated on the Drawings. Where no size is indicated, conduit may be the minimum code permitted size for the quantity of type THHW conductors installed. Minimum size is 3/4".
- B. All wiring shall be installed in raceways where routed through plenum ceiling areas.

1.2 RELATED WORK

- A. Section 26 00 00: General Provisions
- B. Section 26 05 00: Basic Materials and Methods

1.3 SUBMITTALS

- A. Shop Drawings.
- B. Product Data.
- C. Operational Instructions and Maintenance Data.

PART 2 PRODUCTS

2.1 METALLIC CONDUITS

- A. GRC: Threaded rigid heavy wall galvanized steel.
- B. IMC: Threaded intermediate galvanized steel.
- C. EMT: Zinc coated steel electrical metallic tubing.
- D. ARC: Threaded rigid heavy wall aluminum.
- E. Flex: Flexible metal with and without polyvinyl chloride jacket.
- F. Liquidtight flexible conduit: Zinc steel core with smooth gray abrasion-resistant, liquid-tight PVC cover with integral ground wire wound in steel core.
- G. MC (Metal Clad) cable. Note: Metal Clad cable may only be used for branch circuit wiring as specified herein. Refer to Part 3 of this section for uses permitted.
 - 1. MATERIALS
 - a. Cable shall be steel jacketed interlocking armor with internal fully insulated green grounding conductor. Cable shall contain multi-conductor thermoplastic insulated type THHN color coded solid or stranded copper conductors and shall be UL-approved for the intended application.

- b. Connections, terminations and fasteners shall be UL-approved for the application, and designed specifically for use with the cable used, and shall have insulated throats to protect the wire.
- 2. APPROVED MANUFACTURERS
 - a. MC Cable: AFC/A Nortek Company, Type Mc-Lite, HC-90; Alfex, Armorlite.
 - b. Tools: Cable manufacturer approved type with controlled depth rotary cutter.

2.2 NON-METALLIC CONDUITS

- A. Rigid non-metallic conduit: Type II PVC schedule 40, suitable for use with 90 degrees C rated wire. Conduit shall conform to UL Standard 651 and carry appropriate UL listing for above and below ground use.

2.3 SURFACE RACEWAYS

- A. Acceptable manufacturer(s): Wiremold, Panduit or as noted on drawings.
- B. Type, size with quantity and spacing of outlets as shown on drawings. Provide with snap-on cover, connectors, fittings and incidental items required for a complete installation. Raceway shall be in continuous length as indicated on drawings.

2.4 WIREWAYS

- A. Troughs: Steel, painted, square in cross section, preformed knock-outs on standard spacing, hinged cover.
- B. Fittings: Tees, elbows, couplings as required for configuration shown on the Drawings.
- C. Supports: U-shaped, 1/4-inch by 1-1/2-inch steel strap, bent and prime painted.

2.5 FITTINGS

- A. GRC, IMC AND ARC:
 - 1. The conduit itself must be threaded, threaded couplings attached by any means are not allowed.
 - 2. Threaded locknuts.
 - 3. Threaded bushings: 1-1/4 inch and larger shall be of the insulated, grounding type as required under Section 26 05 26.
 - 4. Expansion fittings: O-Z/Gedney Electrical Mfg. Co. type E expansion coupling with bonding jumper for up to four inches of movement.
- B. EMT:
 - 1. Connectors: Steel compression ring type for conduit termination, with insulated throat, suitable for conditions used.
 - 2. Couplings: Steel compression ring type, concrete tight.
- C. Weatherproof Connectors: Threaded pipe connections with waterproofing compound.

2.6 METALLIC BOXES

- A. Flush and Concealed Outlet Boxes: Galvanized stamped steel with screw ears, knock-out plugs, mounting holes, fixture studs if required, RACO or equal.
- B. Surface Outlet Boxes: Galvanized stamped steel same as above for use on ceilings; cast steel or aluminum with threaded hubs for use on walls.

- C. Large Boxes: Boxes exceeding 4-11/16 inches square when required shall be welded steel construction with screw cover and painted, steel gauge as required by physical size, Hoffman, Circle AW or equal.
- D. Floor Boxes:
 - 1. Fully-adjustable, Walker 880 series, Hubbell or approved substitute.
 - 2. Equip all floor outlets with Lexan polycarbonate flanges, black finish, Walker 817, 827 or 837 series with cover plate, Hubbell or approved substitute. Verify floor type.
- E. Floor Boxes (Power and Data):
 - 1. Fully-adjustable flush concrete box, Walker "Resource RFB" series, model RFB4.
 - 2. Equip all floor outlets with recessed carpet trim plate with mire management blocks, Walker RAKMII. Verify floor type.

2.7 NON-METALLIC BOXES

- A. PVC, molded enclosures, threaded knockouts.
- B. Phenolic, molded enclosures, threaded knockouts.

2.8 OTHERS

- A. Any conduits, fittings, etc. specifically not mentioned above are not approved for use.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Conceal all conduits in finished spaces and elsewhere so far as practicable. Concealed conduits shall run in a direct line with long sweep bends and offsets. GRC and IMC embedded in concrete below grade or in damp locations shall be made water-tight by painting the entire male thread with Rustoleum metal primer, or equal, before assembly.
- B. Route exposed conduit parallel or at right angles to structural building lines, and neatly offset into boxes. Conduits attached directly to building surfaces shall closely follow the surfaces. Conduit fittings shall be used to "saddle" under beams.
- C. Conduits, whether exposed or concealed, shall be securely supported and fastened at intervals of nominally every 8 feet and within 18 inches of each outlet, ell, fitting, panel, etc.
- D. Keep conduit and raceways closed with suitable plugs or caps during construction to prevent entrance of dirt, moisture, concrete or foreign objects. Raceways shall be clean and dry before installation of wire and at the time of acceptance.
- E. Pack spaces around conduits with oakum and seal to prevent entrance of moisture where conduits are installed in sleeves or block-outs penetrating moisture barriers.
- F. Where conduits penetrate fire rated concrete walls or floors, provide non-combustible caulking or putty 3M fire barrier material of thickness required to equal or exceed the fire rating of wall or floor.

3.2 CONDUIT

- A. Install GRC or IMC galvanized steel conduits for wiring underground, in-cast-concrete construction, in damp locations, in hazardous areas and where subject to mechanical injury, with threaded fittings made up tight.
- B. EMT may be employed in all other dry protected locations.
- C. ARC may be used wherever EMT is acceptable, with no restriction on size.
- D. Flex is required where flexibility is necessary as at motors, transformers and recessed lighting fixtures, etc. Flex shall be jacketed type, except where concealed in dry locations and spaces such as ceiling cavities.
- E. PVC may be used underground, under interior slabs or where scheduled or noted on the Drawings. Make connections with waterproof solvent cement. Provide GRC at 60 degree and larger bends and where penetrating slabs or elling up above grade in exterior locations. PVC conduit shall not be installed less than 30" under roadways or areas subject to heavy traffic. Provide a ground wire sized per code in all PVC conduits. Conductor quantities indicated in conduits do not include ground wires unless otherwise noted.
- F. Conduit stubbed from a concrete slab or wall to serve an outlet under a table or to supply a machine shall have a rigid conduit coupling flush with the surface of the slab. Provide plug where conduit is to be used in future.
- G. Conduits in above-grade slabs shall be located in the middle of the slab. The maximum size, spacing, and location of conduits in post-tensioned slabs shall be subject to approval by the structural engineer Conduits larger than one inch shall not be run in slabs.
- H. MC (Metal Clad) cable uses permitted :
 - 1. Metal Clad cable shall only be used for branch circuit interior wiring where accessible and located above T-bar ceilings.
 - 2. Metal Clad cable shall not be used for branch circuit home runs. Home runs shall be installed using conduit and conductor method from the circuit breaker panel to a junction box in the accessible ceiling above the room served by the branch circuit or adjacent to the room if that room's ceiling space is inaccessible. From the accessible area junction box, Metal Clad cable may be used to each device or luminaires.
- I. MC (Metal Clad) cable uses NOT permitted:
 - 1. Any uses not specifically allowed in paragraph H above.
 - 2. Feeders.
 - 3. Home runs.
- J. MC (Metal Clad) cable installation :
 - 1. Support horizontal and vertical cable 6 feet on center (maximum) and within 6 inches of boxes with approved cable clamps.
 - 2. Support cable above accessible ceilings; do not rest cables on ceiling tiles. Attach cables with metal clips or plastic cable ties to support wires from structure on 6 foot centers maximum.
 - 3. Cable shall be cut with manufacturer approved devices.
 - 4. Splice conductors only in accessible junction boxes.
 - 5. Cable shall not be supported from, or come in contact with, mechanical ducts, water, sprinkler or gas piping; maintain 6 inch separation minimum.
 - 6. Provide junction box at all cable penetrations of wall, ceiling or floor surfaces for equipment connections; cable shall not be run directly through finished surfaces.

7. Voltage drop: Conductors over 75 feet for 120 volt, and over 200 feet for 277 volt, for branch or individual circuit home runs from equipment connection, receptacle or lighting fixture shall be No. 10 AWG minimum.
8. Provide junction box at transition from concealed to exposed wiring. Exposed wiring shall conform to Section 26 05 33 - Conduits, Raceways, Boxes and Fittings.
9. Where cable penetrates fire-rated walls or floors, provide mechanical fire stop fitting with UL listed fire rating equal to wall or floor rating.
10. Provide junction box at transition from interior to exterior wiring. Exterior wiring shall conform to Section 26 05 33 - Conduits, Raceways, Boxes and Fittings.

3.3 RACEWAYS

- A. Surface metal raceway with snap-in cover may be used in finished spaces only as specified, or shown on Drawings.
- B. Surface metal wireways may be installed at locations to serve motor starters or other control devices where required by a multitude of wiring interconnections or physical layout.
- C. Expansion Joints:
 1. All conduits crossing expansion joints where cast in concrete shall be provided with expansion-deflection fittings, equivalent to OZ/Gedney AXDX, installed per manufacturers recommendations.
 2. All conduits three inches and larger where not cast in concrete shall be rigidly secured to the building structure on opposite sides of a building expansion joint with an expansion-deflection fitting across the joint, equivalent to OZ/Gedney AXDX, installed per manufacturer's recommendations.
 3. All conduits less than three inches where not cast in concrete shall be provided with junction boxes securely fastened on both sides of the expansion joint, connected together with 15 inches of slack (a minimum of 15 inches longer than the straight line length) flexible conduit with copper green ground bonding jumper. In lieu of this flexible conduit, an expansion-deflection fitting, as indicated for conduits three inch and larger, may be installed.
- D. Seismic Joints
 1. No conduits cast in concrete shall be allowed to cross a seismic joint.
 2. All conduits shall be provided with junction boxes securely fastened on both sides of the expansion joint, connected together with 15 inches of slack (a minimum of 15 inches longer than the straight line length) flexible conduit with copper green ground bonding jumper. Prior to installation, verify with Architect that the 15 inches is adequate for the designed movement, and if not, increase this length as required.

3.4 SURFACE RACEWAYS

- A. The raceway system shall provide a complete enclosure that protects the wires installed therein against damage.
- B. There shall not be any openings that exceed 1/16 inch (1.59 mm) in width on surfaces that are accessible following installation of the system.

3.5 FITTINGS

- A. Metallic raceways and conduits shall be assembled continuous and secured to boxes, panels, etc., with appropriate fittings to maintain electrical continuity. All conduit joints shall be cut square, reamed smooth with all fittings drawn up tight.

3.6 BOXES

- A. Outlet boxes shall be of code required size to accommodate all wires, fittings and devices. Provide multi-gang boxes as required to accept devices installed with no more than one device per gang. Equip all metallic boxes with grounding provisions.
- B. Flush wall switch and receptacle outlets used with conduit systems shall be 4 inches square, 1-1/2 inches or more deep, with one or two-gang plaster ring mounted vertically. Where three or more devices are at one location, use one piece multiple gang tile box or gang box with suitable device ring.
- C. Wall bracket and ceiling surface mounted lighting fixture outlets shall be 4-inch octagon, 1-1/2-inches deep with 3/8-inch fixture stud where required. Wall bracket outlets to have single gang opening where required to accommodate fixture canopy. Provide larger boxes or extension rings where quantity of wires installed requires more cubic capacity.
- D. Boxes for the special systems shall be suitable for the equipment installed. Coordinate size and type with the system supplier.
- E. Provide pull boxes where shown, or in conduit runs greater than 100 feet, or where required to limit the number of bends in any conduit to not more than three 90 degree bends or equivalent. Use galvanized boxes of code required size with removable covers installed so that covers will be accessible after work is completed. Do not locate pull boxes or junction boxes in finished areas unless specifically shown or special permission is obtained from Architect.
- F. Boxes shall be flush with finished surfaces or not more than 1/8-inch below surface and be level and plumb. Long screws with spacers or shims for mounting devices will not be acceptable. No combustible material shall be exposed to wiring at outlets.

END OF SECTION

SECTION 26 05 53 IDENTIFICATION

PART 1 GENERAL

1.1 WORK INCLUDED

- A. Clearly and properly identify the complete electrical system to indicate the loads served or the function of each item of equipment connected under this work.

PART 2 PRODUCTS

2.1 LABELS

- A. Panels: Typed or pre-printed white permanent materials labels with adhesive backing, Specified Products, Inc. or equal.
- B. Switchgear, Panelboards and Transformers: Engraved phenolic plastic, black with white letters, Minimum 1/4" letters.
- C. Equipment: Plastic tape with adhesive backing, field printed with proper tool.
 1. Brother P-Touch, Dymo-Tape, or approved.

PART 3 EXECUTION

3.1 SWITCHGEAR

- A. Label the main and feeder protective devices in all distribution panels with laminated plastic labels indicating the function or the load served.
- B. Provide labels for all bussed spaces indicating size of future breaker or switch that may be installed in the space reserved.
- C. Multiple services: Where multiple electrical services serve a building, provide a permanent plaque on service equipment reading:

"BUILDING SERVICE <service no.> OF <total no. of services>".

Service identification is to be in compliance with NEC 230.2(E).

- D. Provide label on MDP to read:

THIS INSTALLATION DESIGNED BY SYSTEM DESIGN CONSULTANTS, INC. PORTLAND, OR 503-248-0227 (year installed)

3.2 BRANCH CIRCUIT PANELBOARDS

- A. Indicate panel number with laminated plastic labels. Indicate voltage phase and feeder source, feeder wire size, and feeder breaker or fuse size with white permanent labels on the inside of the panel door.

- B. Provide machine-printed panel directories with protective, clear transparent covers, accurately accounting for every breaker installed, including spares. Schedules shall use the actual room designations assigned by name or number near completion of the work and not the space designation on the Construction Drawings.

3.3 EQUIPMENT

- A. Label all disconnect switches, motor starters, relays, contactors, time switches indicating voltage, amperage, circuit number and equipment served with white permanent labels.
- B. Label all transformers and busways with black and yellow 4-1/2 inch high pre-printed adhesive backed materials.

3.4 SYSTEMS

- A. Complex control circuits may utilize any combination of colors with each conductor identified throughout, using wraparound numbers or letters. Use the number or letters shown where the Drawings or operation and maintenance data indicate wiring identification.
- B. Label the fire alarm and communication equipment zones, controls, indicators, etc. with machine printed labels or indicators appropriate for the equipment installed, as supplied or recommended by the equipment manufacturer.

END OF SECTION

SECTION 26 24 00 PANELBOARDS

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work Included: Provide branch panels as shown on drawings.

1.2 RELATED WORK

- A. Section 26 00 00: General Provisions
- B. Section 26 05 00: Basic Materials and Methods
- C. Section 26 20 00: Electrical Distribution System
- D. Section 26 28 00: Circuit Protective Devices

1.3 SUBMITTALS

- A. Shop Drawings.
- B. Product Data.
- C. Operation Instruction and Maintenance Data.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- A. ITE-Siemens, Square D or approved substitute.

2.2 BRANCH PANELBOARDS

- A. Flush panels shall have flush doors with concealed hinges and mounting clamps equal to Square D Mono Flat, or ITE Decor trim.
- B. Branch circuit panels shall be bolt-in circuit breaker type with aluminum or copper bussing. Panels shall be fitted with flush lift latches and locks keyed alike. Deliver all panel keys to the Owner at completion of the project.
- C. Panelboard bussing and breakers shall be rated to withstand available fault current.
- D. Provide full size ground bus in all panelboards.
- E. Lugs: Conductors no. 6 and larger, except on molded case circuit breakers, two hole, long barrel pressure tool set Thomas & Betts No. 54,000 series, Burndy "Hydent", Anderson Electric VCEL, or approved.
- F. Wiring gutters shall be a minimum of 4 inches wide except where feeder conductors enter where a minimum of 6 inches clear shall be provided. Feeder conductors to enter directly in line with lug terminals wherever practicable. Provide separate feeder lugs and studs for each feeder conductor.
- G. Branch circuit breakers shall be identified with individual circuit numbers adjacent to each breaker with a typewritten card to identify the load controlled by that breaker. Circuit breakers shall be nominally one inch on centers to allow for easy operation of the handles.

Arrange breakers in the panels as scheduled on the Drawings. Where no schedule is listed, arrange with the one-pole breakers at the top of the panel, followed by the two-pole and three-pole breakers with blank spaces at the bottom.

- H. Surface panels shall have metal face trims with no sharp edges or corners. Finish surface panel tubs to match face trim. Access panel on front may be screw type for access to interior.

2.3 BRANCH PANELBOARDS, EMERGENCY SYSTEM

- A. In addition to the requirements of 2.2 above, a listed surge-protective device shall be installed in or on all emergency system switchboards and panelboards, per NEC 700.8.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install panelboards plumb and level, located as shown on the Drawings.
- B. Arrange loads from served by the panel to balance the load currents as equally as possible between the phases.

3.2 SPARE CONDUITS

- A. Install a spare 3/4-inch conduit from flush panels for each three spare single pole breakers or spaces provided, minimum three conduits per panel. Terminate conduits above an accessible ceiling or as directed.

END OF SECTION

SECTION 26 27 26 WIRING DEVICES AND PLATES

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work Included: Provide wiring devices and plates or blank plates only for all outlet boxes shown.
- B. Receptacles: In addition to requirements specified herein, provide receptacle types as required by Code for the location of receptacle installation, including:
 - 1. GFCI
 - 2. Tamper-resistant
- C. Light switching as shown on plan is to convey intent of switching. Provide low-voltage wiring or additional wiring as required for complete control of light fixtures (e.g., 0-10V wiring) whether specifically indicated or not.

1.2 RELATED WORK

- A. Section 26 00 00: General Provisions
- B. Section 26 05 00: Basic Materials and Methods

1.3 SUBMITTALS

- A. Shop Drawings.
- B. Product Data.
- C. Operation Instructions and Maintenance Data.
- D. Warranty.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Wiring devices shall be specification grade with special devices as noted on the Drawings. Should the Drawings indicate a device other than those listed herein without reference to catalog number, such device shall be of same grade and manufacture as specified below. Furnish a matching cap for all special purpose devices that do not have the common 120 volt NEMA 5-15R or 5-20R configuration.
- B. Comparable grade devices to those listed as manufactured by Hubbell, Leviton and Pass & Seymour, are approved. All lighting switches and duplex receptacles installed shall be by the same manufacturer and have identical appearance characteristics, unless noted otherwise.

