Health, Housing & Human Services
CLACKAMAS COUNTY

Rodney A. Cook
Director

April 25, 2024

BCC Agenda Date/Item: _____

Board of County Commissioners
Clackamas County

Approval of a public improvement contract with ASA Construction for the Clackamas Village Project. The contract value is $3,211,505.75 for 10 months. Funding is through Metro Supportive Housing Services Measure funds. No County General Funds are involved.

Previous Board Action/Review	August 15, 2023 – Board update on Issues on plan to proceed with solicitation for Clackamas Village construction based on architectural designs September 20, 2023 – Board approval of funding for Clackamas Village construction as part of the Capital Needs portion of the Supportive Housing Services carryover spend-down plan November 22, 2023 – Board approval of property transfer Intergovernmental Agreement for H3S to purchase the property from the Development Agency December 13, 2023 – Clackamas Village Development and Budget Update Policy Session, with Board approval of funding plan and plans to solicit for construction and program delivery services April 23, 2024 – Item presented at Issues		
Performance Clackamas	This funding aligns with the County's strategic priority to ensure safe, healthy, and secure communities.		
Counsel Review	Yes	**Procurement Review**	Yes
Contact Person	Adam Brown	**Contact Phone**	971-421-0133

EXECUTIVE SUMMARY: The Housing and Community Development Division of Clackamas County's Health, Housing & Human Services Department (H3S) is seeking approval for a construction contract with ASA Construction to construct the new Clackamas Village transitional housing community.

The Clackamas Village will provide recovery-oriented emergency transitional housing to people experiencing homelessness. On December 13, 2023, the Board approved H3S to proceed with a solicitation for construction services at Clackamas Village based on an architectural design and layout bid set prepared by the project team and architects.

The proposed 13 modular building structures will include a kitchen module, two office modules, two bathroom modules, and eight three-bedroom sleeping modules, with a total of 24 housing units. All units will be accessible by ramps and decks built on-site. The structures will be built off-site and installed on-site. Other site work will include foundations, utilities, storm ponds, landscaping, and paved areas.

ASA Construction was selected from a Notice of Public Improvement Contract Opportunity that was published on January 30, 2024. ASA

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Construction was the lowest responsive bidder of the three proposals submitted for consideration by the March 5, 2024 deadline.

Once Clackamas Village is completed, All Good Northwest will manage the site and coordinate the recovery-oriented housing stability services provided to residents as they work to move on to a more permanent housing solution. All Good Northwest was selected through a separate solicitation for site operations. The contract for these services will come to the Board for approval in May or June.

With site construction anticipated to take approximately 10 months, the new village will open in early 2025. Site construction is funded through Supportive Housing Services funds.

RECOMMENDATION: Staff respectfully recommend that the Board of County Commissioners approve this Contract and authorize Chair Smith to sign on behalf of Clackamas County.

Respectfully submitted,

Rodney A. Cook

Rodney A. Cook
Director of Health, Housing and Human Services

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT

H3S Contract # 11614

This Public Improvement Contract (the "Contract"), is made by and between the Clackamas County, a political subdivision of the State of Oregon ("Owner"), and **ASA Construction, LLC.**, (the "Contractor"), both collectively the "Parties". This Contract shall become effective on the date this Contract has been signed by all the Parties and shall expire upon completion 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: New Clackamas Village Project
Project Address: 16575 SE 115th Ave, Clackamas, OR 97015

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 of the Contractor performing the Work in accordance with the terms of the Contract, the Owner agrees to pay the Contractor the sum of Three Million Two Hundred Eleven Thousand Five Hundred and Five Dollars and Seventy Five Cents ($3,211,505.75) (the "Contract Price"). Payment will be made in accordance with the terms and conditions provided in the Contract Documents. The Contract Price is the amount contemplated by the Base Bid Schedule, 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
- Clackamas County General Conditions
- Prevailing Wage Rates
- Plans, Specifications and Drawings
- Instructions to Bidders
- Bid Bond
- Performance Bond and Payment Bond
- Supplemental General Conditions
- Payroll and Certified Statement Form
- Addenda: Bid Questions and Answers posted 2/27/2024

2. Representatives.
Contractor has named Heather ASA 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 Mark Sirois, Project Coordinator, 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: Heather ASA, cell: 503.913.3383

Project Manager: **Heather ASA, cell: 503.913.3383** shall be the Contractor's project manager and will participate in all meetings throughout the project term.