2.2 PLATES AND COVERS

- A. Flush Finish Plates: .032-inch thick, type 302 stainless steel, brush finish, Leviton or Pass & Seymour.
- B. Flush Finish Plates: Nylon, .070-inch thick, Pass & Seymour TP series, or Leviton .

- C. Surface Covers: Galvanized or cadmium plated steel, 1/2-inch raised industrial type with openings appropriate for device installed.
 - D. Weatherproof:
 - 1. Damp locations: Hubbell HBL5205WO cover mounted horizontally with hinges up.
 - 2. Wet locations: While-in-use weatherproof, lockable cover. Hubbell WP26M, Thomas & Betts Red-Dot series CKNM, Pass & Seymour WUICAST1 or approved equal.
- 2.3 RECEPTACLES, 120V
- A. Duplex: 20 ampere, 3-wire, 2-pole grounding, NEMA 5-20R, Hubbell 5352 series, gray exposed finish.
 - B. Ground Fault Circuit Interrupting (GFCI/GFI): 20 ampere, 3-wire, 2-pole grounding, NEMA 5-20R, gray exposed finish, Hubbell GFR5352 series or approved substitute.
 - C. Tamperproof Duplex: 20 ampere, 3-wire, 2-pole grounding, NEMA 5-20R, Hubbell HBL8300SGGY series, gray exposed finish.
 - D. Receptacle with USB ports: Duplex tamper-resistant receptacle, (2) USB ports, 20 ampere, 3-wire, NEMA 5-20R, gray exposed finish. Pass & Seymour Catalog number TR5362USB*.
- 2.4 RECEPTACLES, OTHER
- A. Special purpose receptacles: As noted on Drawings.
 - B. Clock outlets: Hubbell No. 5235, gray receptacle, plate with clock hanger.
- 2.5 WALL SWITCHES
- A. Low voltage switch: On/Off with Raise/Lower control. Acuity nPODM-DX series, gray exposed finish.
 - B. Line voltage switches: 20 ampere, 120 volt, quiet type, Hubbell 1221 series, gray exposed finish.
 - C. Switch with pilot: lighted clear toggle, Hubbell 1221-PL.
 - D. Keyed security switches: Maintained contact, key removal in both positions. Pass & Seymour PS20AC1KL (single pole), PS20AC2KL (double pole), PS20AC3KL (3-way)
- 2.6 WALL BOX DIMMERS:
- A. White finish, size for loads.
 - B. LED, 0-10 VDC:
 - 1. Thin profile.
 - 2. 1,200 watt (unless noted otherwise)
 - 3. 120/277 volt rated.
 - 4. Acuity SPODMRD, Leviton IP710-LFZ, or approved. Verify compatibility of dimmer switch with LED driver being served.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Devices and finish plates to be installed plumb with building lines.
- B. Finish plates and devices not to be installed until final painting is complete. Scratched or splattered finish plates and devices will not be accepted.
- C. Wall-mounted receptacles shall be installed vertically at centerline height shown on the Drawings or as specified in 26 05 00-3.2.
- D. Receptacles shall be tested for line to neutral, line to ground and neutral to ground faults. Correct any defective wiring.
- E. All special plugs provided with the receptacles shall be given to the Owner in their cartons and a letter stating the date and the Owner's representative that received the materials.

3.2 LIGHTING CONTROL

- A. Provide additional wiring as required for complete dimming control of light fixtures (e.g., 0-10V wiring) whether specifically indicated or not.

END OF SECTION

SECTION 26 28 00 CIRCUIT PROTECTIVE DEVICES (OVERCURRENT DEVICES)

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work Included:
 - 1. Provide overcurrent protective devices of the proper characteristics for the load served.
 - 2. Coordinate fuse size and circuit breaker combinations for selective tripping with minimum interruption of service.
 - 3. Provide fuses as indicated on the drawings, sized per NEC and appropriate for the load served as required for a fully operational system.
 - 4. All fuses shall be furnished of the same manufacturer.
 - 5. All circuit breakers shall be furnished of the same manufacturer as the distribution panel and branch panelboards.
 - 6. All fuses shall be installed by the electrical contractor at job-site and only when equipment is to be energized. Fuses shall not be installed during shipment.

1.2 RELATED WORK

- A. Section 26 00 00: General Provisions,
- B. Section 26 05 00: Basic Materials and Methods,
- C. Section 26 20 00: Electrical Distribution System
- D. Section 26 24 00: Switchboards and Panelboards

1.3 SUBMITTALS

- A. Shop Drawings.
- B. Product Data.
- C. Operation and Maintenance data.

PART 2 PRODUCTS

2.1 FUSES

- A. Provide 100,000 AIC, Current Limiting, UL, Time Delay Fuses.
- B. For Feeders 601 amps to 6000 amps: Class L, KRP-C()SP Time Delay.
- C. For Feeders 600 amps and less:
 - 1. Class RK-1, LPS-RK()SP for 600 Volt, Dual Element.
 - 2. Class RK-1, LPN-RK()SP for 250 Volt, Dual Element.
 - 3. Class J, LPJ()SP for 600 Volt & below, Dual Element.
- D. For Motor Circuits 600 Volts and Below: Class RK-1 and Class J Sized @ 125% FLC of Motor.
- E. Manufacturer: Bussmann System 300 Low-Peak, Littelfuse.

2.2 CIRCUIT BREAKERS

- A. Circuit breakers shall be molded case, thermal magnetic type. Breakers shall have short circuit capacity rating to withstand the maximum short circuit duty which can be expected at the breaker location in the electrical system. Breakers mounted in branch panelboards shall be of the bolt-in type.
- B. Minimum short circuit rating for any circuit breaker: 10,000 A.I.C. for 120V and 208V breakers, 22,000 A.I.C. for 277V and 480V breakers.
- C. Provide circuit breaker lock-on handle guards to prevent accidental shut-off of equipment for breakers supplying time clocks, refrigeration, fire alarm, unswitched egress lighting and like systems.

2.3 SUBSTITUTION APPROVALS

- A. If the electrical contractor wishes to furnish materials other than those specified, a written request, along with a complete short circuit and selective coordination study, shall be submitted to the engineer for evaluation at least 10 days prior to bid date. If the engineer's evaluation indicates acceptance, a written addendum will be issued listing the other acceptable manufacturer.

PART 3 EXECUTION

3.1 FUSES

- A. Install fuses for motor protection to best protect the motor without nuisance tripping.
- B. Provide one complete set of spare fuses of each amperage used on this project. Store spare fuses in a metal, hinged door cabinet located adjacent to the Main Distribution Panel. Label cabinet.
- C. Provide pullers for fuses, stored with fuses in cabinet.

END OF SECTION

SECTION 26 28 16 ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work Included:
 - 1. Provide manual or magnetic motor starters of the proper characteristics for equipment as listed on the Drawings or not provided by Division 23, e.g. overhead door operators.
 - 2. Provide switches of proper characteristics as disconnecting means.

1.2 RELATED WORK

- A. Section 26 00 00: General Provisions
- B. Section 26 05 00: Basic Materials and Methods
- C. Section 26 28 00: Circuit Protective Devices

1.3 SUBMITTALS

- A. Shop Drawings.
- B. Product Data.
- C. Operation Instruction and Maintenance Data.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- A. ITE-Siemens, Square D or approved substitute.

2.2 MOTOR STARTERS

- A. Manual starters, toggle type, quick-make, quick-break with thermal overload protection and suitable enclosures.
- B. Enclosures shall be NEMA 1 for indoor use and NEMA 3R where installed exposed to the weather or designated by the subscript "WP".
- C. Magnetic starters, full voltage across the line non-reversing type, 120 volt coils, overload relays in each leg, H-O-A selector switches, red running pilot lights, auxiliary contacts, 120V control transformers and suitable enclosures. The starters shall be combination type with fusible switches where shown adjacent to the disconnect switch.

2.3 DISCONNECTS

- A. Safety and disconnect switches shall be NEMA type HD (heavy duty), quick-make, quick-break, dual rated with electrical characteristics as required by the system voltage and the load served. Switches shall be equipped with a defeatable cover interlock.
- B. Enclosures shall be NEMA 1 for indoor use and NEMA 3R where installed exposed to the weather or designated by the subscript "WP".

- C. Disconnects shall be fusible or non-fusible as designated on Drawings and/or required by code.

PART 3 EXECUTION

3.1 CLEARANCES

- A. Maintain all code required clearances under this work.

3.2 MOTOR STARTERS

- A. Provide the motor starting equipment as shown on the Drawings and coordinate all motor "overload" starter relays.
- B. Install the starters at the respective equipment unless shown otherwise.

3.3 DISCONNECT SWITCHES

- A. Provide all code required disconnect switches under this work whether specifically shown or not.
- B. Disconnect switches required when equipment is not in sight of the branch circuit panel or starter may be horsepower rated, toggle type in suitable enclosure, mounted at or on the equipment.

END OF SECTION

SECTION 26 50 00 LIGHTING FIXTURES AND LAMPS

PART 1 GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Provide all lighting outlets indicated on the Drawings with a fixture of type designated and appropriate for the location. Outlet symbols on the Drawings without a type designation shall have a fixture the same as those used in similar or like locations.
2. Where a fixture type designation has been omitted and cannot be determined by the Contractor, request a clarification from the Architect and provide a suitable fixture type as directed at no additional cost.
3. Coordinate installation of lighting fixtures with the ceiling installation and all other trades to provide a total system that is neat and orderly in appearance.
4. Verify ceiling types with architectural specifications and drawings.
5. Provide luminaires complete with lamps, ballasts, reflectors, diffusers, lenses, shielding, hangers, accessories and fittings.
6. Store and handle so as not to subject materials to corrosion or mechanical damage from environment and/or construction.

1.2 RELATED WORK

- A. Section 26 00 00: General Provisions
- B. Section 26 05 00: Basic Materials and Methods
- C. Section 26 05 33: Conduits, Raceways, Boxes and Fittings

1.3 QUALITY ASSURANCE

- A. Luminaires shall be UL listed and be manufactured in accordance with appropriate UL and ANSI standards and shall bear UL label appropriate for intended use.
- B. The lighting designated for this project was based on fixture types and manufacturers as specified. If substitution of other than those specified is proposed for an alternate, provide the data and the operating fixtures both as specified and alleged equal. The Architect/Engineer reserves the right to request full photometric analysis of area affected by the proposed substitution prior to acceptance or denial.
- C. Equality shall be determined by comparisons of actual fixtures and the following fixture characteristics.
 1. Performance:
 - a. Distribution
 - b. Utilization
 - c. Average brightness/maximum brightness
 - d. Spacing to mounting height ratio
 - e. Comfort probability
 - f. Energy life-cycle analysis.
 2. Construction:
 - a. Engineering
 - b. Workmanship
 - c. Rigidity

- d. Permanence of materials and finishes; Durability
- 3. Installation Ease:
 - a. Captive parts and captive hardware
 - b. Provision for leveling
 - c. Through-wiring ease
- 4. Maintenance:
 - a. Relamping ease
 - b. Replacement of ballast and lamp sockets
- 5. Appearance:
 - a. Light tightness
 - b. Neat, trim styling
 - c. Aesthetic architectural value
- 6. Availability:
 - a. Lead time
- 7. Sustainable Design Performance Indicators:
 - a. Environmental performance in manufacturing
 - b. Manufacturing sustainability policies
 - c. ISO 14001 certification or equivalent environmental management systems.
 - d. ISO 9001 certification for quality assurance
 - e. Annual environmental performance or sustainability reports.
 - f. Environmentally responsible materials and resources.
 - g. Regional availability of materials and resources.
 - h. Regional production and manufacturing.

1.4 SUBMITTALS

- A. Shop Drawings.
- B. Product Data.
- C. Operation Instruction and Maintenance Data.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Recessed fixtures shall have trims which fit neatly and tightly to the surfaces in which they are installed without leaks or gaps. Contractor to verify ceiling types at all locations and provide appropriate trim kit for each fixture. Where necessary, install heat resistant non-rubber gaskets to prevent light leaks or moisture from entering between fixture trim and the surface to which they are mounted.
- B. Fixtures installed under canopies, roof or open porches, and similar damp or wet locations shall be UL listed and labeled as suitable for damp or wet locations.

2.2 LUMINAIRE REQUIREMENTS, GENERAL

- A. Unless otherwise required, all fixtures installed on this project will have an LED light source.
- B. Recessed luminaires shall be IC-rated when installed at locations where insulation will come in direct contact with fixture. Contractor to verify ceiling assembly makeup at all fixture locations.

2.3 DRIVERS, LED

- A. LED drivers shall be electronic-type, labeled as compliant with radio frequency interference (RFI) requirements of FCC Title 47 Part 15, and comply with NEMA SSL 1 "Electronic Drivers for LED Devices, Arrays, or Systems". LED drivers shall have a sound rating of "A", have a minimum efficiency of 85%, and be rated for a THD of less than 20 percent at all input voltages.
- B. Dimmable LED drivers shall be 0-10V type. Dimmable LED drivers shall be capable of dimming without LED strobing or flicker across their full dimming range.
- C. Drivers shall be rated for the ambient temperatures in which they are located. Outdoor fixtures shall be equipped with ballasts or drivers rated for reliable starting to 0 degrees F. Indoor fixtures located in areas with direct sunlight or above normal ambient temperatures shall have ballasts or drivers rated at 65 degrees C minimum.

2.4 LUMINAIRE INTEGRAL BATTERY BACKUP

- A. Luminaire battery backups will have a minimum initial output of 1400 lumens, except as noted below.
- B. Recessed downlights and similar: Luminaire battery backups will have a minimum initial output of 10 watts.

2.5 PHOTOCCELL

- A. Heavy duty die cast zinc housing and base, SPST. Cadmium-sulphide, epoxy-coated 1" diameter cell. Activation upon 1 to 5fc, off at 3 to 15fc, with 2 minute time delay. Fail on mode. Tork Series 2100, or approved equal. Voltage as indicated on Drawings.

2.6 TIMECLOCK

- A. Single channel controller, 7 day scheduling plus special day, 32 set points. Manual override to next scheduled event, user selectable automatic daylight saving, automatic leap year compensation, user selectable am/pm or 24 hour format. Battery back-up. Tork DG100 Series digital time switch.

2.7 LIGHTING CONTACTOR

- A. Class 8903, Type L Multi-pole Lighting Contactor, electrically held, silver cadmium oxide double break contacts, field convertible NO and NC contacts. 30A lighting ballast rating. Quantity of poles as indicated on Drawings.

2.8 LIGHTING LUMINAIRE SCHEDULE

- A. See Drawings.

PART 3 GENERAL

3.1 INSTALLATION

- A. Determine ceiling types in each area and provide suitable mounting frames where required for recessed fixtures.

- B. Fixtures shall be left clean at the time of acceptance of the work with every lamp in operation. If fixtures are deemed dirty by the Architect at completion of the project, the Contractor shall clean them at no additional cost to the Owner.
- C. Fixtures shall be carefully aligned, leveled in straight lines, and located as shown on the architectural reflected ceiling plan. The final decision as to adequacy of support and alignment, shall be given by the Architect. The fixtures shall be supported by separate means from the building structure per applicable seismic requirements and not from the ceiling system, ductwork, piping or other systems.
- D. Fixtures shall be aimed or installed to provide the lighting pattern for which the fixture is designed.
- E. Fixtures recessed into fire-rated ceiling assemblies shall include system maintaining such rating around fixture.
- F. Fixtures located in mechanical rooms and storage/utility rooms to be coordinated with ductwork, piping and structural members. Adjust stems as required for proper illumination of the area.

3.2 WIRING

- A. Recessed fixtures served from a junction box above the ceiling may be connected with 3/8-inch flex, 2 No. 18. Provide 3 No. 18 wires where dual circuiting is called for. Provide ground continuity.

END OF SECTION

SECTION 27 05 28 PATHWAYS FOR COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide a concealed raceway system, including raceways, outlet boxes, pull boxes, backboards sleeves, power outlets as shown and specified for the following limited power or communication systems. Provide raceway from each outlet shown for the following systems to an accessible location above a removable ceiling. Devices, wiring and installation of equipment shall be "Furnished by Owner, Installed by Owner".
 - 1. Telephone/Data

1.2 RELATED WORK

- A. Section 260000: General Provisions
- B. Section 260500: Basic Materials and Methods
- C. Section 260533: Conduits, Raceways, Boxes and Fittings

1.3 SUBMITTALS

- A. Product Data.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. OUTLET BOXES: Bowes, Raco.

2.2 MATERIALS

- A. Minimum raceway size shall be 1" unless otherwise noted. Raceways shall be EMT unless otherwise noted and shall be installed with a minimum of bends. Bends where used, shall have 12" minimum radius. Raceways exceeding 100 feet or having more than two right angle bends shall have a pullbox in an accessible location approximately in the center of the run.
- B. All free raceway ends shall have plastic bushings.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Outlets and finish plates to be installed plumb with building lines.
- B. Provide pull string in all raceways.
- C. Finish plates will not to be installed until final painting is complete. Scratched or splattered finish plates and devices will not be accepted.
- D. Wall mounted outlets shall be installed vertically at centerline height shown on the Drawings.
- E. Provide blank cover plates for all outlets not utilized, coordinate with system installer.

3.2 OUTLETS

- A. Provide minimum of 1-inch conduit or size as shown on drawings for single data and telephone outlets. Provide with pull string, 4 square junction box, double gang mud ring and plate as required, plates to match receptacle plates in style and quality. Provide insulated bushing at end of conduits and route all raceways to an accessible ceiling space, maintain 12-inch clearance from cable trays.
- B. Provide minimum of 1 1/4-inch conduit or size as shown on drawings for combination data and telephone outlets. Provide with pull string, 4 square junction box, double gang mud ring and plate as required, plates to match receptacle plates in style and quality. Provide insulated bushing at end of conduits and route all raceways to an accessible ceiling space, maintain 12-inch clearance from cable trays.

END OF SECTION

SECTION 28 31 00 - FIRE ALARM SYSTEM

PART 1 - GENERAL

1.1 WORK INCLUDED:

- A. Furnish and install a design-build extension of the existing fire alarm system to provide code-required coverage based on based on building modifications.
 - 1. All system components shall be of one system manufacturer, matching existing system. All equipment shall be UL, FM listed and meet NFPA 72. All equipment and devices shall be listed by UL Inc., or approved by F.M. Laboratories.
 - 2. System shall include but not be limited to all controls, power supply, signal initiating and sounding devices, conduit, wiring and all other equipment necessary for a complete and operating system. All equipment shall be American made and assembled.
 - 3. Additions to the system shall include, but not be limited to, all controls, power supply, signal initiating and sounding devices, conduit, wiring and all other equipment necessary for a complete and operating system.
- B. Provide code-required coverage in modified areas of building.