Job Superintendent: **Bailey Duhrkoop, cell: 503.815.3756** shall be the Contractor's on-site job superintendent throughout the project term.

Project Engineer: Lorelle Newland, cell 503.803.9560 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: (tentative) **July 1, 2024**, Upon Issuance of Notice to Proceed
SUBSTANTIAL COMPLETION DATE: 180 days from issuance of Notice to Proceed, currently estimated to be **December 28, 2024**
FINAL COMPLETION DATE: (210 days from issuance of Notice to Proceed, currently estimated to be **February 1, 2025**
CONTRACT CLOSE OUT DATE: 240 days from Notice to Proceed currently estimated to be **March 1, 2025**

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, Contractor shall furnish proof of the required insurance naming Clackamas County – Health, Housing & Human Services Department as an additional insured. Insurance certificates may be returned with the signed Contract or may be emailed to marksir@clackamas.us.

6. Liquidated Damages
The Owner and the Contractor acknowledge and agree that if the Contractor fails to reach Substantial Completion of the entire Work by the Substantial Completion Date identified in Section 4 above, the Owner will suffer damages, which are both extremely difficult and impracticable to ascertain, and on that basis agree to the assessment by Owner of liquidated damages as provided in this Section. These damages may include, but are not limited to, use of the Project, costs associated with Contract administration, and use of temporary facilities. The liquidated damages amount is not a penalty, but a reasonable estimate of the amount of losses the Owner will suffer. The Owner may deduct such liquidated damages as are payable under this Section from money due or to become due to the Contractor or, at is election, pursue any other legal remedy to collect such liquidated damages from the Contractor and/or its Surety.

If the Contractor fails to achieve Substantial Completion of the entire Work by the Substantial Completion Date identified in Section 4, the Contractor shall pay the Owner as liquidated damages:

6.1. $ 3,000.00 per Calendar day past the Substantial Completion date.

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.

7. Tax Compliance.
The Contractor shall comply with all federal, state and local laws, regulation, executive orders and ordinances applicable to this Contract. 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.

8. 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.

9. 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.

10. 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.

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. 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.

13. 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 Regional, 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.

14. Indemnification and Defense of Metro. The Contractor agrees to indemnify, defend, save and hold harmless Metro Regional Government ("Metro"), and its officers, elected officials, agents and employees from and against all claims, actions, losses, liabilities, including reasonable attorney and accounting fees, and all expenses incidental to the investigation and defense thereof, arising out of or based upon Contractor's acts or omissions in performing under this Contract. However, neither Contractor nor any attorney engaged by Contractor shall defend the claim in the name of Metro, nor purport to act as legal representative of Metro, without first receiving from the Metro attorney's office authority to act as legal counsel for Metro, nor shall Contractor settle any claim on behalf of Metro without the approval of the Metro attorney's office. Metro may, at its election and expense, assume its own defense and settlement.

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

Contractor DATA:

Contractor must complete each item:
Contractor CCB # 221391 Expiration Date: 7.2024
Oregon Business Registry # 017437481 Entity Type: Limited Liability Company State of Formation: OR

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.

ASA Construction, LLC

4.3.24
Authorized Signature Date

Heather ASA, Chief Executive Officer
Name / Title Printed

Clackamas County

Tootie Smith Date

APPROVED AS TO FORM

04/08/2024
County Counsel Date

CLACKAMAS COUNTY
NOTICE OF PUBLIC IMPROVEMENT CONTRACT OPPORTUNITY

INVITATION TO BID
New Clackamas Village Project
January 30, 2024

Clackamas County ("County"), on behalf of Housing and Community Development Division, through their Board of County Commissioners is accepting sealed bids for the New Clackamas Village Project until **March 5, 2024, 2:00 PM,** Pacific Time, ("Bid Closing"). Development of an emergency housing village on a vacant lot. Structures to be built offsite through modular construction process consisting of a kitchen module, two office modules, two bathroom modules, and eight sleeping modules. All units will be accessible by site built ramps and decks that are site built. Site work includes all foundations, utilities, storm ponds and paved areas. The project site is located at 16575 SE 115th Ave, Clackamas, OR 97015.

ACCESS BID DOCUMENTS AND DELIVER BIDS VIA EMAIL:
Bidding Documents can be downloaded from the state of Oregon procurement website ("OregonBuys") at the following address: https://oregonbuys.gov/bso/view/login/login.xhtml, Document No.S-C01010-00009328. 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. Send bids to Mark Sirois, Project Coordinator: marksir@clackamas.us

Project Estimate: $2.7 Million Dollars.

Project Schedule: Notice to Proceed, 180 Days to Substantial Completion and 210 Days to Final Completion.

Project Key Note(s):

1) State and county permits will be secured by the owner before construction start date.
2) Modular units are to be built offsite then delivered and installed onto foundations at the site.
3) February 23, 2024 is the last day for questions on this bid proposal. Questions and answers will be posted by February 27th.

Contact Information:
Bid Documents Questions, Plans and Specifications Questions to Mark Sirois, Project Coordinator:
marksir@clackamas.us
Drew Shreiner, Project Architect.

Mandatory Walk-throughs for this Project:
There will be two available dates and times: 1st walk-through on Monday, February 12, 2024 @ 11am
2nd walk-through on Thursday, February 15, 2023 @ 11am
The address is: 16575 SE 115th Ave, Clackamas, OR 97015

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, January 5, 2024, which can be downloaded at the following web address: BOLI : Prevailing Wage Rates : For Employers : State of Oregon The Work will take place in Clackamas County, Oregon.

Federal Prevailing Wage Rates: Not Applicable

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

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 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.

17.6 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 Housing and 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 race, color, religion, sex, sexual orientation, gender identity, national origin, marital status, age, disability or familial status.

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT

SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

Project Name: New Clackamas Village Project
(Clackamas, 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 ***2:00 p.m. Pacific Time, March 5, 2024***. The Bid must be emailed to the following address: marksir@clackamas.us. The email subject line must read "**Bid for New Clackamas Village 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/89504397462

Meeting ID: 895 0439 7462
Passcode: 426610

One tap mobile
+14086380968,,89504397462# US (San Jose)
+16694449171,,89504397462# US

Dial by your location
• +1 408 638 0968 US (San Jose)
• +1 669 444 9171 US
• +1 669 900 6833 US (San Jose)
• +1 719 359 4580 US
• +1 253 205 0468 US
• +1 253 215 8782 US (Tacoma)
• +1 346 248 7799 US (Houston)
• +1 360 209 5623 US
• +1 386 347 5053 US

• +1 507 473 4847 US
• +1 564 217 2000 US
• +1 646 876 9923 US (New York)
• +1 646 931 3860 US
• +1 689 278 1000 US
• +1 301 715 8592 US (Washington DC)
• +1 305 224 1968 US
• +1 309 205 3325 US
• +1 312 626 6799 US (Chicago)

Meeting ID: 895 0439 7462

Find your local number: https://clackamascounty.zoom.us/u/kjkmZFm65

**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 be required to adhere to all work performed, as a result of this procurement shall be conducted in strict accordance with all applicable local, state and federal regulations. Even if not specifically detailed in the Scope of Work, Drawings or Specifications all work shall be accomplished in accordance with all current City, County and State building codes/requirements. The contractor shall be responsible for all permits, locates and fees necessary to perform this work.

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 marksir@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: Asa Construction **Total Contract Amount:**
Project Name: New Clackamas Village Emergency Housing Project

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 to Steve Kelly, 2051 Kaen Road, Oregon City, OR 97045 or email to stevekel@clackamas.us within 2 hours of the BID/Quote Closing Date/Time

LIST ALL 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	**DOLLAR AMOUNT OF SUBCONTRACT**	If Certified or self-reporting MBE/WBE/ESB Subcontractor Check box ☑		
			MBE	WBE	ESB
Name Epling Address 1295 SE 62nd Ave City/St/Zip Hillsboro OR 97123 Phone# 971-236-2175 OCCB# 238584	Electrical	93K	☐	☐	☒
Name McDermott Address 9940 SE Oak St. City/St/Zip Portland 97216 Phone# 503-655-9619 OCCB# 201614	Fencing	63K	☐	☒	☐
Name ReCorp Address 2050 Beavercreek City/St/Zip Org. City 97045 Phone# 503-310-1098 OCCB#	Survey	17K	☐	☐	☒
Name Address City/St/Zip Phone# OCCB#			☐	☐	☐

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

Prime Contractor: Asa Construction
Project: New Clackamas Village Project

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 Sollicitation 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>>)	
Epling	Electrical	2/28/24	2/28/24	mark	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	93K		
McDermott	Fencing	2/28/24			[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes [X] No		too high	
Recon	Survey	2/28/24			[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	17 K		
					[ ] Yes [ ] No	[ ] Yes [ ] No	[ ] Yes [ ] No			
					[ ] Yes [ ] No	[ ] Yes [ ] No	[ ] Yes [ ] No			
					[ ] Yes [ ] No	[ ] Yes [ ] No	[ ] Yes [ ] No			
					[ ] Yes [ ] No	[ ] Yes [ ] No	[ ] Yes [ ] No			

CLACKAMAS COUNTY
GOOD FAITH EFFORT
PROJECT COMPLETION REPORT
(FORM 3)

Prime Contractor Name: Asa Construction **Total Contract Amount:**

Project Name: New Clackamas Village Project

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.