1.2 SUBMITTALS

- A. Shop Drawings.
- B. Product Data.
- C. Operation Instruction and Maintenance Data.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Additions to the system shall include, but not be limited to, all controls, power supply, signal initiating and sounding devices, conduit, wiring and all other equipment necessary for a complete and operating system.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. The contractor will, in conjunction with an Owner representative, test the existing fire alarm system prior to any work being started. The electrical contractor will document any discrepancies with the system. Any failures with the system after the test and during construction that have not been documented will be the responsibility of the electrical contractor. The contractor will repair the system and make it fully operational at their own expense.
- B. The fire alarm components (i.e. pull stations, smoke detectors, ionization detectors, horns, magnetic door holders, fire alarm panel, batteries, chargers, fire alarm cable, etc.) will be supplied, installed and connected by Division 28 Contract work.
- C. Transmission wiring shall be #16 two conductor twisted pair, FPL rated cable. Shielded cable is not acceptable due to high installation cost.

- D. All wiring shall be in accordance with NFPA standard 72A, NEC and applicable state and local regulations. Wiring shall be installed in accordance with the manufacturer's wiring diagram and shall be free from grounds, opens and shorts.
- E. System shall be installed complete in a conduit system.

3.2 TESTING

- A. Upon completion of the installation by the electrical contractor, the system shall be checked by a factory trained technician.
- B. Each device shall be tested for proper operation and auxiliary function.

3.3 OPERATION AND MAINTENANCE MANUALS

- A. Five sets of manuals shall be given to the engineer at the conclusion of the project. Manuals are to contain as-built drawings on disk utilizing AutoCAD, spare parts list, operating procedures, troubleshooting guide, FCP program print out, FCP data file on disk and a one year service proposal on the system.

END OF SECTION

SECTION 311000- SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY:

- A. This Section includes the following:
 - 1. Removing existing plants and grass.
 - 2. Clearing and grubbing.
 - 3. Stripping and stockpiling topsoil.
 - 4. Removing above and below grade site improvements
 - 5. Disconnecting capping or sealing and abandoning site utilities in place.
 - 6. Temporary erosion and sedimentation control measures.
- B. Related Sections include the following:
 - 1. Section 311070; Erosion Control
 - 2. Section 312000; Earth Moving
 - 3. Section 329113; Soil Preparation

1.3 DEFINITIONS

- A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.

1.4 MATERIAL OWNERSHIP

- A. Except for stripped topsoil or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.5 SUBMITTALS

- A. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.

- B. Record drawings, according to Division 1 Section "Project Record Documents," identifying and accurately locating capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 QUALITY ASSURANCE

- A. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.7 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- B. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.
 - 1. Do not proceed with work on adjoining property until directed by Owner's Representative.
- C. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.
- D. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.
- E. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Divisions 31 and 32 "Earthwork" and "Soil Preparation."
 - 1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Verify that site conditions are acceptable for demolition to commence safely and without damage to existing features to be retained.
 - 1. Restore damaged improvements to their original condition, as acceptable to Owner.
- B. Protect and maintain benchmarks and survey control points from disturbance during construction.
- C. Locate and clearly flag trees and vegetation to remain or to be relocated.
- D. Should any asbestos material, contaminated soil, toxic, or questionable material be encountered during the work, the Contractor shall perform the following:
 - 1. Notify Owner and Owner's Representative of condition.
 - 2. Notify Department of Environmental Quality, and/or all other jurisdictional agencies of the condition.
 - 3. Comply with all directives of regulatory agency requirements.
 - 4. Allow the Owner sufficient time to employ respective testing agencies to determine extent of condition before proceeding with work in the affected area.
 - 5. And if corrective measures are required, the Contractor's involvement and adjustment in construction schedule or sequence, if necessary, shall be outlined in a Change Order to the Contract fully describing any necessary additional costs and/or extensions of the contract time in accordance with the general conditions of these contract documents.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
- B. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- C. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 UTILITIES

- A. Owner will arrange for disconnecting and sealing indicated utilities that serve existing structures before site clearing, when requested by Contractor.
 - 1. Verify that utilities have been disconnected and capped before proceeding with site clearing.
- B. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.
 - 1. Arrange with utility companies to shut off indicated utilities.

2. Owner will arrange to shut off indicated utilities when requested by Contractor.
- C. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 1. Notify Owner's Representative not less than two days in advance of proposed utility interruptions.
- D. Excavate for and remove underground utilities indicated to be removed.
- E. Removal of underground utilities is included in Division 2 Sections covering site utilities.

3.4 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction.
 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
 2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
 3. Grind stumps and remove roots, obstructions, and debris extending to a depth of 18 inches below exposed subgrade.
 4. Use only hand methods for grubbing within tree protection zone.
 5. Chip removed tree branches and dispose of off-site.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
 1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.5 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.
- B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
 1. Remove subsoil and nonsoil materials from topsoil, including trash, debris, weeds, roots, and other waste materials.
- C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 1. Limit height of topsoil stockpiles to 72 inches.
 2. Do not stockpile topsoil within tree protection zones.
 3. Dispose of excess topsoil as specified for waste material disposal.
 4. Stockpile surplus topsoil to allow for respreading deeper topsoil.

3.6 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
 - 1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.
 - 2. Paint cut ends of steel reinforcement in concrete to remain to prevent corrosion.

3.7 DISPOSAL

- A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.
 - 1. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.

END OF SECTION 311000

SECTION 312000 – EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Preparing subgrades for slabs-on-grade, walks, pavements and exterior plants.
 - 2. Excavating and backfilling for buildings and structures.
 - 3. Drainage course for slabs-on-grade.
 - 4. Subbase course for concrete walks and pavements.
 - 5. Subbase and base course for asphalt paving.
 - 6. Subsurface drainage backfill for walls and trenches.
 - 7. Excavating and backfilling for utility trenches.
 - 8. Excavating and backfilling trenches for buried mechanical and electrical utilities and pits for buried utility structures.
- B. Related Sections include the following:
 - 1. Section 015639; Temporary Tree and Plant Protection
 - 2. Section 311070; Erosion Control
 - 3. Section 321313; Concrete Paving
 - 4. Section 328400; Planting Irrigation
 - 5. Section 329113; Soil Preparation
 - 6. Section 329300; Plants

1.3 UNIT PRICES

- A. Unit prices for earthwork are included in Division 1 Section "Unit Prices."
- B. Quantity allowances for earthwork are included in Division 1 Section "Allowances."
- C. Rock Measurement: Volume of rock actually removed, measured in original position, but not to exceed the following. Unit prices for rock excavation include replacement with approved materials.
 - 1. 24 inches outside of concrete forms other than at footings.
 - 2. 12 inches outside of concrete forms at footings.
 - 3. 6 inches outside of minimum required dimensions of concrete cast against grade.

4. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
5. 6 inches beneath bottom of concrete slabs-on-grade.
6. 6 inches beneath pipe in trenches, and the greater of 24 inches wider than pipe or 42 inches wide.

1.4 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Course placed between the subbase course and hot-mix asphalt paving.
- C. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Drainage Course: Course supporting the slab-on-grade that also minimizes upward capillary flow of pore water.
- F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
 1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Owner's Representative. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
 2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
 3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Owner's Representative. Unauthorized excavation, as well as remedial work directed by Owner's Representative, shall be without additional compensation.
- G. Fill: Soil materials used to raise existing grades.
- H. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material that exceed 1 cu. yd. for bulk excavation or 3/4 cu. yd. for footing, trench, and pit excavation that cannot be removed by rock excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:
 1. Excavation of Footings, Trenches, and Pits: Late-model, track-mounted hydraulic excavator; equipped with a 42-inch wide, maximum, short-tip-radius rock bucket; rated at not less than 138-hp flywheel power with bucket-curling force of not less than 28,090 lbf and stick-crowd force of not less than 18,650 lbf; measured according to SAE J-1179.

2. Bulk Excavation: Late-model, track-mounted loader; rated at not less than 210-hp flywheel power and developing a minimum of 48,510-lbf breakout force with a general-purpose bare bucket; measured according to SAE J-732.
- I. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material 3/4 cu. yd. or more in volume that exceed a standard penetration resistance of 100 blows/2 inches when tested by an independent geotechnical testing agency, according to ASTM D 1586.
- J. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- K. Subbase Course: Course placed between the subgrade and base course for hot-mix asphalt pavement, or course placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- L. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- M. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.5 SUBMITTALS

- A. Product Data: For the following:
 1. Each type of plastic warning tape.
 2. Geotextile.
 3. Controlled low-strength material, including design mixture.
 4. Geofoam.
- B. Samples: 12-by-12-inch Sample of separation geotextile.
- C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
 1. Classification according to ASTM D 2487 of each on-site and borrow soil material proposed for fill and backfill.
 2. Laboratory compaction curve according to ASTM D 698 for each on-site and borrow soil material proposed for fill and backfill.
- D. Blasting Plan: For record purposes; approved by authorities having jurisdiction.
- E. Seismic Survey Report: For record purposes; from seismic survey agency.
- F. Preexcavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by earthwork operations. Submit before earthwork begins.

1.6 QUALITY ASSURANCE

- A. Blasting: Comply with applicable requirements in NFPA 495, "Explosive Materials Code," and prepare a blasting plan reporting the following:
 - 1. Types of explosive and sizes of charge to be used in each area of rock removal, types of blasting mats, sequence of blasting operations, and procedures that will prevent damage to site improvements and structures on Project site and adjacent properties.
 - 2. Seismographic monitoring during blasting operations.
- B. Seismic Survey Agency: An independent testing agency, acceptable to authorities having jurisdiction, experienced in seismic surveys and blasting procedures to perform the following services:
 - 1. Report types of explosive and sizes of charge to be used in each area of rock removal, types of blasting mats, sequence of blasting operations, and procedures that will prevent damage to site improvements and structures on Project site and adjacent properties.
 - 2. Seismographic monitoring during blasting operations.
- C. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.
- D. Preexcavation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.7 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Owner's Representative and then only after arranging to provide temporary utility services according to requirements indicated.
 - 1. Notify Owner's Representative not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Owner's Representative's written permission.
 - 3. Contact utility-locator service for area where Project is located before excavating.
- B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

- B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM or a combination of these groups; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.
 - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.
- F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
- H. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.
- I. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve and 0 to 5 percent passing a No. 4 sieve.
- J. Sand: ASTM C 33; fine aggregate, natural, or manufactured sand.
- K. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

2.2 GEOTEXTILES

- A. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
 - 1. Survivability: Class 2; AASHTO M 288.
 - 2. Grab Tensile Strength: 247 lbf; ASTM D 4632.
 - 3. Sewn Seam Strength: 222 lbf; ASTM D 4632.
 - 4. Tear Strength: 90 lbf; ASTM D 4533.
 - 5. Puncture Strength: 90 lbf; ASTM D 4833.

6. Apparent Opening Size: No. 60 sieve, maximum; ASTM D 4751.
7. Permittivity: 0.02 per second, minimum; ASTM D 4491.
8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

2.3 ACCESSORIES

- A. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:
1. Red: Electric.
 2. Yellow: Gas, oil, steam, and dangerous materials.
 3. Orange: Telephone and other communications.
 4. Blue: Water systems.
 5. Green: Sewer systems.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 2 Section "Site Clearing."
- C. Protect and maintain erosion and sedimentation controls, which are specified in Division 2 Section "Site Clearing," during earthwork operations.
- D. Provide protective insulating materials to protect subgrades and foundation soils against freezing temperatures or frost.

3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.3 EXPLOSIVES

- A. Explosives: Do not use explosives.
- B. Explosives: Obtain written permission from authorities having jurisdiction before bringing explosives to Project site or using explosives on Project site.
 - 1. Perform blasting without damaging adjacent structures, property, or site improvements.
 - 2. Perform blasting without weakening the bearing capacity of rock subgrade and with the least-practicable disturbance to rock to remain.

3.4 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
 - 2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:
 - a. 24 inches outside of concrete forms other than at footings.
 - b. 12 inches outside of concrete forms at footings.
 - c. 6 inches outside of minimum required dimensions of concrete cast against grade.
 - d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
 - e. 6 inches beneath bottom of concrete slabs on grade.
 - f. 6 inches beneath pipe in trenches, and the greater of 24 inches wider than pipe or 42 inches wide.
- B. Classified Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by Owner's Representative. The Contract Sum will be adjusted for rock excavation according to unit prices included in the Contract Documents. Changes in the Contract time may be authorized for rock excavation.
 - 1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.
 - a. Intermittent drilling; blasting, if permitted; ram hammering; or ripping of material not classified as rock excavation is earth excavation.
 - 2. Rock excavation includes removal and disposal of rock. Remove rock to lines and subgrade elevations indicated to permit installation of permanent construction without exceeding the following dimensions:

- a. 24 inches outside of concrete forms other than at footings.
- b. 12 inches outside of concrete forms at footings.
- c. 6 inches outside of minimum required dimensions of concrete cast against grade.
- d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
- e. 6 inches beneath bottom of concrete slabs on grade.
- f. 6 inches beneath pipe in trenches, and the greater of 24 inches wider than pipe or 42 inches wide.

3.5 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
 2. Pile Foundations: Stop excavations 6 to 12 inches above bottom of pile cap before piles are placed. After piles have been driven, remove loose and displaced material. Excavate to final grade, leaving solid base to receive concrete pile caps.
 3. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended as bearing surfaces.

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.7 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
 1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.
 1. Clearance: 12 inches each side of pipe or conduit.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

1. For pipes and conduit less than 6 inches in nominal diameter and flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
 2. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe circumference. Fill depressions with tamped sand backfill.
 3. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.
- D. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe elevation to allow for bedding course. Hand excavate for bell of pipe.
1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

3.8 SUBGRADE INSPECTION

- A. Notify Owner's Representative when excavations have reached required subgrade.
- B. If Owner's Representative determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- C. Proof-roll subgrade [below the building slabs and pavements] <Insert locations> with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 1. Completely proof-roll subgrade in one direction[, repeating proof-rolling in direction perpendicular to first direction]. Limit vehicle speed to 3 mph.
 2. Proof-roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
 3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Owner's Representative, and replace with compacted backfill or fill as directed.
- D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for [unit prices] [changes in the Work].
- E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Owner's Representative, without additional compensation.

3.9 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Owner's Representative.

1. Fill unauthorized excavations under other construction or utility pipe as directed by Owner's Representative.

3.10 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.11 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
 2. Surveying locations of underground utilities for Record Documents.
 3. Testing and inspecting underground utilities.
 4. Removing concrete formwork.
 5. Removing trash and debris.
 6. Removing temporary shoring and bracing, and sheeting.
 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.12 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Backfill trenches excavated under footings and within 18 inches of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings. Concrete is specified in Division 3 Section "Cast-in-Place Concrete."
- D. Provide 4-inch- thick, concrete-base slab support for piping or conduit less than 30 inches below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase.
- E. Place and compact initial backfill of [subbase material] [satisfactory soil], free of particles larger than 1 inch in any dimension, to a height of 12 inches over the utility pipe or conduit.

1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- F. Controlled Low-Strength Material: Place initial backfill of controlled low-strength material to a height of 12 inches over the utility pipe or conduit.
- G. Backfill voids with satisfactory soil while installing and removing shoring and bracing.
- H. Place and compact final backfill of satisfactory soil to final subgrade elevation.
- I. Controlled Low-Strength Material: Place final backfill of controlled low-strength material to final subgrade elevation.
- J. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.13 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
 1. Under grass and planted areas, use satisfactory soil material.
 2. Under walks and pavements, use satisfactory soil material.
 3. Under steps and ramps, use engineered fill.
 4. Under building slabs, use engineered fill.
 5. Under footings and foundations, use engineered fill.
- C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.14 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.15 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698:
 - 1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.
 - 2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 92 percent.
 - 3. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
 - 4. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent.

3.16 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between adjacent existing grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 - 1. Lawn or Unpaved Areas: Plus or minus 1 inch.
 - 2. Walks: Plus or minus 1 inch.
 - 3. Pavements: Plus or minus 1/2 inch.
- C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.17 SUBBASE AND BASE COURSES

- A. Place subbase and base course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place subbase and base course under pavements and walks as follows:
 - 1. Install separation geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.

2. Place base course material over subbase course under hot-mix asphalt pavement.
 3. Shape subbase and base course to required crown elevations and cross-slope grades.
 4. Place subbase and base course 6 inches or less in compacted thickness in a single layer.
 5. Place subbase and base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
 6. Compact subbase and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.
- C. Pavement Shoulders: Place shoulders along edges of subbase and base course to prevent lateral movement. Construct shoulders, at least 12 inches wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.18 DRAINAGE COURSE

- A. Place drainage course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place and compact drainage course under cast-in-place concrete slabs-on-grade as follows:
 1. Install subdrainage geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
 2. Place drainage course 6 inches or less in compacted thickness in a single layer.
 3. Place drainage course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
 4. Compact each layer of drainage course to required cross sections and thicknesses to not less than **95** percent of maximum dry unit weight according to ASTM D 698.

3.19 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Owner's Representative.
- D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:

1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least 1 test for every 2000 sq. ft. or less of paved area or building slab, but in no case fewer than 3 tests.
 2. Foundation Wall Backfill: At each compacted backfill layer, at least 1 test for each 100 feet or less of wall length, but no fewer than 2 tests.
 3. Trench Backfill: At each compacted initial and final backfill layer, at least 1 test for each 150 feet or less of trench length, but no fewer than 2 tests.
- E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.20 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
1. Scarify or remove and replace soil material to depth as directed by Owner's Representative; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.21 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.
- B. Disposal: Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Owner's Representative.
1. Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 312200

SECTION 312513 – EROSION CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Installation and maintenance of erosion control methods, such as temporary and permanent seeding, temporary and permanent mulching, sediment fences, and other sediment barriers, and other structural and non-structural water and wind erosion and pollution controls.
- B. Related Sections include the following:
 - 1. Section 005639; Temporary Tree Protection
 - 2. Section 311000; Site Clearing
 - 3. Section 312000; Earth Moving
 - 4. Section 329113; Soil Preparation
 - 5. Section 329200; Turf and Grasses

1.3 SUBMITTALS

- A. Prior to the start of construction, the Contractor shall submit to the Owner's Representative, a schedule and implementation plan, utilizing the methods specified herein, and coordinated with the construction work schedule. Construction may not commence until the Erosion Control Plan has been approved by the Owner's Representative.
- B. The Erosion Control Plan shall include, but not be limited to the following:
 - 1. Clearing and grubbing for perimeter controls, and access.
 - 2. Materials and installation of perimeter controls.
 - 3. Installation phasing, in conjunction with general construction schedule.
 - 4. Clearing, grubbing, and trenching for activities other than perimeter controls.
 - 5. Final grading and stabilization of soil.
 - 6. Method of monitoring rainfall.
 - 7. Installation and maintenance of temporary erosion controls.
 - 8. Installation and maintenance of permanent erosion controls.

1.4 QUALITY ASSURANCE

- A. All work shall comply with applicable standards of the American Society for Testing and Materials (ASTM)

1.5 PROJECT CONDITIONS

- A. The Contractor shall protect all areas of work defined on the drawings and any existing on-site vegetation, structures, utilities, etc. All damage as a result of work under this contract shall be repaired at no cost to the Owner. The Contractor shall be responsible for the provision of traffic control, barricades, safety guards, and any other structures or improvements necessary for the complete protection of the public.

1.6 EROSION CONTROL

- A. All erosion control measures shall be in place prior to the start of any construction activity.
- B. Erosion control measures shall be maintained continuously throughout the duration of the construction process and shall not be removed, without prior approval from the Owner's Representative, until all site and landscape elements are fully established.

1.7 PERFORMANCE REQUIREMENTS

- A. Comply with all requirements of U.S. Environmental Protection Agency for erosion and sedimentation control, as specified for the National Pollutant Discharge Elimination System (NPDES), under requirements for the 2012 General Permit for Discharges from Construction Activities.
- B. Also comply with all more stringent requirements of the City of Portland Erosion and Sedimentation Control Manual.
- C. Follow an Erosion and Sedimentation Control Plan.
- D. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
- E. Revisions to ESCP: Keep copies of all ESCP revisions on site. There are three ways to inform DEQ or its Agent of revisions to the ESCP:
 - 1. Submit ESCP revisions by email to DEQ or its Agent when revisions to the ESCP are minimal and identify in the email the particular changes. Submit only portions of the ESCP that have changed.
 - 2. Submit the revisions by redlining the copy of the original ESCP or drawings. Submit only drawings that have changes.
 - 3. When the ESCP requires extensive revisions, submit the entire revised ESCP to DEQ or its Agent.
- F. ESCP revisions must be submitted to DEQ or its Agent if they are made for any of the reasons listed below:
 - 1. Changes for emergency situations: When immediate corrective actions are required to cease the discharge of significant amounts of sediment entering surface waters or nearby properties, the ESCP revisions must identify the corrective actions taken to cease the discharge, if such actions require a change to the ESCP or a change in the

- method(s) of implementing the ESCP, (for example, increased inspection frequency). Submit the ESCP to DEQ or its Agent within ten calendar days of the discharge identifying the corrective actions taken to cease the discharge. Approval of the revisions by DEQ or its Agent prior to implementation of corrective actions is not required.
2. Change (increase or decrease) in the size of the project: Submit revisions to DEQ or its Agent at least 10 days before implementing the revisions. If the permit registrant does not receive a response from DEQ or its Agent within 10 days of receipt, the proposed revisions are deemed approved.
 3. Change (increase or decrease) in the size or location of disturbed areas: Submit revisions to DEQ or its Agent at least 10 days before implementing the revisions. If the permit registrant does not receive a response from DEQ or its Agent within 10 days of the receipt, the proposed revisions are deemed approved.
 4. Changes to BMPs: Submit changes in the project design that may affect stormwater discharges, local conditions, or project schedule (for example, schedule delays postpone earthwork to wet weather season so additional controls are needed) must be submitted. In addition, submit changes (such as type or design) to the BMPs identified in the ESCP, their location, maintenance required, and any other revisions necessary to prevent and control erosion and sediment runoff. Submit revisions to DEQ or its Agent at least 10 days before implementing the revisions. If the permit registrant does not receive a response within 10 days of receipt, the proposed revisions are deemed approved.
 5. Change in the erosion and sediment control inspector: Submit name, contact information, and qualifications to DEQ or its Agent. If the permit registrant does not receive a response from DEQ or its Agent within 10 days of receipt, the inspector(s) are deemed approved.
 6. Changes that DEQ or Agent requests: DEQ or Agent may require the permit registrant to submit ESCP revisions at any time if the ESCP is inadequate to prevent the discharge of significant amounts of sediment or turbidity to surface waters or to conveyance systems that discharge to surface waters.
- G. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.
- H. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
- I. Inspections:
1. Inspections must be conducted by a person who:
 - a. Is knowledgeable in the principle and practice of erosion and sediment controls, and
 - b. Possesses the skills to assess conditions at the construction site that could impact stormwater quality, and
 - c. Is knowledgeable in the correct installation of the erosion and sediment controls, and

- d. Is able to assess the effectiveness of sediment and erosion control measures selected to control the quality of stormwater discharges from the construction activity.
- 2. Visual monitoring requirement: all areas of the site disturbed by construction activity must be inspected to ensure that BMPs are in working order. Locations where vehicles enter or exit the site shall be inspected for evidence of off-site sediment tracking as well as areas used for storage of materials that are exposed to precipitation for evidence of spillage or other potential to contaminate stormwater runoff. In addition, inspect all discharge points identified in the ESCP for evidence of or the potential for the discharge of pollutants, and to ascertain whether erosion and sediment control measures are effective in preventing significant impacts to surface waters. Where discharge points are inaccessible, nearby downstream locations must be inspected to the extent that such inspections are practicable.
- 3. All ESCP controls and practices must be inspected according to the following schedule:
- 4.

Site Condition	Minimum Frequency
1. Active Period	Daily when stormwater runoff, including runoff from snowmelt, is occurring. At least once every two weeks, regardless of whether stormwater runoff is occurring.
2. Prior to the site becoming inactive or in anticipation of site inaccessibility	Once to ensure that erosion and sediment control measures are in working order. Any necessary maintenance and repair must be made prior to leaving the site.
3. Inactive periods greater than 14 consecutive calendar days	Once every 2 weeks.
4. Periods during which the site is inaccessible due to inclement weather	If practical, inspections must occur daily at a relevant and accessible discharge point or downstream location

- 5. Recordkeeping Requirements: Document all visual inspections in an onsite logbook. If there are no findings, simply record the inspection date, and inspector’s name. In addition, record any findings, including:
 - a. At the designated discharge location(s):
 - 1) Where to make observations:
 - a) At the discharge location if the discharge is to a conveyance system leading to surface waters;
 - b) From the discharge point to 50 feet downstream if the discharge is to surface waters; and
 - c) At any location where more than 1/2 of the width of the receiving surface water is affected.

- 2) How to make observations:
 - a) For turbidity and color, describe any apparent color and the clarity of the discharge, and any apparent difference in comparison with surface waters.
 - b) Describe any sheen or floating material, or record that it is absent. If present, it could indicate concern about a possible spill or leakage from vehicles or materials storage.
 - b. If a site is inaccessible due to inclement weather, record the inspections noted at a relevant discharge point or downstream location, if practical.
 - c. Locations of BMPs that need to be maintained, inspections of all BMPs, including erosion and sediment controls, chemical and waste controls, locations where vehicles enter and exit the site, status of areas that employ temporary or final stabilization control, soil stockpile area, and non-stormwater pollution (e.g. paints, oils, fuels, adhesives) controls.
 - d. Locations of BMPs that failed to operate as designed or proved inadequate for a particular location;
 - e. Locations where additional BMPs are needed that did not exist at the time of inspection; and
 - f. Corrective action required and implementation dates.
 - g. All inspection records and monitoring results must be kept on site and maintained by the permit registrant. The records shall list the construction site name as it appears on the registrant's permit and the file or site number. These records must be made available to DEQ, Agent, or local municipality upon request. These records must be delivered or made available to DEQ or its Agent within 3 working days of request. These inspection records and monitoring results must be maintained for at least 3 years after project completion. In addition, a copy of the ESCP and revisions must be retained on site and made available on request to the DEQ, Agent, or the local municipality. During inactive periods of greater than 7 consecutive calendar days, the ESCP must be retained by the permit registrant but does not need to be at the construction site.
- J. Erosion On-Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
1. Control movement of sediment and soil from temporary stockpiles of soil.
 2. Prevent development of ruts due to equipment and vehicular traffic.
 3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- K. Erosion Off-Site: Prevent erosion of soil and deposition of sediment on other properties due to construction activities for this project.
1. Prevent windblown soil from leaving the project site.
 2. Prevent tracking of mud onto public roads outside site.
 3. Prevent mud and sediment from flowing onto sidewalks and pavements.
 4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

- L. Sedimentation of Waterways Off-Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
 - 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
- M. Open Water: Prevent standing water that could become stagnant.
- N. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Wattles: Straw-filled tube of flexible netting
 - 1. Straw must be certified weed free forage
 - 2. Netting to consist of seamless, high density polyethylene and ethylvinyl acetate and contain ultra-violet inhibitors.
- B. Silt Fence: Field fabricated silt fencing shall be a staked fabric exhibiting the following characteristics:
 - 1. Maximum post spacing - 4' o.c.
 - 2. Grab Strength (ASTM D 4632-91, 1996) - 90 Lbs.
 - 3. Permittivity (ASTM D 4491-99a) - 0.05 sec-1
 - 4. Apparent Opening (ASTM D 4751-99a) - 0.20 in. max. av. per roll
 - 5. Ultraviolet Stability (ASTM D 4355-99) 70% after 500 hrs. exp.
 - 6. Miraffi 100x, Trevira 1114 or GTF - 1702 by Exxon or approved equal.
- C. Straw Bale. Standard 40-60 pound rectangular bales of cereal grain straw or grass seed straw which are wire-bound or string-tied.
- D. Grass Straw Mulch: Sterile, clean, cereal grain straw.
- E. Seed. Erosion Control Seed Mixture consisting of the following:

<u>Kind of Seed</u>	<u>Min.Lbs. /Surface Acre</u>
American Slough Grass (Beckmannia syzigachne)	5
Elymus glaucus (Wild Blue Rye)	20
Festuca rubra v. Rubra (Native Red Fescue)	20
Bromus californica (Bromegrass)	5

- 1. Where applicable, seed shall meet or exceed Blue Tag quality according to current Oregon Certified Seed Standards published by Oregon State University.
- 2. Seeds shall be labeled in accordance with USDA Rules and Regulations under the Federal Seed Act.

3. Seeds shall be furnished in sealed, standard containers unless written exception is granted
4. Noxious weed seed shall not exceed 1% of total by weight.
5. Seed that is wet or moldy or has been damaged in transit will not be accepted.
6. The Contractor shall furnish suppliers certificate guaranteeing that the seed conforms to the above requirements and USDA certification. Seed shall be delivered to the contract site in unopened containers bearing the USDA and suppliers certificates.
7. Hydroseeding shall occur only as allowed by the requirements of Division 1 and 2 of these specifications.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION

- A. Install erosion control measures specified herein or as shown on plan, insuring that sediments do not enter the drainage system or watershed, or violate applicable water standards. Disturbed areas shall be limited to the construction site. Incorporate all erosion control facilities at the earliest possible time in conjunction with construction activity, and pre-approved construction schedules. No equipment requiring repair or leaking lubrication or fuels shall be allowed in the construction area. The Contractor shall immediately remove and dispose of soils contaminated by equipment.
- B. Perimeter controls shall be in place prior to clearing or grubbing operations.
- C. Temporary stabilization shall be in the form of plastic sheeting on disturbed slopes and temporary stockpiles where immediate protection is required and permanent controls as specified are not yet in place. Plastic sheeting shall cover all exposed surfaces, and be firmly secured and shall be completely removed upon installation of permanent control measures.
- D. The Contractor shall have temporary or permanent methods in place, per the approved erosion control plan, prior to the beginning of the average wet season.

3.2 EROSION CONTROL METHODS

- A. Prior to the start of any work the Contractor shall submit an erosion control plan for review and approval utilizing one or more of the following methods:
 1. Silt Fence:
 - a. Install supported Fence by fastened mesh and geo-textile securely to the up-slope side of the posts.
 - b. Install fabric to stakes by utilizing manufacturer's seam pockets only, do not field stitch.
 - c. Avoid fabric joints. Utilize a continuous roll of geotextile, cut to the length of the required barrier. When joints are required, splice geotextile only at support joints using a 12-inch fabric overlap.
 - d. Securely fasten each end of fabric to end posts.

2. Straw Bales:
 - a. Place and arrange controls as necessary to check water velocity and trap and/or prevent sediments from entering drainage conveyance systems, ponds, wetlands, or other sensitive areas downstream from the construction site.
3. Straw Hydromulch:
 - a. Apply grass straw mulch at a rate of two to three tons per acre, continuously throughout area subject to erosion.
 - b. For erosion-control mats, install planting soil in two lifts, with second lift equal to thickness of erosion-control mats. Install erosion-control mat and fasten as recommended by material manufacturer.
 - c. Fill cells of erosion-control mat with planting soil and compact before planting.
 - d. Retain first paragraph below for erosion-control blanket or mesh.
 - e. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.
4. Seed:
 - a. Apply seed per specification Section 329200, Turf and Grasses.

3.3 SEASONAL MONITORING AND MAINTENANCE

- A. The Contractor shall inspect erosion controls on active construction sites daily and erosion controls on inactive construction sites monthly maintain erosion control installations in good working order at all times. The Contractor shall remove and regrade sediment from specified controls once sedimentation has reached 1/3 of the exposed height of the control.
- B. The Contractor shall inspect erosion controls daily during rainy periods on all sites. The Contractor shall immediately correct and/or modify erosion control installations not performing as required.
- C. The Contractor shall update the approved erosion control plan immediately to reflect necessary changes.
- D. The Contractor shall be equipped and ready to mobilize crews for immediate repairs or installations of additional erosion control materials during working and non-working hours for the duration of construction and until permanent erosion controls are established.
- E. The Contractor shall be responsible for clean up of accumulations of silt, sediments or other debris and the repair of erosion (cuts) that alter the grades as specified in the contract documents. The Contractor shall effect cleanup and repairs as soon as practicable but no more than two days after the surrounding exposed ground has dried sufficiently to prevent damage from repair operations or equipment. The Contractor shall re-establish specified vegetative stabilization controls within 7 calendar days from the time of their disturbance. In the event of continuous rainfall over a 24-hour period, or other circumstances that preclude the use of equipment, repairs shall be done manually or as directed by the Owner's Representative.

- F. The Contractor shall retain all controls until the completion of construction as directed by the contract documents, or the Owner's Representative.
- G. The Contractor shall maintain required access points in good condition throughout the maintenance period and remove them at the end of the maintenance period or at the direction of the Owner's Representative.
- H. Upon completion of construction contract the Contractor shall remove all materials utilized for erosion control practices. All components of the erosion control system shall remain the property of the Contractor unless otherwise directed by the contract documents.

END OF SECTION 312513

SECTION 321216 – ASPHALTIC CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Hot-mix asphalt paving.
 - 2. Hot-mix asphalt patching.
 - 3. Hot-mix asphalt paving overlay.
 - 4. Asphalt surface treatments.
 - 5. Pavement painting.
 - 6. Cold milling of existing hot-mix asphalt pavement.
- B. Related Sections include the following:
 - 1. Section 312000: Earth Moving
 - 2. Section 321373: Concrete Paving Joint Sealants.

1.3 DEFINITIONS

- A. Hot-Mix Asphalt Paving Terminology: Refer to ASTM D 8 for definitions of terms.
- B. DOT: Department of Transportation.

1.4 SYSTEM DESCRIPTION

- A. Provide hot-mix asphalt paving according to materials, workmanship, and other applicable requirements of standard specifications of state or local DOT.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.
- B. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.
- C. Job-Mix Designs: For each job mix proposed for the Work.

- D. Shop Drawings: Indicate pavement markings, lane separations, and defined parking spaces. Indicate, with international graphics symbol, spaces dedicated to people with disabilities.
- E. Samples: For each paving fabric, 12 by 12 inches (300 by 300 mm) minimum.
- F. Qualification Data: For manufacturer.
- G. Material Test Reports: For each paving material.
- H. Material Certificates: For each paving material, signed by manufacturers.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer.
 - 1. Manufacturer shall be a paving-mix manufacturer registered with and approved by authorities having jurisdiction or the DOT of the state in which Project is located.
- B. Testing Agency Qualifications: Qualified according to ASTM D 3666 for testing indicated, as documented according to ASTM E 548.
- C. Regulatory Requirements: Comply with state and local DOT for asphalt paving work.
- D. Asphalt-Paving Publication: Comply with AIMS-22, "Construction of Hot Mix Asphalt Pavements," unless more stringent requirements are indicated.
- E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."
- F. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to hot-mix asphalt paving including, but not limited to, the following:
 - 1. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture hot-mix asphalt.
 - 2. Review condition of subgrade and preparatory work.
 - 3. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.
 - 4. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver pavement-marking materials to Project site in original packages with seals unbroken and bearing manufacturer's labels containing brand name and type of material, date of manufacture, and directions for storage.
- B. Store pavement-marking materials in a clean, dry, protected location within temperature range required by manufacturer. Protect stored materials from direct sunlight.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp or if the following conditions are not met:
 - 1. Prime and Tack Coats: Minimum surface temperature of 60 deg F(15.5 deg C).
 - 2. Slurry Coat: Comply with weather limitations of ASTM D 3910.
 - 3. Asphalt Base Course: Minimum surface temperature of 40 deg F(4 deg C) and rising at time of placement.
 - 4. Asphalt Surface Course: Minimum surface temperature of 60 deg F(15.5 deg C) at time of placement.
- B. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F(4 deg C) for oil-based materials, 50 deg F(10 deg C) for water-based materials, and not exceeding 95 deg F(35 deg C).

PART 2 - PRODUCTS

2.1 AGGREGATES

- A. General: Use materials and gradations that have performed satisfactorily in previous installations.
- B. Coarse Aggregate: ASTM D 692, sound; angular crushed stone, crushed gravel, or properly cured, crushed blast-furnace slag.
- C. Fine Aggregate: ASTM D 1073 or AASHTO M 29, sharp-edged natural sand or sand prepared from stone, gravel, properly cured blast-furnace slag, or combinations thereof.
 - 1. For hot-mix asphalt, limit natural sand to a maximum of 20 percent by weight of the total aggregate mass.
- D. Mineral Filler: ASTM D 242 or AASHTO M 17, rock or slag dust, hydraulic cement, or other inert material.

2.2 ASPHALT MATERIALS

- A. Asphalt Binder: AASHTO MP 1, PG 64-22.
- B. Asphalt Cement: ASTM D 3381 for viscosity-graded material.
- C. Prime Coat: ASTM D 2027, medium-curing cutback asphalt, MC-30 or MC-70.
- D. Prime Coat: Asphalt emulsion prime complying with state and local DOT requirements.
- E. Tack Coat: ASTM D 977 or AASHTO M 140, emulsified asphalt or ASTM D 2397 or AASHTO M 208, cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.

- F. Water: Potable.
- G. Undersealing Asphalt: ASTM D 3141 or AASHTO M 238, pumping consistency.

2.3 AUXILIARY MATERIALS

- A. Herbicide: Commercial chemical for weed control, registered by the EPA. Provide in granular, liquid, or wettable powder form.
- B. Sand: ASTM D 1073 or AASHTO M 29, Grade Nos. 2 or 3.
- C. Paving Geotextile: AASHTO M 288, nonwoven polypropylene; resistant to chemical attack, rot, and mildew; and specifically designed for paving applications.
- D. Joint Sealant: ASTM D 3405 or AASHTO M 301, hot-applied, single-component, polymer-modified bituminous sealant.
- E. Pavement-Marking Paint: Alkyd-resin type, lead and chromate free, ready mixed, complying with FS TT-P-115, Type II.
 - 1. Color: As indicated.
- F. Glass Beads: AASHTO M 247, Type 1.
- G. Pavement Painting of the Basketball Court: Novacrylic as manufactured by Nova Sports USA 800-USA-NOVA or approved equal.
 - 1. All coatings shall be pure acrylic, containing no asphaltic or tar emulsions, no any vinyl, alkyd or non-acrylic resins.
 - 2. Color system shall be factory mixed compounds requiring only the addition of water at the jobsite, except for the addition of sand to Novasurface.
 - 3. Color shall be traditional green for the basketball key and free throw area, then terra cotta for the between that and the three-point line. The remaining area is to be green except the center jump circle which will be terra cotta.
 - 4. The lines will be Novatex textured line paint.