LIST ALL 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 ☑		
			MBE	WBE	ESB
Name Epling Address 1295 SE 162nd Ave City/St/Zip Hillsboro OR 97123 Phone# 971-236-2175 OCCB# 238584	Electrical	93K	☐	☐	☒
Name McGuires # Address 9940 SE Oak St City/St/Zip Portland OR 97216 Phone# 503-655-9619 OCCB# 2011616	Fencing	63K	☐	☒	☐
Name ReCorp Address 2050 Beavercreek City/St/Zip Org. City OR 97045 Phone# 503-310-1098 OCCB#	Survey	17K	☐	☐	☒
Name Address City/St/Zip Phone# OCCB#			☐	☐	☐
Name Address City/St/Zip Phone# OCCB#			☐	☐	☐
Name Address City/St/Zip Phone# OCCB#			☐	☐	☐

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

3.5.24
Date

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT

BID BOND

Project Name: New Clackamas VIllage Project

We, ASA Construction, LLC, as "Principal,"
(Name of Principal)

and Merchants Bonding Company (MUTUAL), an Iowa 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% ----)

Ten Percent (10%) of the Total Amount Bid ---------- 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. *) 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.

*S-C01010-00009328

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 5th day of March, 20 24 .

Principal: ASA Construction, LLC

By: _____
Signature

_____
Official Capacity

Attest: _____
Corporation Secretary

Surety: Merchants Bonding Company (MUTUAL)

By: Attorney-In-Fact

Nicholas Fredrickson
Name

2233 112th Avenue NE
Address

Bellevue WA 98004
City State Zip

(425) 709-3600 (425) 709-7460
Phone Fax

MERCHANTS BONDING COMPANY™

POWER OF ATTORNEY

Know All Persons By These Presents, that MERCHANTS BONDING COMPANY (MUTUAL) and MERCHANTS NATIONAL BONDING, INC., both being corporations of the State of Iowa, d/b/a Merchants National Indemnity Company (in California only) (herein collectively called the "Companies") do hereby make, constitute and appoint, individually,

Abigail A Bonney; Alec Gumpfer; Andrew Kerslake; Brenda Nolin; Charla M Boadle; Deanna M French; Derek Sabo; Elizabeth R Hahn; Francis Wirt; Gregory C Ryerson; Guy P Armfield; Jana M Roy; John N Bustard; John R Claeys; Justin Gwinn; Katelyn Cooper; Lauren Zakarian; Marie I Matetich; Mindee L Rankin; Nicholas Fredrickson; Roger Kaltenbach; Roland R Eugenio; Ronald J Lange; Sandy L Boswell; Scott A Garcia; Scott Fisher; Scott McGilvray; Sean K Spencer; Sharon L Pope; Shirley J Pace; Susan B Larson; William M Smith

their true and lawful Attorney(s)-in-Fact, to sign its name as surety(ies) and to execute, seal and acknowledge any and all bonds, undertakings, contracts and other written instruments in the nature thereof, on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

This Power-of-Attorney is granted and is signed and sealed by facsimile under and by authority of the following By-Laws adopted by the Board of Directors of Merchants Bonding Company (Mutual) on April 23, 2011 and amended August 14, 2015 and adopted by the Board of Directors of Merchants National Bonding, Inc., on October 16, 2015.

"The President, Secretary, Treasurer, or any Assistant Treasurer or any Assistant Secretary or any Vice President shall have power and authority to appoint Attorneys-in-Fact, and to authorize them to execute on behalf of the Company, and attach the seal of the Company thereto, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof."

"The signature of any authorized officer and the seal of the Company may be affixed by facsimile or electronic transmission 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 fixed."