2.4 MIXES

- A. Hot-Mix Asphalt: Open graded, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction and complying with the following requirements:
 - 1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
 - 2. Porous Asphalt Mix:

US Standard Sieve Size	Percent Passing
½ in	100
3/8 in	95
#4	35
#8	15

#16	10
#30	2

a. Percent bituminous – 5.75% to 6% by weight.
b. Mix shall contain little or no sand or dust as indicated by sieve requirements above and shall exhibit a 'pore space' of 16% to 17%.

B. Emulsified-Asphalt Slurry: ASTM D 3910, Type 2, consisting of emulsified asphalt, fine aggregate, and mineral fillers.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that subgrade is dry and in suitable condition to support paving and imposed loads.
- B. Proof-roll subbase using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.
- C. Proceed with paving only after unsatisfactory conditions have been corrected.

3.2 COLD MILLING

- A. Clean existing pavement surface of loose and deleterious material immediately before cold milling. Remove existing asphalt pavement by cold milling to grades and cross sections indicated.
 - 1. Mill to a depth of 1-1/2 inches (38 mm).
 - 2. Mill to a uniform finished surface free of gouges, grooves, and ridges.
 - 3. Control rate of milling to prevent tearing of existing asphalt course.
 - 4. Repair or replace curbs, manholes, and other construction damaged during cold milling.
 - 5. Excavate and trim unbound-aggregate base course, if encountered, and keep material separate from milled hot-mix asphalt.
 - 6. Transport milled hot-mix asphalt to asphalt recycling facility.
 - 7. Keep milled pavement surface free of loose material and dust.

3.3 PATCHING

- A. Hot-Mix Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches (300 mm) into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.
- B. Portland Cement Concrete Pavement: Break cracked slabs and roll as required to reseat concrete pieces firmly.
 - 1. Pump hot undersealing asphalt under rocking slabs until slab is stabilized or, if necessary, crack slab into pieces and roll to reseat pieces firmly.

2. Remove disintegrated or badly cracked pavement. Excavate rectangular or trapezoidal patches, extending into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Recompact existing unbound-aggregate base course to form new subgrade.
- C. Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gal./sq. yd. (0.2 to 0.7 L/sq. m).
 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.
- D. Patching: Fill excavated pavements with hot-mix asphalt base mix and, while still hot, compact flush with adjacent surface.
- E. Patching: Partially fill excavated pavements with hot-mix asphalt base mix and, while still hot, compact. Cover asphalt base course with compacted, hot-mix surface layer finished flush with adjacent surfaces.

3.4 REPAIRS

- A. Leveling Course: Install and compact leveling course consisting of hot-mix asphalt surface course to level sags and fill depressions deeper than 1 inch (25 mm) in existing pavements.
 1. Install leveling wedges in compacted lifts not exceeding 3 inches (75 mm) thick.
- B. Crack and Joint Filling: Remove existing joint filler material from cracks or joints to a depth of 1/4 inch (6 mm).
 1. Clean cracks and joints in existing hot-mix asphalt pavement.
 2. Use emulsified-asphalt slurry to seal cracks and joints less than 1/4 inch (6 mm) wide. Fill flush with surface of existing pavement and remove excess.
 3. Use hot-applied joint sealant to seal cracks and joints more than 1/4 inch (6 mm) wide. Fill flush with surface of existing pavement and remove excess.

3.5 SURFACE PREPARATION

- A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
 1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.
- B. Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.
 1. Mix herbicide with prime coat if formulated by manufacturer for that purpose.

- C. Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of 0.15 to 0.50 gal./sq. yd.(0.7 to 2.3 L/sq. m). Apply enough material to penetrate and seal but not flood surface. Allow prime coat to cure for 72 hours minimum.
 - 1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Use enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
 - 2. Protect primed substrate from damage until ready to receive paving.

- D. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd.(0.2 to 0.7 L/sq. m).
 - 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
 - 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.6 PAVING GEOTEXTILE INSTALLATION

- A. Apply tack coat uniformly to existing pavement surfaces at a rate of 0.20 to 0.30 gal./sq. yd. (0.8 to 1.2 L/sq. m).

- B. Place paving geotextile promptly according to manufacturer's written instructions. Broom or roll geotextile smooth and free of wrinkles and folds. Overlap longitudinal joints 4 inches (100 mm) and transverse joints 6 inches (150 mm).
 - 1. Protect paving geotextile from traffic and other damage and place hot-mix asphalt paving overlay the same day.

3.7 HOT-MIX ASPHALT PLACING

- A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
 - 1. Place hot-mix asphalt base course in number of lifts and thicknesses indicated.
 - 2. Place hot-mix asphalt surface course in single lift.
 - 3. Spread mix at minimum temperature of 250 deg. F (121 deg. C).
 - 4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes, unless otherwise indicated.
 - 5. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

- B. Place paving in consecutive strips not less than 10 feet (3 m) wide unless infill edge strips of a lesser width are required.
 - 1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete a section of asphalt base course before placing asphalt surface course.

- C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.8 JOINTS

- A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions with same texture and smoothness as other sections of hot-mix asphalt course.
 - 1. Clean contact surfaces and apply tack coat to joints.
 - 2. Offset longitudinal joints, in successive courses, a minimum of 6 inches (150 mm).
 - 3. Offset transverse joints, in successive courses, a minimum of 24 inches (600 mm).
 - 4. Construct transverse joints as described in AI MS-22, "Construction of Hot Mix Asphalt Pavements."
 - 5. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
 - 6. Compact asphalt at joints to a density within 2 percent of specified course density.

3.9 COMPACTION

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate compactors in areas inaccessible to rollers.
 - 1. Complete compaction before mix temperature cools to 185 deg. F (85 deg. C).
- B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.
- C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:
 - 1. Average Density: 96 percent of reference laboratory density according to AASHTO T 245, but not less than 94 percent nor greater than 100 percent.
 - 2. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.
- D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
- E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.
- F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.
- G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.10 INSTALLATION TOLERANCES

- A. Thickness: Compact each course to produce the thickness indicated within the following tolerances:
 - 1. Base Course: Plus or minus 1/2 inch (13 mm).
 - 2. Surface Course: Plus 1/4 inch (6 mm), no minus.

- B. Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot (3-m) straightedge applied transversely or longitudinally to paved areas:
 - 1. Base Course: 1/4 inch (6 mm).
 - 2. Surface Course: 1/8 inch (3 mm).
 - 3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch (6 mm).

3.11 SURFACE TREATMENTS

- A. Slurry Seals: Apply slurry coat in a uniform thickness according to ASTM D 3910 and allow to cure.
 - 1. Roll slurry seal to remove ridges and provide a uniform, smooth surface.

3.12 PAVEMENT PAINTING

- A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Owners Representative.
- B. Allow paving to age for 30 days before starting pavement marking.
- C. Sweep and clean surface to eliminate loose material and dust.
- D. Apply paint with mechanical equipment to produce pavement colors and markings, of dimensions indicated, with uniform, straight edges. Apply per manufacturer's specifications.

3.13 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.
 - 1. Testing agency will conduct and interpret tests and state in each report whether tested Work complies with or deviates from specified requirements.
- B. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- C. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.

- D. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.
- E. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement according to ASTM D 979 or AASHTO T 168.
 - 1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.
 - 2. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.
 - a. One core sample will be taken for every 1000 sq. yd. (836 sq. m) or less of installed pavement, with no fewer than 3 cores taken.
 - b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.
- F. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.14 DISPOSAL

- A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.
 - 1. Do not allow excavated materials to accumulate on-site.

END OF SECTION 322116

SECTION 321313 - CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. The work includes, but is not limited to, the following:
 - 1. Curbs and gutters.
 - 2. Walkways.
- B. RELATED SECTIONS
 - 1. Section 312000; Earth Moving
 - 2. Section 033000; Cast-In-Place Concrete
 - 3. Section 321373; Concrete Paving Joint Sealants

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, and ground granulated blast-furnace slag.

1.4 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixtures: For each concrete pavement mixture. Include alternate mixture designs when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- C. Qualification Data: For manufacturer and testing agency.
- D. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:
 - 1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.
- E. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements:
 - 1. Cementitious materials.
 - 2. Steel reinforcement and reinforcement accessories.

3. Admixtures.
 4. Curing compounds.
 5. Applied finish materials.
 6. Bonding agent or epoxy adhesive.
 7. Joint fillers.
- F. Field quality-control test reports.
- G. Minutes of preinstallation conference.

1.5 QUALITY ASSURANCE

- A. Contractor shall notify Owner's Representative if specified treatments, admixtures, or procedures conflict with proper concrete construction. Submit for approval, alternate conditions to remedy conflicts prior to commencement of construction. Do not proceed until all conflicts have been approved and corrected.
- B. Proprietary items shown on the drawings and specified herein are shown to establish standards of quality, utility, design and function. Equivalent units by other manufacturers (substitutions) will be considered provided they are similar in characteristics. They shall be substituted only if approved by the Owner's Representative.
- C. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.
1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- D. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.
1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.
- E. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.
- F. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- G. Mockups: Cast mockups of full-size sections of concrete pavement to demonstrate typical joints, surface finish, texture, color, and standard of workmanship.
1. Build mockups in the location and of the size indicated or, if not indicated, as directed by Architect.
 2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
 3. Obtain Architect's approval of mockups before starting construction.
 4. Maintain approved mockups during construction in an undisturbed condition as a standard for judging the completed pavement.
 5. Demolish and remove approved mockups from the site when directed by Architect.

6. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- H. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."
 1. Before submitting design mixtures, review concrete pavement mixture design and examine procedures for ensuring quality of concrete materials and concrete pavement construction practices. Require representatives, including the following, of each entity directly concerned with concrete pavement, to attend conference:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete producer.
 - d. Concrete pavement subcontractor.

1.6 PROJECT CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
 2. Products: Subject to compliance with requirements, provide one of the products specified.
 3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
 4. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.
 1. Use flexible or curved forms for curves with a radius 100 feet or less.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

- A. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.
- B. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.
- C. Reinforcing Bars: ASTM A 615/A 615M, Grade 60(Grade 420); deformed.
- D. Galvanized Reinforcing Bars: ASTM A 767/A 767M, Class II zinc coated, hot-dip galvanized after fabrication and bending; with ASTM A 615/A 615M, Grade 60(Grade 420) deformed bars.
- E. Deformed-Steel Wire: ASTM A 496.
- F. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60(Grade 420). Cut bars true to length with ends square and free of burrs.
- G. Epoxy-Coated Joint Dowel Bars: ASTM A 775/A 775M; with ASTM A 615/A 615M, Grade 60(Grade 420), plain steel bars.
- H. Tie Bars: ASTM A 615/A 615M, Grade 60(Grade 420), deformed.
- I. Hook Bolts: ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6), internally and externally threaded. Design hook-bolt joint assembly to hold coupling against pavement form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.
- J. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete, and as follows:
 - 1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
 - 2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.
- K. Zinc Repair Material: ASTM A 780.

2.4 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout the Project:
 - 1. Portland Cement: ASTM C 150, Type I/II, gray. Supplement with the following:
 - a. Fly Ash: ASTM C 618, Class F.
- B. Normal-Weight Aggregates: ASTM C 33, Class 4S coarse aggregate, uniformly graded. Provide aggregates from a single source with documented service record data of at least 10

years' satisfactory service in similar pavement applications and service conditions using similar aggregates and cementitious materials.

1. Maximum Coarse-Aggregate Size: 1 inch nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: ASTM C 94/C 94M.

D. Air-Entraining Admixture: ASTM C 260.

E. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.5 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz. /sq. yd. dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.

1. Products:

- a. Axim Concrete Technologies; Cimfilm.
- b. Burke by Edeco; BurkeFilm.
- c. ChemMasters; Spray-Film.
- d. Conspec Marketing & Manufacturing Co., Inc.; Aquafilm.
- e. Dayton Superior Corporation; Sure Film.
- f. Euclid Chemical Company (The); Eucobar.
- g. Kaufman Products, Inc.; Vapor Aid.
- h. Lambert Corporation; Lambco Skin.
- i. L&M Construction Chemicals, Inc.; E-Con.
- j. MBT Protection and Repair, ChemRex Inc.; Confilm.
- k. Meadows, W. R., Inc.; Sealtight Evapre.
- l. Metalcrete Industries; Waterhold.
- m. Nox-Crete Products Group, Kinsman Corporation; Monofilm.
- n. Sika Corporation, Inc.; SikaFilm.

- o. Symons Corporation; Finishing Aid.
 - p. Vexcon Chemicals, Inc.; Certi-Vex EnvioAssist.
- E. Clear Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.
 - 1. Products:
 - a. Anti-Hydro International, Inc.; AH Curing Compound #2 DR WB.
 - b. Burke by Edoko; Aqua Resin Cure.
 - c. ChemMasters; Safe-Cure Clear.
 - d. Conspec Marketing & Manufacturing Co., Inc.; W.B. Resin Cure.
 - e. Dayton Superior Corporation; Day Chem Rez Cure (J-11-W).
 - f. Euclid Chemical Company (The); Kurez DR VOX.
 - g. Kaufman Products, Inc.; Thinfilm 420.
 - h. Lambert Corporation; Aqua Kure-Clear.
 - i. L&M Construction Chemicals, Inc.; L&M Cure R.
 - j. Meadows, W. R., Inc.; 1100 Clear.
 - k. Nox-Crete Products Group, Kinsman Corporation; Resin Cure E.
 - l. Symons Corporation; Resi-Chem Clear.
 - m. Tamms Industries Inc.; Horncure WB 30.
 - n. Unitex; Hydro Cure 309.
 - o. Vexcon Chemicals, Inc.; Certi-Vex Enviocure 100.

2.6 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.
- B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- C. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to requirements, and as follows:
 - 1. Types I and II, non-load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
- D. Chemical Surface Retarder: Water-soluble, liquid-set retarder with color dye, for horizontal concrete surface application, capable of temporarily delaying final hardening of concrete to a depth of 1/8 to 1/4 inch.
 - 1. Products:
 - a. Burke by Edeco; True Etch Surface Retarder.
 - b. ChemMasters; Exposee.
 - c. Conspec Marketing & Manufacturing Co., Inc.; Delay S.
 - d. Euclid Chemical Company (The); Surface Retarder S.
 - e. Kaufman Products, Inc.; Expose.
 - f. Metalcrete Industries; Surfard.
 - g. Nox-Crete Products Group, Kinsman Corporation; Crete-Nox TA.
 - h. Scofield, L. M. Company; Lithotex.
 - i. Sika Corporation, Inc.; Rugasol-S.

- j. Vexcon Chemicals, Inc.; Certi-Vex Envioset.

2.7 FIBER REINFORCEMENT

- A. Synthetic Fiber: Monofilament polypropylene fibers engineered and designed for use in decorative concrete paving, complying with ASTM C1116/C1116M, Type III, 1/2 to 1-1/2 inches long.
 - 1. Products: Subject to compliance with requirements, [provide the following] [provide one of the following] [available products that may be incorporated into the Work include, but are not limited to, the following]:
 - a. Euclid Chemical Company (The); an RPM company; PSI Fiberstrand 100.
 - b. FiberForce; ABC Polymer Industries, LLC; FiberForce 100.
 - c. FORTA Corporation; FORTA ECONO-MONO.
 - d. GCP Applied Technologies Inc.; Grace MicroFiber.
 - e. Nycon, Inc.; ProCon-M.
 - f. Propex Operating Company, LLC; Fibermesh 150.
 - g. Sika Corporation; Sika Fiber HP.
 - h. Approved equal.

2.8 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed concrete mixture designs for the trial batch method.
- B. Proportion mixtures to provide normal-weight concrete with the following properties:
 - 1. Compressive Strength (28 Days): 3500 psi.
 - 2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45.
 - 3. Slump Limit: 4 inches, plus or minus 1 inch.
- C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:
 - 1. Air Content: 6 percent plus or minus 1.5 percent for 1-inch nominal maximum aggregate size.
- D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing 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.
- F. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements as follows:

1. Fly Ash or Pozzolan: 25 percent.
- G. Synthetic Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than 1.5 lb/cu. yd..

2.9 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.
 1. When air temperature is between 85 degrees F and 90 degrees F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 degrees F, reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.
 1. For concrete mixes 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 concrete mixes 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, mixing time, quantity, and amount of water added.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Proof-roll prepared subbase surface below concrete pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding.
 1. Completely proof-roll subbase in one direction and repeat in perpendicular direction. Limit vehicle speed to 3 mph.
 2. Proof-roll with a loaded 10-wheel tandem-axle dump truck weighing not less than 15 tons.
 3. Subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch require correction according to requirements in Division 31 Section "Earth Moving".
- C. Proceed with concrete pavement operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

3.2 PREPARATION

- A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
- D. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
- E. Zinc-Coated Reinforcement: Use galvanized steel wire ties to fasten zinc-coated reinforcement. Repair cut and damaged zinc coatings with zinc repair material.

3.5 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.
 - 1. When joining existing pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.
 - 1. Continue steel reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.
 - 2. Provide tie bars at sides of pavement strips where indicated.
 - 3. Butt Joints: Use epoxy bonding adhesive at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 - 4. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys, unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.
 - 5. 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.

- C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.
 - 1. Locate expansion joints at intervals of 30 feet, unless otherwise indicated.
 - 2. Extend joint fillers full width and depth of joint.
 - 3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
 - 4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
 - 5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
 - 6. Protect top edge of joint filler during concrete placement with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

- D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-third of the concrete thickness, as follows to match jointing of existing adjacent concrete pavement:
 - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover 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 will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
 - 3. Doweled Contraction 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.

- E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. Remove snow, ice, or frost from subbase surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.
- E. Do not add water to concrete during delivery or at Project site.

- F. Do not add water to fresh concrete after testing.
- G. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- H. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
 - 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.
- I. Place concrete in two operations; strike off initial pour for entire width of placement and to the required depth below finish surface. Lay welded wire fabric or fabricated bar mats immediately in final position. Place top layer of concrete, strike off, and screed.
 - 1. Remove and replace concrete that has been placed for more than 15 minutes without being covered by top layer, or use bonding agent if approved by Architect.
- J. Screed pavement surfaces with a straightedge and strike off.
- K. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.
- L. Curbs and Gutters: When automatic machine placement is used for curb and gutter placement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete. If results are not approved, remove and replace with formed concrete.
- M. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When air temperature has fallen to or is expected to fall below 40 degrees F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 degrees F and not more than 80 degrees F at point of placement.
 - 2. Do not use frozen materials or materials containing ice or snow.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mix designs.
- N. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:
 - 1. Cool ingredients before mixing to maintain concrete temperature below 90 degrees F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.

3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.7 FLOAT FINISHING

- A. General: Do not add water to concrete surfaces during finishing operations.
- B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
 1. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiff-bristled broom, perpendicular to line of traffic.