In connection with obligations in favor of the Florida Department of Transportation only, it is agreed that the power and aut hority hereby given to the Attorney-in-Fact includes any and all consents for the release of retained percentages and/or final estimates on engineering and construction contracts required by the State of Florida Department of Transportation. It is fully understood that consenting to the State of Florida Department of Transportation making payment of the final estimate to the Contractor and/or its assignee, shall not relieve this surety company of any of its obligations under its bond.

In connection with obligations in favor of the Kentucky Department of Highways only, it is agreed that the power and authority hereby given to the Attorney-in-Fact cannot be modified or revoked unless prior written personal notice of such intent has been given to the Commissioner-Department of Highways of the Commonwealth of Kentucky at least thirty (30) days prior to the modification or revocation.

In Witness Whereof, the Companies have caused this instrument to be signed and sealed this 2nd day of February , 2024 .

MERCHANTS NATIONAL BONDING, INC. INCORPORATED -o- 2003

MERCHANTS BONDING COMPANY (MUTUAL) INCORPORATED -o- 1933

MERCHANTS BONDING COMPANY (MUTUAL)
MERCHANTS NATIONAL BONDING, INC.
d/b/a MERCHANTS NATIONAL INDEMNITY COMPANY

By Larry Taylor
President

STATE OF IOWA
COUNTY OF DALLAS ss.

On this 2nd day of February 2024 , before me appeared Larry Taylor, to me personally known, who being by me duly sworn did say that he is President of MERCHANTS BONDING COMPANY (MUTUAL) and MERCHANTS NATIONAL BONDING, INC.; and that the seals affixed to the foregoing instrument are the Corporate Seals of the Companies; and that the said instrument was signed and sealed in behalf of the Companies by authority of their respective Boards of Directors.

NOTARIAL SEAL IOWA

Penni Miller
Commission Number 787952
My Commission Expires
January 20, 2027

Notary Public

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

I, William Warner, Jr., Secretary of MERCHANTS BONDING COMPANY (MUTUAL) and MERCHANTS NATIONAL BONDING, INC., do hereby certify that the above and foregoing is a true and correct copy of the POWER-OF-ATTORNEY executed by said Companies, which is still in full force and effect and has not been amended or revoked.

In Witness Whereof, I have hereunto set my hand and affixed the seal of the Companies on this 5 day of March , 2024 .

MERCHANTS NATIONAL BONDING, INC. INCORPORATED -o- 2003

MERCHANTS BONDING COMPANY (MUTUAL) INCORPORATED -o- 1933

William Warner Jr.
Secretary

POA 0018 (1/24)

CLACKAMAS COUNTY

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT

BID FORM

PROJECT: New Clackamas Village
BID CLOSING: March 5, 2024 at 2p.m.
BID OPENING: March 5, 2024 at 2p.m.

FROM: Asa Construction
Bidder's Name (must be full legal name, not ABN/DBA)

EMAIL: Mark Sirois, Project Manager, marksir@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 _____; or

__X__d. A limited liability corporation organized under the laws of the State of Oregon;

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:

Three million two hundred eleven thousand five hundred and five 75/100 Dollars ($ 3,211,505.75)

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 4, inclusive *(fill in blanks)*

Important Note: ----------
These items will not be included, yet in the essence of time, the County is not removing these items from the Plans (i.e. Drawings) and Specifications. **N/A**

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 Base Bid Schedule with Bid, see below.**

Base Bid Schedule

Item No.	Description	Quantity	Unit	Unit Price	Total
	GENERAL REQUIREMENTS				
Div 01	**General Conditions/** Mobilization	1	LS	563,781	563,781.00
	SITE PREPARATION				
Div 01	Selective Demolition, removal of materials and debris per CIVIL Drawings C1.00	1	LS	350,000	350,000.00
	New Fencing and gates	860	LF	70.38	60,526.80
Div 03/ S2.0B	Foundations for 13 modular buildings	13	EA	7,140	92,820.00
Div 33	**SITE UTILITIES**				
Civil	Water and Sewer lines, Electrical lines	1	LS	100,000	100,000.00
	MODULAR SLEEPING UNITS				
	Construction, delivery and installation of 8 three-bedroom modular units per specs.	8	EA	112,110.00	896,880.00
	MODULAR OFFICE UNITS				
	Construction, delivery and installation of 2 modular office units per specs.	2	EA	140,981.00	281,962.00
	MODULAR BATHROOM UNITS				
	Construction, delivery and installation of 2 three-bathroom modular units per specs.	2	EA	174,498.00	348,996.00
	MODULAR KITCHEN AND DINING UNIT				
	Construction, delivery and installation of 1 Kitchen modular unit per specs.	1	EA	241,144.00	241,144.00
	SITE IMPROVEMENTS				
	Walkways per CIVIL C2.00	1	LS	23,008	23,008.00
	Ramps per Architectural and Structural drawings	1	LS	10,890.00	10,890.00
	Decks per Architectural and Structural drawings	1	LS	167,814.95	167,814.95
	External Site Lighting per A001	1	LS	8,000.00	8,000.00
	Driveways, stormwater treatment facilities per CIVIL	1	LS	33,750.00	33,750.00
	Trash enclosure per Architectural drawings	1	LS	11,300.00	11,300.00
	Stormwater connections and rain gutter installs	1	LS	20,633.00	20,633.00
				Base Bid	
				TOTAL BID AMOUNT	3,211,505.75