3.8 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Comply with ACI 306.1 for cold-weather protection.
- C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lbs. /sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:
 1. Moist Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.9 PAVEMENT TOLERANCES

- A. Comply with tolerances of ACI 117 and as follows:
1. Elevation: 1/4 inch.
 2. Thickness: Plus 3/8 inch, minus 1/4 inch.
 3. Surface: Gap below 10-foot- long, unlevelled straightedge not to exceed 1/4 inch.
 4. Lateral Alignment and Spacing of Tie Bars and Dowels: 1 inch.
 5. Vertical Alignment of Tie Bars and Dowels: 1/4 inch.
 6. Alignment of Tie-Bar End Relative to Line Perpendicular to Pavement Edge: 1/2 inch.
 7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement Edge: Length of dowel 1/4 inch per 12 inches.
 8. Joint Spacing: 3 inches.
 9. Contraction Joint Depth: Plus 1/4 inch, no minus.
 10. Joint Width: Plus 1/8 inch, no minus.

3.10 PAVEMENT MARKING

- A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Owner's Representative.
- B. Allow concrete pavement to cure for 28 days and be dry before starting pavement marking.
- C. Sweep and clean surface to eliminate loose material and dust.

3.11 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
1. Testing Frequency: Obtain at least 1 composite sample for each 100 cu. yd. or fraction thereof of each concrete mix placed each day.
 - a. When frequency of testing will provide 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.
 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
 3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
 4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 degrees F and below and when 80 degrees F and above, and one test for each composite sample.
 5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.

6. Compressive-Strength Tests: ASTM C 39/C 39M; test 1 specimen at 7 days and 2 specimens at 28 days.
 - a. A compressive-strength test shall be the average compressive strength from 2 specimens obtained from same composite sample and tested at 28 days.
- C. Strength of each concrete mix will be satisfactory if average of any 3 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.
- D. 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.
- E. 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.
- F. 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.
- G. Remove and replace concrete pavement where test results indicate that it does not comply with specified requirements.
- H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.12 REPAIRS AND PROTECTION

- A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.
- B. Drill test cores, where directed by Owner's Representative, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.
- C. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321313

SECTION 32 11 23 AGGREGATE BASE

PART 1 GENERAL

1.01 SUMMARY

- A. Work of this section consists of furnishing and placing base course material composed of crushed aggregate.
 - 1. The base course shall be constructed on a prepared underlying course in accordance with these specifications and shall conform to the dimensions and typical cross section and with the lines and grades shown on the plans.

1.02 RELATED SECTIONS

- A. Section 03 30 00 – Cast-In-Place Concrete
- B. Section 32 13 13 – Concrete Paving

1.03 REFERENCE STANDARDS

- A. ASTM D 1557 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.

1.04 SUBMITTALS

- A. See section 01 33000 – Submittals, for submittal procedures.
- B. Materials Sources: Submit name of imported materials source.
 - 1. Contractor shall produce test results from a certified testing laboratory indicating the suitability of the material. Test shall not be older than one year.
- C. Aggregate Composition Test Reports: Results of laboratory test on proposed and actual materials used.
- D. Compaction Density Test Reports.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Aggregate Base Rock:
 - 1. Aggregate base rock below pavements should be clean, crushed rock or crushed gravel, $\frac{3}{4}$ "-0 or 1"-0 material meeting the requirements in the OSSC, Aggregate Base and Shoulders. The base aggregate should contain no deleterious materials and have less than 5 percent by weight passing the U.S. Standard No. 200 Sieve.
 - 2. Refer to the Structural Contract Drawings for additional requirements for aggregate bases under the building.
- B. Certification of Aggregate: Prior to the placing of the aggregate base course material, the Contractor shall produce test results from a certified testing laboratory indicating the suitability of the material.

PART 3 EXECUTION

3.01 CONSTRUCTION REQUIREMENTS

- A. Aggregate bases shall be placed per the requirements of the OSSC Specifications.
- B. Place aggregate in maximum 6 inch layers and compact to specified density.
- C. Level and contour surfaces to elevations and gradients indicated. If thickness is more than 6 inches, spread in two equal lifts.

- D. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.
- E. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- F. Use mechanical tamping equipment in areas inaccessible to compaction equipment.
- G. Compact aggregate base course thoroughly and uniformly to at least 95% of the maximum density as determined by ASTM D1557.

3.02 TOLERANCES

- A. Flatness: Maximum variation of ½-inch measured with 10-foot (3 m) straight edge.
- B. Scheduled Compacted Thickness: Within ¼-inch.
- C. Variation from Design Elevation: Within ½-inch.

3.03 FIELD QUALITY CONTROL

- A. Compaction testing will be performed in accordance with ASTM D1557, ASTM D2922 and ASTM D3017.
- B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- C. Frequency of Tests: One test every 2,000 SY. Provide record of testing for finished base course prior to paving.

3.04 EQUIPMENT

- A. All equipment necessary for the proper construction of this work shall be in first-class working condition before construction is permitted to start, and all other equipment must be able to produce a product meeting the specifications.

3.05 MAINTENANCE

- A. Following the completion of the base course, the Contractor shall perform all maintenance work necessary to keep the base course in a condition satisfactory for paving.

END OF SECTION

SECTION 323113 – CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fence framework, fabric, and accessories.
 - 2. Excavation for post bases.
 - 3. Concrete footings.

- B. Related Sections:
 - 1. Section 033000 – Cast-In-Place-Concrete

1.2 DESCRIPTION

- A. Furnish all labor, materials, and equipment required to install the chain link fencing system as indicated on the drawings and/or specified herein. Said work shall include any incidentals required to provide a finished job.

1.3 EXISTING CONDITIONS

- A. Examine the site to determine existing conditions, extent of work and clearing operations required. Failure of the CONTRACTOR to visit the site and familiarize themselves with the existing conditions shall in no way relieve them from obligations with respect to their bid or contract.

1.4 QUALITY ASSURANCE

- A. The installer must be experienced in backstop and fencing installations. CONTRACTOR shall provide three REPRESENTATIVE backstop or fencing projects for OWNER'S REPRESENTATIVE'S review.

- B. Thoroughly inspects site, related work, and OWNER-supplied materials (where applicable). Notify the OWNER before bidding of any conditions adversely affecting the performance of fencing installation.

- C. CONTRACTOR shall provide a warranty stating that the fencing is secure and stable, tight, corrosion-free, in proper alignment, complete in detail and finish, and free of hazardous conditions. Any defects that develop within one year from the date of Physical Completion shall be replaced at the expense of the CONTRACTOR.

- D. Standard Specifications: All work shall conform to all applicable requirements of the following Standard Specifications, whether specifically referred to or not, except as specifically modified herein.

- E. ASTM International:
 - 1. ASTM Committee F-14 Standard on Fences (latest edition).

2. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 3. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 4. ASTM A392 - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.
 5. ASTM A491 - Standard Specification for Aluminum-Coated Steel Chain-Link Fence Fabric.
 6. ASTM A585 - Standard Specification for Aluminum-Coated Steel Barbed Wire.
 7. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
 8. ASTM F567 - Standard Practice for Installation of Chain-Link Fence.
 9. ASTM F626 - Fence Fittings.
 10. ASTM F668 - Standard Specification for Poly Vinyl Chloride (PVC) Coated Steel Chain Link Fence Fabric.
 11. ASTM F934 - Standard Specification for Standard Colors for Polymer-Coated Chain Link Fence Materials.
 12. ASTM F1083 - Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.
 13. Pipe ASTM A5.3.
- F. Perform all shop and field welding in accordance with the pertinent recommendations of the American Welding Society.
- G. Chain Link Fence Manufacturers Institute:
1. CLFMI - Product Manual.

1.5 SUBMITTALS

- A. Shop Drawings: Submit Shop Drawings for approval, prior to manufacturing, describing sizing and detailing typical line post, terminal post, post spacing, gate, fabric, materials, hardware assemblies, and all proposed fence/gate alignment sections.
- B. Structural Engineering Report: Submit a Structural Engineering Report with calculations that substantiate the Shop Drawings for wind load, using the design criteria of a 100 MPH wind load for a three second duration against all fencing/posts higher than six (6) feet.
- C. Certified Letters: CONTRACTOR to provide certified letters from manufacturers indicating conformance with specifications, manufacturing date and lot number for all materials used on the site.

1.6 SUBSTITUTIONS AND PRODUCT OPTIONS

- A. Refer to Section 01600 of these specifications for information about substitutions.

1.7 PRODUCT HANDLING

- A. All materials are to be new and delivered to the site in an undamaged condition. Store materials off the ground and protect from damage. In the event of damage,

immediately make repairs and/or replace as necessary to the approval of the OWNER'S REPRESENTATIVE and at no additional cost to the OWNER.

1.8 PRODUCTS / DISTRIBUTORS

1. Pacific Fence & Wire Company, 13770 Southeast Ambler Road, Clackamas, OR 97215; 503-233-6248; www.pacificfence.com

PART 2 MATERIALS

2.1 GENERAL

- A. All piping for fence and gates shall be Schedule 40 hot-dipped galvanized steel with PVC coating to match fence fabric..
- B. All color coated chain link fence fabric shall have the PVC coating extruded over zinc coated core wire per ASTM F668-04 Class 2b. Color shall be as selected by the OWNER'S REPRESENTATIVE. All other materials shall have 10 to 15 mils polyester resin coating.

2.2 CHAIN LINK FENCE FABRIC

- A. Color coated chain link fence fabric shall conform to ASTM F668-04 Class 2b material. Fabric shall be W&M steel core wire (or equal), galvanized with not less than .30 oz. per square foot of actual surface, with a .015 - .025 inch PVC bonded, extruded and adhering to the galvanized wire. Fabric shall be woven in a continuous 2" mesh. Steel core wire shall have a minimum breaking strength of 1290 lbs. Finished size, including PVC bonded or powder coating shall be 5-gauge (finished) with 6-gauge core for back panels of backstops, and 8-gauge (finished) with 9-gauge core wire for all other fencing, or as specified on plans and details. Lower edge of fabric shall be no greater than one and one-half (1-1/2) inches above concrete mow strip or infield finished grade as specified on plans and details.
- B. Color coated and Galvanized Fabric shall have a knuckled top and bottom selvage.
- C. Height of the fabric measured from the ends of the knuckled selvage shall be as specified on plans and details, plus or minus 1 inch per 8 lineal feet.

2.3 PERIMETER FENCING

- A. All posts, rails, and framework for color coated fencing shall have 10-15 mils of polyester resin over galvanized steel (ASTM F1043). No hand painting is allowed, except for minor touching up. Sizes shall be as specified in the following table for perimeter fencing and backstop and wing fencing:

2.4 GATES AND GATE POSTS

- A. General: Gate posts, frames, and hardware shall be hot-dipped galvanized as noted for framework. All fittings shall be hot-dipped galvanized and polyester resin coated as specified in Section 2.2. Gate frames shall be galvanized or polyester resin coated after welding or painted with approved zinc enriched (for galvanized fencing) or flat alkyd enamel (for vinyl or powder coated fencing) paint. Gate fabric shall match fencing fabric. Gates shall maintain no gaps greater than two (2) inches between gateposts and frames or one and one-half (1-1/2) inches above the ground.
- B. Gates:
1. Gate Posts: Posts shall be a minimum 2-7/8 inch O.D. schedule 40 steel pipe (or larger, depending upon the size of the gate opening).
 2. Gate Frames: 1-7/8 inch O.D. steel pipe with joints notched and welded to form a rigid frame. Welds shall be coated with cold galvanized coating. Frames shall be filled with same fabric as fence and fastened in the frame by means of tension bars and fasteners at 1 foot OC.
 3. Diagonal Cross-Bracing: 3/8 inch O.D. vinyl coated adjustable truss rods to ensure frame rigidity without sag or twist.
 4. Hinges: Pressed steel to suit gate size, non-lift-off type, offset to permit 180-degree gate opening. Provide 2 hinges for each leaf. Drill, tap, and set screw or weld to frame and post to prevent rotation. Hinges are to be Bulldog Industrial hinge with plug by Master Halco or approved equal.
 5. Single Gate Latch: Provide heavy-duty gate fork latch of correct size malleable iron to permit operation from either side of gate, with padlock eye as integral part of latch.
 6. Double Gate Latch: Provide 1-3/8 inch O.D. powder coated steel plunger pipe, locking device, and box as integral part of plunger pipe. Weld and paint fastener to secure plunger and locking device to gate framework to insure latch will not turn. Provide 1-7/8 inch O.D. galvanized steel pipe sleeve, raised 1/2 inch above finished grade and set in 12-inch diameter by 12-inch deep concrete footing. Plunger shall be the same height as the gate in the closed position.

2.5 FITTINGS

- A. Fittings shall be hot-dipped galvanized pressed steel in accordance with ASTM F 626. All fittings shall be industrial quality. All fittings except nuts and bolts shall be polyester resin coated after galvanizing, with 10-15 mils of thermally bonded PVC. After installation, spray all nuts and bolts with two coats of flat alkyd enamel paint (color to match fence) suitable for metal.

2.6 ACCESSORIES

- A. Post tops shall be pressed steel and designed as a weather tight closure cap for tubular posts, and shall be vinyl or powder coated.
- B. Tension bars shall be of one piece lengths equal to full height of fabric with a minimum cross section of 3/16" x 3/4". Provide two tension bars (vinyl or powder coated) for each gate, end post, corner and pull posts

- C. Tension bar bands (vinyl or powder coated), shall be pressed steel per ASTM F 626 spaced not over 12 inches on-center to secure tension bars to end, corner, pull, and gate posts.
- D. Tension Wire: CONTRACTOR shall provide a No. 7 W & M gauge galvanized high carbon coiled, tension wire (vinyl or powder coated), stretched along the bottom of fabric and fastened to the fabric at intervals of not more than 18 inches, using steel hog rings. Tension wire shall be attached with brace band, and nut and bolt. Tension wire shall be terminated around the bolt to itself with a minimum of three complete wraps.
- E. Wire Ties: CONTRACTOR shall provide wire ties as follows: 6-gauge vinyl or powder coated steel wire ties and 9-gauge hog rings on backstop rear panels with standard 6-gauge fabric, 6-gauge vinyl or powder coated aluminum wire ties on all other backstop panels, wing fences, and perimeter fences with 9-gauge fabric or as otherwise specified or shown on plans.

PART 3 EXECUTION

3.1 SITE PREPARATION

- A. On-Site Conference: Do not work until a site meeting with the OWNER'S REPRESENTATIVE and appropriate Parks Department maintenance staff is held.
- B. CONTRACTOR is responsible providing temporary barricades and enclosures, and protection of adjacent property and existing work. Barricades are to be in place before construction operations are started. Coordinate this work with other on-site work and trades. Complete clearing and site preparation work is required prior to excavation.
- C. CONTRACTOR shall not allow vinyl or powder coated materials to become scratched, gouged or damaged in any way during the storing or construction of the fence.

3.2 FENCE CONSTRUCTION

- A. Posts:
 - 1. Auger holes for post footings in firm, undisturbed or compacted soil. Holes for new line post footings shall be sized as shown on plans and standard details. Holes for terminal and gateposts shall be sized as shown on plans and standard details.
 - 2. Over-excavate hole depths to 6 inches deeper than post bottoms.
 - 3. Place concrete around posts in a continuous placement, tamp for consolidation, checking each post for vertical and top alignment. Support posts plumb until concrete has cured. Set and secure keepers, stops, sleeves, and other accessories into concrete as required.
 - 4. Tops of post footings shall be flush with finished grade, trowled and sloped outward to drain. Top of footing shall appear true and circular in shape with post at center of circle.
 - 5. Post shall be 10 feet on-center maximum Sleeved Posts:

6. Insert posts into sleeves provided in concrete footing for tops of walls as specified on plans and details. Check each post for vertical (plumb) and top alignment.
 7. Secure posts to sleeves with 3/8" diameter by 1-1/2" long stainless steel, self-tapping Tec-screw.
 8. Posts shall be 10' O.C. maximum.
- B. Rails:
1. Top rail shall be securely fastened to terminal posts and pass through tops of line post fittings, forming a continuous rail for the full length of fence. Top rail shall be furnished in lengths approximately 21 feet long with standard hot dip galvanized, vinyl or powder coated steel expansion couplings not less than 6" in length. Lengths less than 10 feet shall not be used adjacent to terminal posts. Place top rail and coupling to allow for slip expansion and contraction.
 2. Intermediate and bottom (when specified) rails shall conform to the same specifications as the top rail and be joined at line posts with double-end socket clamps or brace bands and rail ends, with one inverted to maintain smooth line.
- C. Brace Assemblies: All corner, terminal, and gate posts shall be furnished with complete brace assembly, including brace of same material and finish as top rail, and adjustable tightener for 3/8 inch truss rod. Corner and terminal posts shall have two brace assemblies, one in each direction. The diagonal 3/8 inch adjustable truss rod shall be attached to the first ensuing line post. Install braces so that posts are plumb and true when diagonal rod is under proper tension. No truss rod is required if the intermediate rail is continuous.
- D. Fabric: Pull fabric taut and securely tie to posts and rails. Install fabric on interior or playing side of fence except as specified on plans and details, and anchored to framework so that the fabric remains in tension after pulling force is released. Lower edge of fabric shall be level with finished grades at one and one-half (1-1/2) inches above grade (typical).
- E. Wire Ties: Tie fabric to line post, rails, and braces with wire ties (sizes above), spaced 12 inches O.C. (typ.). Tie fabric to tension wire, if no bottom rail is required, with hog rings (sizes above) at 18 inches O.C. (typical).
- F. Tension Bars: Fabric shall be attached to the terminal posts by means of single piece tension bars. Thread through fabric and secure to posts with metal bands spaced not over 12" O.C. (typical).
- G. Welding: All field welds shall be fully filled, ground flush and smooth, and cold galvanized by brushing on "Galvicon", or approved equal. Use silver paint for galvanized fencing or color to match color coated fencing (two coats required).

3.3 GATES

- A. Install gates as shown on the plans and details. No openings between frame or gate members shall exceed 3 inches. The gap between the bottom rail and finish grade shall not exceed one and one-half (1-1/2) inches.

- B. Install gates plumb, level, and secure for full opening without interference. Adjust hardware for smooth operation and lubricate where necessary. After the OWNER'S REPRESENTATIVE'S approval of operation, drill, tap, and setscrew or spot-weld and paint all hinges and latch hardware to prevent rotation.
- C. Install the gateposts the same as terminal posts.

3.4 CLEANUP

- A. Job site shall be cleared of all excess materials (concrete, wire, rails, pipe, etc.). All areas impacted by construction shall be leveled with infield soil on the inside and paving or topsoil on the outside for ballfield backstop projects and graded flush with concrete mow strip, be free of all debris and rocks, and restored to as good as or better than the original condition, as approved by the OWNER'S REPRESENTATIVE.

END OF SECTION

SECTION 329113-SOIL PREPARATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. The work covered in this section consists of furnishing all labor, materials and equipment for testing, preparation, and placement of topsoil and compost as indicated by the drawings and as specified.
 - 2. Coordinate placement of topsoil and required soil amendments with the establishment of rough grades.
 - 3. Coordinate depths of soil amendments and topsoil with grading specifications for rough and finish grades.
 - 4. All rough grading operations shall be completed as required by these specifications. Topsoil placement or backfilling in areas to be landscaped shall not occur until the Owner's Representative has issued written approval of the rough grade and topsoil.
- B. Related Sections include the following:
 - 1. Section 329200; Turf and Grasses
 - 2. Section 329300; Plants

1.3 DEFINITIONS

- A. Backfill: The earth used to replace or the act of replacing earth in an excavation.
- B. Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they were grown, with ball size not less than sizes indicated; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the root flare visible at the surface of the ball as recommended by ANSI Z60.1.
- C. Balled and Potted Stock: Plants dug with firm, natural balls of earth in which they are grown and placed, unbroken, in a container. Ball size is not less than sizes indicated.
- D. Bare-Root Stock: Plants with a well-branched, fibrous-root system developed by transplanting or root pruning, with soil or growing medium removed, and with not less than minimum root spread according to ANSI Z60.1 for type and size of plant required.
- E. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when

removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.

- F. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.
- G. Fabric Bag-Grown Stock: Healthy, vigorous, well-rooted plants established and grown in-ground in a porous fabric bag with well-established root system reaching sides of fabric bag. Fabric bag size is not less than diameter, depth, and volume required by ANSI Z60.1 for type and size of plant.
- H. Finish Grade: Elevation of finished surface of planting soil.
- I. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- J. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- K. Pests: Living organisms that occur where they are not desired, or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- L. Planting Area: Areas to be planted.
- M. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- N. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.
- O. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.
- P. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.
- Q. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- R. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- S. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.

- T. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow.

1.4 SUBMITTALS

- A. At least 20 working days prior to use on site the Contractor shall submit the following information to the Owner's Representative.
 - 1. Certified analysis of imported topsoil required by these specifications.
 - a. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of topsoil.
 - b. Report suitability of tested soil for plant growth.
 - c. Based upon the test results, laboratory soil analysis shall state recommendations for soil treatments and soil amendments to be incorporated. Recommendations shall be stated in weight per 1000 sq. ft. (92.9 sq. m) or volume per cu. yd. (0.76 cu. m) for nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory planting soil suitable for healthy, viable plants.
 - d. Report presence of problem salts, minerals, or heavy metals, including aluminum, arsenic, barium, cadmium, chromium, cobalt, lead, lithium, and vanadium. If such problem materials are present, provide additional recommendations for corrective action
 - e. Available Testing Laboratories:
 - 1) Soil and Plant Laboratory, Inc. – www.soilandplantlaboratory.com
 - 2) Western Agricultural Laboratories – www.al-labs-west.com
 - 2. Where any tests show results failing to conform to the required standards the Contractor shall include with the testing report a recommended treatment plan to bring the material into conformance.

1.5 QUALITY ASSURANCE

- A. Soil Preparation - All soil preparation work shall be done under the supervision of a Contractor having experience in landscape construction. All work shall be done in accordance with proper horticultural practices.
- B. Herbicide Application - Applications of herbicide for weed control, as required, shall be made only by an applicator currently licensed under State and Federal law.
- C. The Contractor shall store fertilizer and other required materials in a dry place and free from the intrusion of moisture.
- D. Soil/Compost 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.

1.6 PROJECT CONDITIONS

- A. Prior to the work of this section all rough graded surfaces shall be free of:
 - 1. Concrete, asphalt, and other construction debris;
 - 2. Limbs, twigs, cones, seed-pods and other woody material; and
 - 3. Rock, gravel or other material not suitable for plant growth.
- B. The Contractor shall set limits of work areas for vehicles and equipment to minimize soil compaction in planting areas.
- C. On-Site stockpiled topsoil shall not be placed higher than 4 feet.
- D. In all plant bed areas the sub-grade shall be free of unsuitable material such as stumps, roots, rocks, concrete, asphalt, or metals, for a minimum depth of 24 inches and in all lawn or seeded areas the sub-grade shall be free of unsuitable material for a minimum depth of 12 inches.
- E. The Contractor shall provide protective covers and barriers as necessary to prevent damage and staining to all site improvements.
- F. The Contractor shall prepare topsoil only when weather and soil conditions allow. Do not attempt soil preparation work when weather or soil conditions would contribute to poor or improper mixing, voids, or other adverse conditions.
- G. The Contractor shall take all reasonable precautions to prevent runoff of topsoil and fertilizers from leaving site or entering storm systems, or any waterway.
- H. General contractor shall assure that protection is provided during and after installation so other trades do not damage membrane.

1.7 SEQUENCING AND SCHEDULE

- A. Coordinate soil preparation work with installation of other site improvements and planting of trees, shrubs, ground covers and lawns.
- B. Contractor to stockpile amended topsoil for lawn areas separate from amended topsoil for planting areas for review and approval by owner's representative prior to placing topsoil.

PART 2 - PRODUCTS

2.1 PLANTING SOILS GENERAL

- A. Planting Soil for Seeded Lawns: Use amended native topsoil in seeded lawn areas. Amendments are as indicated below. Note: the pH range shall be between 5.5 and 7, organic material content at levels between 2-6%; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to lawn growth. Contractor to amend planting soils for seeded lawns with the following amendments:

1. Ratio of Loose Compost to Topsoil by Volume: 1:4.
2. Ratio of Sand to Topsoil by Volume: 1:20
3. Weight of Sulfur per 1000 Sq. Ft.: .6 lbs
4. Weight of Agricultural Gypsum per 1000 Sq. Ft. 10 lbs.
5. Weight of Bonemeal per 1000 Sq. Ft. : 3 lbs.
6. Weight of Superphosphate per 1000 Sq. Ft.: 3 lbs.
7. Weight of Commercial Fertilizer per 1000 Sq. Ft. : 15 lbs.
8. Weight of Slow-Release Fertilizer per 1000 Sq. Ft. : 5 lbs.

B. Planting Soil for Planting Areas: Import Planting Topsoil over all planting areas.. The pH range for the planting soil shall be between 5.5 and 7, organic material content at levels between 2-6%; free of stones 1-1/2 inches or larger in any dimension and other extraneous materials harmful to plant growth.

C. Planting Soil for Stormwater Planting Areas - The material shall be a mix of sand and compost, blended by volume consisting of 60-70% sand and 30-40% compost (by volume).

1. Analysis Requirements - A particle gradation analysis of the blended material, including compost, shall be conducted in conformance with ASTM C117/C136 (AASHTO T11/T27) or ASTM D422/D1140.
 - a. The analysis shall include the following sieve sizes: 1 inch, 3/8 inch, #4, #10, #20, #40, #60, #100, #200. The gradation of the blend shall meet the following gradation criteria:

Sieve Size	Percent Passing
1 inch	100
# 4	75-100
# 10	40-100
# 40	15-50
# 100	5-25
# 200	5-15

- b. The blend shall have a coefficient of Uniformity (D60/D10) equal or greater than 6 to ensure it is well graded (has a broad range of particle sizes). The coefficient is the ratio of two particle diameters on a grain-size distribution curve; it is the particle diameter at 60% passing divided by the particle diameter at 10% passing.
- c. The pH (Power of Hydrogen) of the blended material shall be tested and be between 6 to 8.

2. General Requirements for the Blended Material:

- a. The material shall be loose and friable.
- b. It shall be well mixed and homogenous.
- c. It shall be free of wood pieces, plastic, and other foreign matter.
- d. It shall have no visible water

D. Topsoil Soil Textural Class Requirements: Topsoil textural analysis shall fall within the following gradations:

Textural Class	% of Total Weight	Average %
Sand (0.05-2.0mm dia.)	45-75	60
Silt (0.002-0.05mm dia.)	15-35	25

Clay (less than 0.002mm dia.)

05-20

15

- E. On-Site Amended Planting Soil: Native Topsoil is not acceptable for planting soil..
1. If contractor determines native topsoil ito produce viable planting soil. Clean soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth,
 2. Native surface or imported topsoil shall not be placed or amended until it is in a dry state, without enough moisture to allow it to be packed or squeezed into a ball.
- F. Additional Properties of Imported Topsoil or Manufactured Topsoil: Screened and free of stones 1 inch or larger in any dimension; free of roots, plants, sod, clods, clay lumps, pockets of coarse sand, paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials harmful to plant growth; free of weeds and invasive plants including but not limited to:
1. *Cirsium arvense* (Canadian Thistle)
 2. *Convolvulus* spp. (Morning Glory)
 3. *Cytisus scoparus* (Scotch Broom)
 4. *Dipsacus sylvestris* (Common Teasel)
 5. *Festuca arundinaceae* (Tall Fescue)
 6. *Hedera helix* (English Ivy)
 7. *Holcus canatus* (Velvet Grass)
 8. *Lolium* spp. (Rye Grasses)
 9. *Lotus corniculatus* (Bird's Foot Trefoil)
 10. *Lythrium salicaria* (Purple Loose Strife)
 11. *Melilotus* spp. (Sweet Clover)
 12. *Myriophyllum spicatum* (Eurasian Milfoil)
 13. *Phalaris arundinaceae* (Reed Canary Grass)
 14. *Rubus discolor* (Himalayan Blackberry)
 15. *Solanum* spp. (Nightshade)
 16. *Trifolium* spp. (Clovers), and
 17. Not infested with nematodes, grubs, other pests, pest eggs, or other undesirable organisms and disease-causing plant pathogens; friable and with sufficient structure to give good tilth and aeration. Continuous, air-filled, pore-space content on a volume/volume basis shall be at least 15 percent when moisture is present at field capacity. Soil shall have a field capacity of at least 15 percent on a dry weight basis.

2.2 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:
1. Class: Class T, with a minimum 99 percent passing through No. 8 sieve and a minimum 75 percent passing through No. 60 sieve.
 2. Class: Class O, with a minimum 95 percent passing through No. 8 sieve and a minimum 55 percent passing through No. 60 sieve.
 3. Provide lime in form of dolomitic limestone.

- B. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, with a minimum 99 percent passing through No. 6 sieve and a maximum 10 percent passing through No. 40 sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Aluminum Sulfate: Commercial grade, unadulterated.
- E. Perlite: Horticultural perlite, soil amendment grade.
- F. Agricultural Gypsum: Finely ground, containing a minimum of 90 percent calcium sulfate.
- G. Sand: Clean, washed, natural or manufactured, free of toxic materials.
- H. Diatomaceous Earth: Calcined, diatomaceous earth, 90 percent silica, with approximately 140 percent water absorption capacity by weight.
- I. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

2.3 COMPOST

- A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 3/4-inch sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
 - 1. Organic Matter Content: 50 to 60 percent of dry weight.
 - 2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.
- B. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil, or toxic materials.
- C. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

2.4 FERTILIZERS

- A. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 4 percent nitrogen and 10 percent phosphoric acid.
- B. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.
- C. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.
- D. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.
- E. Planting Tablets: Tightly compressed chip type, long-lasting, slow-release, commercial-grade planting fertilizer in tablet form. Tablets shall break down with soil bacteria, converting nutrients into a form that can be absorbed by plant roots.
1. Size: 10-gram tablets.
 2. Nutrient Composition: 20 percent nitrogen, 10 percent phosphorous, and 5 percent potassium, by weight plus micronutrients.

2.5 PRE-EMERGENT HERBICIDE

- A. Pre-emergent herbicide shall be as directed for condition by currently licensed herbicide applicator.

2.6 POST-EMERGENT HERBICIDE

- A. Post-emergent herbicide shall be as directed for condition by currently licensed herbicide applicator.

2.7 WATER

- A. Water shall be suitable for irrigation, free from oil, acid, alkali, salt or other substances harmful to plant life.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. The Contractor shall examine the entire site for conditions that will adversely affect execution, permanence and quality of work, and survival of plant materials. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. Rough Grading Inspection - Contractor shall notify Owner's Representative a minimum of 72 hours in advance for inspection of rough grades.

- C. The Contractor shall verify that rough grades and slopes of areas to be planted areas are set at sufficient depth to allow for placement of specified materials. If the site is not suitable for landscaping operations, the Contractor shall perform necessary corrective work.

3.2 GENERAL PREPARATION OF GROUND SURFACES – ALL PLANTING OR SEEDING AREAS

- A. The Contractor shall eliminate uneven areas and low spots, remove lumber, stones, sticks, mortar, concrete, rubbish, debris, contaminated soil and any other material harmful to plant life, in shrub and ground cover beds.
- B. The Contractor shall verify that invasive species and weeds have been eliminated prior to the placement of topsoil. The Contractor must not place topsoil until all living weed matter has been eliminated.
- C. Weed eradication shall include herbicide and non-herbicide methods. Eradication shall include but is not limited to elimination of the following invasive species and weeds;

- Cirsium arvense (Canadian Thistle)
- Convolvulus spp. (Morning Glory)
- Cytisus scoparius (Scotch Broom)
- Dipsacus sylvestris (Common Teasel)
- Festuca arundinaceae (Tall Fescue)
- Hedera helix (English Ivy)
- Holcus canatus (Velvet Grass)
- Lolium spp. (Rye Grasses)
- Lotus corniculatus (Bird's Foot Trefoil)
- Lythrium salicaria (Purple Loose Strife)
- Melilotus spp. (Sweet Clover)
- Myriophyllum spicatum (Eurasian Milfoil)
- Phalaris arundinaceae (Reed Canary Grass)
- Rubus discolor (Himalayan Blackberry)
- Solanum spp. (Nightshade)
- Trifolium spp. (Clovers)

1. Herbicide application shall be by manual 'spot spraying', wicking, or backpack methods per manufacturer's specifications.
2. Herbicide application shall be as directed by a currently licensed applicator and shall be strictly applied by manufacturer's specifications, and applicable codes and regulations.
3. Remove invasive plant material after herbicide application has effectively stopped plant growth. Dispose legally off-site.
4. After initial spraying and removal of weeds, and prior to placing topsoil, the contractor shall water the subgrade sufficiently to germinate dormant weed seeds.
 - a. Prior to this weed crop producing seeds, the contractor shall spray these weeds with herbicide and remove them from the site.
 - b. Before continuing with topsoil placement the contractor shall verify with the Owner's Representative whether or not to repeat this treatment.

5. Selective hand removal by non-herbicide methods shall be utilized if herbicide application threatens existing plantings.
6. Existing or new plantings damaged or killed by herbicide application shall be replaced immediately at no additional cost to the Owner.

3.3 PLACING PLANTING SOILS

- A. Planting soils shall be placed in minimum depths of 12 inches in planting areas, and 4 inches in seeded lawn areas.
- B. Verify that planting soil is stockpiled in sufficient quantities to be placed at depths specified. The Contractor shall notify the Owner's Representative immediately if supplies are inadequate or do not meet specifications for topsoil. The Contractor shall provide imported topsoil meeting the requirements of this section if the supply of existing on-site topsoil is insufficient.
- C. Planting soil shall be placed at specified grades between any existing or constructed points on the site, such as curbs, walls, walks and paving.

3.4 SOIL PREPARATION IN PLANTING BEDS

- A. Loosen subgrade of planting beds to a minimum depth of 8 inches. Remove stones larger than 1-1/2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
 1. Select from or retain both options in first subparagraph below for off-site or in-place mixing of planting soil.
 2. Spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend with loosened subgrade.
 - a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
 - b. Mix lime with dry soil before mixing fertilizer.
 - c. Spread planting soil mix to a depth of 6 inches but not less than required to meet finish grades after natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
 - d. Retain subparagraph below to knit planting soil to subsoil and to improve soil drainage. Retain for hardpan subgrades, poorly drained subgrades, or subgrades that heavily compact during construction. Usually delete if planting soil exceeds a depth of 8 inches (200 mm).
 - e. Spread approximately one-half the thickness of planting soil mix over loosened subgrade. Mix thoroughly into top 4 inches of subgrade. Spread remainder of planting soil mix.
- B. Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.
- C. Restore planting beds if eroded or otherwise disturbed after finish grading and before planting.

3.5 SOIL PREPARATION IN SEEDED LAWN AREAS

- A. Limit lawn subgrade preparation to areas to be seeded.
- B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 6 inches . Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
 - 1. Apply fertilizer directly to subgrade before loosening.
 - 2. Thoroughly blend planting soil mix off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.
 - a. Delay mixing fertilizer with planting soil if seeding will not proceed within a few days.
 - b. Mix lime with dry soil before mixing fertilizer.
 - 3. Spread planting soil mix to a depth of 4 inches but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
 - a. Spread approximately one-half the thickness of planting soil mix over loosened subgrade. Mix thoroughly into top 4 inches of subgrade. Spread remainder of planting soil mix.
- C. Finish Grading: Grade seeded lawn areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. .
- D. Moisten prepared lawn areas before seeding if soil is dry. Water thoroughly and allow surface to dry before seeding. Do not create muddy soil.
- E. Restore areas if eroded or otherwise disturbed after finish grading and before seeding.

3.6 SOIL PREPARATION IN STORMWATER PLANTING AREAS

- A. Examine the entire site for conditions that will adversely affect execution, permanence and quality of work, and survival of plant materials.
- B. Prepare subgrade as directed in this specification for removal of unwanted material and weed eradication.
- C. Verify that finish grades and slopes of seeded and planting areas are correct prior to commencing work of this section. If the site is not suitable for planting and seeding operations, the Contractor shall perform necessary corrective work, for the review and approval of the Owner's Representative.
- D. Monitor effectiveness of herbicide methods and protect existing plantings and seeded areas.
- E. General Preparation and Grading of Soil Surfaces in Mitigation and Buffer Planting Areas:

1. Remove extraneous material within the limits of the grading operations. Eliminate uneven areas and low spots. Protect from damage, areas, which are designated on the plan, or as directed by the Owner's Representative, to remain.
2. At elevations designated on the plan, all areas shall be ripped, and harrowed and floated to an even surface following the specified contours. Do not disturb existing vegetation or habitat snags designated to remain. Cross track slope areas with tracked equipment parallel with slope to mitigate surface runoff.
3. Eliminate apparent invasive weeds per specifications, using approved herbicides and approved methods of removal.
4. Rip harrow, and float soil surface at areas to be planted and seeded to a friable, even surface. Rip and harrow any surfaces compacted by vehicles or equipment.
5. Final grading shall not exhibit hardened 'scraped' surfaces or vehicular circulation evidence. Any such surface shall be floated or 'softened' for acceptance of seed.
6. The Contractor shall be responsible for providing control of airborne dust and particulates from the work areas. Visible dust shall be limited by water, dust palliative or other methods approved by the Owner's Representative.
7. Protect adjacent grading and site work. Protect existing utilities, construction and paved surfaces throughout construction. Any disturbance of existing features outside of designated limits shall be restored to pre-construction condition at Contractor's expense. Cover exposed slopes by specified means if erosion threatens. Monitor runoff conditions and notify Owner's Representative of detrimental conditions.

F. Backfill Soil for Stormwater Planting Areas:

1. Backfill soil required in grading operations shall be the native soil indigenous to the site that is clean, and clear of material deleterious to native plant growth.

3.7 CLEANUP

- A. Keep project site free from accumulation of debris, topsoil, and other material.
- B. At completion of each area of work, completely remove debris, equipment and surplus materials.
- C. Any paved area or surfaces stained or soiled from landscaping materials shall be cleaned with a power sweeper using water under pressure. Building surfaces shall be washed with proper equipment and materials as approved by the Owner's Representative.

END OF SECTION 329113

SECTION 329300-PLANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Furnishing all labor, materials and equipment for installation of landscape planting as shown on the drawings and as specified.
- B. Related Sections include the following:
 - 1. Section 015639; Temporary Tree and Plant Protection
 - 2. Section 328400, Planting Irrigation
 - 3. Section 329113, Soil Preparation
 - 4. Section 329200, Turf and Grasses

1.3 DEFINITIONS

- A. The following publications, referred to thereafter by basic designation only, form a part of this specification to the extent indicated by references:
 - 1. STANDARDIZED PLANT NAMES, 1942 Edition, published by J. Horace McFarland Company.
 - 2. FLORA OF THE PACIFIC NORTHWEST; by Hitchcock and Cronquist, latest edition,
 - 3. Federal Standard for Fertilizers - Mixed, Commercial: FS0-F-241D
- B. Balled and Burlapped Stock: Exterior plants dug with firm, natural balls of earth in which they were grown, with ball size not less than diameter and depth recommended by ANSI Z60.1, latest edition, for type and size of plant required; wrapped with burlap, tied, rigidly supported, and drum-laced with twine with the root flare visible at the surface of the ball as recommended by ANSI Z60.1, latest edition.
- C. Balled and Potted Stock: Exterior plants dug with firm, natural balls of earth in which they are grown and placed, unbroken, in a container. Ball size is not less than diameter and depth recommended by ANSI Z60.1, latest edition, for type and size of plant required.
- D. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1, latest edition, for type and size of plant required.

- E. Fabric Bag-Grown Stock: Healthy, vigorous, well-rooted plants established and grown in-ground in a porous fabric bag with well-established root system reaching sides of fabric bag. Fabric bag size is not less than diameter, depth, and volume required by ANSI Z60.1, latest edition, for type and size of plant.
- F. Finish Grade: Elevation of finished surface of planting soil.
- G. Groundcover: Low woody or herbaceous plants generally less than 24 inches high at maturity or per jurisdictional definition.
- H. Healthy (Plants): Plants that are growing in a condition that expresses leaf size, crown density, color, and with annual growth rates typical of the species and cultivar's horticultural description, adjusted for the planting site conditions, drainage and weather conditions.
- I. Kinked root: A root within the root package that bends more than 90 degrees.
- J. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.
- K. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.

1.4 SUBMITTALS

- A. Submit certifications, or samples of material requested for substitution.
- B. A maximum of 1 month after the Contractor receives the authorization to proceed, the Contractor shall submit to the Owner's Representative, copies of all nursery invoices for plant materials to be used on site. The copies must indicate source of supply by name, address and phone number, order invoice number, and size and quantity for each species or variety ordered.
- C. Inspection certificates:
 - 1. All plant material shall meet requirements of State and Federal laws with respect to inspection for plant diseases and infestation.
 - 2. Inspection certificates required by law shall accompany each shipment of plant materials and be submitted to the Owner's Representative.

1.5 QUALITY ASSURANCE

- A. Work and material supplied shall comply with applicable requirements of the United States Department of Agriculture (USDA).
- B. The Contractor shall protect all materials, at all times during handling, shipping and storage, from extreme weather conditions, wind, drying of roots or root ball injury.
 - 1. Store fertilizers in a dry place and protect from intrusion of moisture.
 - 2. Deliver plants at the time of planting, and handle with proper horticultural practice.

- C. Plant materials showing damage from handling, shipping or during planting shall be rejected by the Owner's Representative and shall be replaced by the Contractor at their expense.
 - D. Provide quality, size, genus, species, and variety of exterior plants indicated, complying with applicable requirements in the latest edition of ANSI Z60.1, "American Standard for Nursery Stock."
 - 1. Selection of exterior plants purchased under allowances will be made by Owner's Representative, who will tag plants at their place of growth before they are prepared for transplanting.
 - E. Tree and Shrub Measurements: Measure according to ANSI Z60.1, latest edition, with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6 inches above ground for trees up to 4-inch caliper size, and 12 inches above ground for larger sizes. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip-to-tip.
 - F. Observation: Owner's Representative may observe trees and shrubs either at place of growth or at site before planting for compliance with requirements for genus, species, variety, size, and quality. Owner's Representative retains right to observe trees and shrubs further for size and condition of balls and root systems, insects, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site and replace.
 - G. Store fertilizers in a dry place and protect from intrusion of moisture.
 - H. Planting
 - 1. All landscaping work shall be done under the supervision of a Contractor currently licensed in landscape construction, under respective jurisdictions, and having a minimum of two years of experience in landscape construction. All work shall be done in accordance with proper horticultural practices and hereinafter described.
 - I. Herbicide Application
 - 1. Application of herbicides for weed control as may be required shall be made only by an applicator currently licensed under this state's law.
- 1.6 DELIVERY, STORAGE, AND HANDLING
- A. Deliver exterior plants freshly dug.
 - 1. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting.
 - B. Do not prune trees and shrubs before delivery, except as approved by Owner's Representative. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of exterior plants during delivery. Do not drop exterior plants during delivery.
 - C. Handle planting stock by root ball.

- D. Deliver exterior plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set exterior plants trees in shade, protect from weather and mechanical damage, and keep roots moist.
 - 1. Heel-in bare-root stock. Soak roots in water for two hours if dried out.
 - 2. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
 - 3. Do not remove container-grown stock from containers before time of planting.
 - 4. Water root systems of exterior plants stored on-site with a fine-mist spray. Water as often as necessary to maintain root systems in a moist condition.

1.7 PROJECT CONDITIONS AND COORDINATION

- A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
 - 1. Planting Season: West of Cascade Mountains, September 1 – May 15, unless otherwise specified; container grown materials located in irrigated areas may be planted at other times depending upon written approval by Owner's Representative.
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions are between 35 and 80 degrees Fahrenheit and soil conditions are not saturated.
- C. Coordination with seeded, plugged and sodded areas: Plant trees and shrubs after finish grades are established and before seeding, plugging and sodding designated areas, unless otherwise acceptable to Owner's Representative.
 - 1. When planting trees and shrubs after seeding, plugging and sodding, protect these areas and promptly repair damage caused by the planting operations.
- D. The Contractor shall coordinate planting work with soil preparation.

1.8 PLANT MATERIALS SUBSTITUTION

- A. Plants, not specifically named in the plant list, will not be accepted unless specifically accepted in writing by the Owner's Representative.
- B. Substitutes proposed for approval, in each case, shall possess the same essential characteristics as the kind of plant actually specified in regard to appearance, ultimate height, shape, and habit of growth, general soil, and other environmental requirements.

1.9 WARRANTY

- A. The establishment and warranty periods for all types of plantings shall be initiated upon the Owner's Representative acceptance of the work and for the period of time listed below.
- B. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.
- C. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.

- D. Annuals: Three months.

PART 2 - PRODUCTS

2.1 TREES, SHRUBS AND GROUNDCOVER

- A. General species, variety, quantity, size and condition of plant will be provided as indicated on the drawings.

Plant material shall be supplied, but not limited to form and conditions defined as follows:

Rhizome:	Section of root or stolon
Propagules:	Section of stem
Bulb:	Single bulb mass
Plug:	Rooted Cutting
Aquatic container:	Water filled container for floating plants
Seedling:	Rooted tree or shrub
Tubeling:	Rooted tree or shrub in single tube
Bare Root:	Shrub or tree with soil removed from root mass
Cutting:	Stem cut from parent stock
Ball and Burlap:	Tree or shrub with excavated root ball wrapped and tied
Container:	Standard pot or bag, per ANSI standard sizing.

- B. Nomenclature shall conform to "Standardized Plant Names."
- C. Quality definitions, grading tolerances, and caliper to height ratios no less than minimum specified in ANSI Z60.1.
- D. Plant material shall be healthy nursery stock, well branched, full foliated when in leaf, free from disease, injury, insects, all weeds and weed roots.
- E. Cold storage plants shall not be permitted.
- F. Plant materials shall be nursery-grown unless otherwise specified. Nursery-grown plants shall have been growing continuously in licensed nurseries for the following minimum number of growing seasons:

Plant Materials	Time in Nursery
Evergreens and conifers	Two growing seasons
Deciduous	One growing season
Groundcover and Vines	One growing season

- G. Balled and burlapped (B&B) stock shall be furnished with natural ball.
- H. Potted and container stock shall be well rooted, vigorous enough to ensure survival and exhibit healthy growth.
- I. Container stock shall have been growing in its container for a minimum of six (6) months and a maximum of two (2) years, with roots filling the containers but not showing evidence of being or having been root bound.

- J. Trees: Provide untapped, straight, single-leader trees.
- K. Plant materials shall be free from disease, insects, disfiguring knots, sun scale, injuries, bark abrasion, evidence of improper pruning and other objectionable disfigurements.
- L. Trees and shrubs shall have all developed branching system; shrubs shall have full foliage and shall not be leggy.
- M. Thin, weak, leggy, or misshapen plants will be rejected by the **Owner's Representative**.
- N. Labels: The correct horticultural name, size and caliper and/or other data, as specified in the Plant Material List, written on durable labels in weather-resistant ink, shall be securely attached to all individually shipped plants and to each box, bundle, bale and container of plant materials. Labels shall remain on representative plant materials until final acceptance of planting. Labels shall be affixed in such a manner that will not girdle the plant materials.
- O. The species (botanical and common names), size, manner in which the plants are furnished, and spacing of the required plant materials, are noted on the planting plan.
- P. The quantities of plant materials shall be as determined by the Contractor in accordance with the specified spacing, or location on plan. Surplus or shortages of plant quantities shall be the responsibility of the Contractor.

TREE STABILIZATION MATERIALS

- Q. Stakes and Guys:
 - 1. Upright and Guy Stakes: Rough-sawn, sound, new softwood free of knots, holes, cross grain, and other defects, 2-by-2-inch nominal by length indicated, pointed at one end.
 - 2. Flexible Ties: Wide rubber or elastic bands or straps of length required to reach stakes or turnbuckles.
 - 3. Guys and Tie Wires: ASTM A 641/A 641M, Class 1, galvanized-steel wire, two-strand, twisted, 0.106 inch in diameter.
 - 4. Tree-Tie Webbing: UV-resistant polypropylene or nylon webbing with brass grommets.
 - 5. Guy Cables: Five-strand, 3/16-inch- diameter, galvanized-steel cable, with zinc-coated turnbuckles, a minimum of 3 inches long, with two 3/8-inch galvanized eyebolts.
 - 6. Flags: Standard surveyor's plastic flagging tape, white, 6 inches long.

2.2 WATER

- A. Water shall be suitable for irrigation, free from oil, acid, alkali, salt or other substances harmful to plant life.

2.3 MULCHES

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, [salt hay or threshed straw of wheat, rye, oats, or barley] [Clean 'field straw' from *Deschampsia caespitosa*].

- B. Fir and/or hemlock bark, 1-inch minus size with less than 30% bark finer than 1/4-inch size. Sawdust and wood shavings will not be acceptable.
- C. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
 - 1. Organic Matter Content: 50 to 60 percent of dry weight.
 - 2. Feedstock: Agricultural, food, or industrial residuals; bio solids; yard trimmings; or source-separated or compostable mixed solid waste.

2.4 MISCELLANEOUS PRODUCTS

- A. Root Barrier: Black, molded, modular panels manufactured with 50 percent recycled polyethylene plastic with ultraviolet inhibitors, 85 mils thick, with vertical root deflecting ribs protruding 3/4 inch out from panel, and each panel 18 inches high and wide.
- B. Anti-desiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.
- C. Burlap: Non-synthetic, biodegradable.
- D. Mycorrhizal Fungi: Dry, granular inoculant containing at least 5300 spores per lb. of vesicular-arbuscular mycorrhizal fungi and 95 million spores per lb. of ectomycorrhizal fungi, 33 percent hydrogel, and a maximum of 5.5 percent inert material.

PART 3 - EXECUTION

3.1 INITIAL INSPECTION OF PLANT MATERIAL

- A. All plant materials must be inspected by the **Owner's Representative** before planting. All plant material shall be free from insects, diseases, and injuries and sizing shall be equal to or exceeding measurements specified. Transport and handle all materials in strict accordance with proper horticultural standards. The Contractor shall provide plants with habit and growth that is normal, sound, healthy and vigorous.
- B. All plant materials not meeting specification requirements shall be rejected.
- C. All native plants shall be nursery stock except hardwood cuttings. Nursery stock shall be grown from propagules or seed collected from western Oregon or western Washington sources only. Plants from off-site collection sources shall not be allowed, unless otherwise approved by the Owner's Representative.
- D. Hardwood cuttings, as identified on the plant list, shall be taken from healthy, vigorous, one to three-year old, plants grown in full sunlight and obtained from the respective watershed identified by the Owner's Representative. Cuttings shall be from 1 to 2 feet in length and between 1/4 and 3/4 inches in diameter, as shown on plans. Each piece shall contain a minimum

of two dormant buds per foot of length. Period of collection shall be at dormancy and at the optimum time per proper horticultural standards for cutting establishment.

3.2 PLANT BED PREPARATION

- A. Prepare plant beds as directed in Division 32, Soil Preparation.

3.3 PLANT LAYOUT AND INSPECTION

- A. Layout of major planting areas as indicated on the plans are approximate only, and the locations and identity of all trees, shrubs, ground covers and other plantings shall be outlined in the field by the Contractor, subject to review and approval by the Owner's Representative.
- B. Inspection: The Contractor shall notify the Owner's Representative forty-eight (48) hours prior to beginning any planting. The Owner's Representative may adjust plant material location to meet field conditions. Planting shall not occur until the Owner's Representative has approved the location and layout of all plant beds.

3.4 TREES, SHRUBS, GROUND COVER AND OTHER PLANTINGS

- A. Plant trees and shrubs upright and adjust to set best appearance or relationship to adjacent plants and structures. Shrubs and groundcovers shall be planted one half the distance from curbs, sidewalks, buildings and other objects, as specified in the spacing requirements.

Native Plant material shall be planted with regard to condition specified on plan, per, but not limited to the following:

Rhizome:	Cut into soil surface within 2 inches of surface
Propagule:	Cut into soil surface within 2 inches of surface
Bulb:	Set into soil 4 inches- 6 inches deep; point up
Plug:	Placed into soil at size of root mass
Aquatic container:	Dispersed into open water surface
Seedling:	Cut into soil as deep as root mass, compacted
Tubeling:	Cut into soil as deep as root mass, compacted
Bare Root:	Placed into plant pit sufficient for root mass, compacted
Cutting:	Dibble into soil per cutting installation detail on plan
Ball and Burlap:	Placed into plant pit twice the size of root ball, compacted
Container:	Placed into plant pit twice the size of container

- B. Excavation for planting
 1. Stockpile all excavated topsoil for planting operations.
 2. In digging pits for trees, the contractor shall separate sod, topsoil suitable for backfill, and subsoil, and shall dispose of the sod, rocks and unsuitable material off-site.
 3. Diameter or minimum width of planting pit or trenches shall be as shown on the drawings.
 4. If standing water is encountered during excavation of the planting pits, the Contractor shall notify the Owner's Representative who will determine the corrective drainage measures required.

5. If underground obstructions or rocks are encountered in excavation of planting areas making it impossible to plant materials as shown on the contract documents, an alternate location for the planting shall be selected by the Owner's Representative.
6. Excess excavated topsoil shall be used to form saucers around plants as detailed. Soil not required or suitable for the above usage shall be properly disposed of off the project site.
7. Root crown to be visible before tree is set. Remove top of root ball media to locate if needed.
8. Burlap, twine and metal basket to be cut and removed entirely down to base of rootball after tree is set (material on bottom can remain). If rootball is unstable or breaking, only remove the top 12" of burlap.
9. Staking to remain no more than two years unless Owner's Representative directs longer staking period. Maintain 2" strap slack around trunk.
10. For Trees Located in Stormwater Facilities: rootball to rest on stable pedestal of compacted subgrade, selected topsoil or stormwater facility topsoil. Pedestal soils to have less than 3% organic matter content. Install soil in 6" lifts.

C. Cutting: Cut off cleanly all broken or frayed roots, smaller than 1/2 inch caliper.

D. Prior to completing backfilling, the upper two-thirds of the plant pit shall be flooded with the plant starter solution. Allow solution to soak away. Finish filling holes to finish grade and lightly compact soil around root ball.

E. Placement and compaction: Place and compact backfill soil mixture carefully to avoid injury to roots; fill all voids.

3.5 SHRUBS AND GROUND COVER PLANTING BED GRADES

A. Establish finish grades and slopes in accordance with finish grades as specified.

3.6 MULCHING

A. Mulch all shrubs and ground cover planting beds with a 2 inch layer of mulch material within two (2) days after planting. Cover entire bed areas; apply evenly. A 2 inch layer of mulch material shall be applied to saucer areas of trees and shrubs located outside of planting beds.

3.7 TREE STABILIZATION

A. Install trunk stabilization as follows unless otherwise indicated:

1. Upright Staking and Tying: Stake trees of 2- through 5-inch caliper. Stake trees of less than 2-inch caliper only as required to prevent wind tip out. Use a minimum of two stakes of length required to penetrate at least 18 inches below bottom of backfilled excavation and to extend to the dimension shown on Drawings. Set vertical stakes and space to avoid penetrating root balls or root masses.
2. Use two stakes for trees up to 12 feet high and 2-1/2 inches or less in caliper; three stakes for trees less than 14 feet
3. Support trees with bands of flexible ties at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.

4. Support trees with two strands of tie wire, connected to the brass grommets of tree-tie webbing at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.
- B. Staking and Guying: Stake and guy trees more than 14 feet in height and more than 3 inches in caliper unless otherwise indicated. Securely attach no fewer than three guys to stakes 30 inches long, driven to grade.
 1. Site-Fabricated Staking-and-Guying Method:
 - a. Support trees with bands of flexible ties at contact points with tree trunk and reaching to stakes. Allow enough slack to avoid rigid restraint of tree.

3.8 ROOT-BARRIER INSTALLATION

- A. Install root barrier where trees are planted within 60 inches paving or other hardscape elements, such as walls, curbs, and walkways unless otherwise shown on Drawings.

3.9 ANTIDESICCANT

- A. The application of the antidesiccant shall be prior to transplanting as a spray or during planting as a dip. The antidesiccant shall not be applied if rain is anticipated in one hour or less. If not previously applied, the Contractor shall, within 24 hours of completing backfilling, spray all evergreen and leafed-out deciduous plants with the antidesiccant thoroughly covering all leaves. The solution shall be mixed according to manufacturer's specifications.

3.10 PRUNING

- A. Pruning shall be done at or after the time of planting in accordance with proper horticultural practice.
- B. Pruning shall be limited to the minimum necessary to remove injured twigs and branches and to compensate for the loss of roots during transplanting, but shall never exceed one-half of the branching structure.
 1. Crossed or rubbing branches shall be removed providing the natural shape of the tree is preserved.
 2. All cuts shall be made flush with the parent stem leaving no stubs. Pruning cuts shall be made in a manner to favor the earliest possible covering of the wound by callus growth. Cuts that produce large wounds and weaken the tree will not be acceptable. Evergreens shall not be pruned except to remove injured branches and/or double leaders. The use of pole shears and/or hedge shears for pruning deciduous and evergreen trees will not be permitted. All trimmings and other debris left over from the planting operations shall be collected and disposed of legally off the site.
- C. With the permission of the Owner's Representative, pruning may be done before delivery of plants, but not before plants have been inspected and accepted.

3.11 CLEANUP

- A. Keep premises free from accumulation of debris.
- B. At completion of each area of work, remove all debris, equipment and surplus materials

END OF SECTION 329300