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:

Parker Smith + Feek.

(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 221391. 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 Ohio Security Ins, Policy No. USPC0067923, and that Contractor shall submit Certificates of Insurance as required.

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

Project Executive: Heather Asa, Cell Phone: 503·803·9560,
Project Manager: Heather Asa, Cell Phone: 503·913·3383,
Job Superintendent: Bailey Dunncoop, Cell Phone: 503·515·3756,
Project Engineer: Lorelle Newland, Cell Phone: 503·803·9560.

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: Asa Construction

ADDRESS: PO Box 699
Estacada OR 97023

TELEPHONE NO: 503·803·9560

EMAIL: heather@asaconstruction.com

SIGNATURE 1) _____
Sole Individual

or 2) _____
Partner

or 3) _____
Authorized Officer or Employee of Corporation

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

FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM
PROJECT: HAVEN HOUSE ROOF PROJECT (CD #1836)

BID OPENING: 3/5/24, Thursday, 2:00 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: marksir@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.	Pacific	1,687,056	Buildings
2.	Willamette	60,520	Fencing
3.	AEC	29,310	Erosion
4.	Tory	128,008	Concrete
5.	Valley Pav.	33,750	Paving
6.	Epling	93,000	Electrical

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: Asa Construction

Bidder Signature: [signature] Phone # 503·913·3383

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT
SUPPLEMENTAL GENERAL CONDITIONS

PROJECT: New Clackamas Village

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 it is entirety and replaced with the following:

B.4 PERMITS

The Architect (BaseDesign) has confirmed they have submitted an application for permits with the State of Oregon and Clackamas County Permit Office.

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, **180 days from issuance from Notice to Proceed, Estimated to be July 1, 2024,** and as further required in the Plans and Specifications and Section 13 of the Contract to be completed by December 28, 2024, this is an estimated date based on the Contract being fully executed, in early July. Time will be of the essence to open the new building for operation of a new emergency housing facility, 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.

(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 $1,000 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 one thousand dollars ($1,000.00) 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

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT

PERFORMANCE BOND

Bond No.: ORC45530
Project Name: New Clackamas Village

Merchants Bonding Company (MUTUAL) (Surety #1)	Bond Amount No. 1:	$3,211,505.75
N/A (Surety #2)*	Bond Amount No. 2:*	$ N/A
* *If using multiple sureties*	Total Penal Sum of Bond:	$3,211,505.75

We, ASA Construction, LLC 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) Three Million, Two Hundred Eleven Thousand, Five Hundred Five & 75/100ths (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 4th day of April, 20 24.

PRINCIPAL: ASA Construction, LLC

By: _____
Signature

_____
Official Capacity

Attest: _____
Corporation Secretary

SURETY: Merchants Bonding Company (MUTUAL)
[Add signatures for each if using multiple bonds]

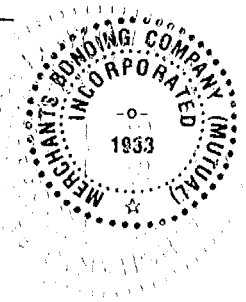
BY ATTORNEY-IN-FACT:
[Power-of-Attorney must accompany each bond]

Nicholas Fredrickson
Name

Nicholas Fredrickson
Signature

2233 112th Avenue NE
Address

Bellevue	WA	98004
City	State	Zip
(425) 709-3600	(425) 709-7460	
Phone	Fax	



MERCHANTS BONDING COMPANY™

POWER OF ATTORNEY

Know All Persons By These Presents, that MERCHANTS BONDING COMPANY (MUTUAL) and MERCHANTS NATIONAL BONDING, INC., both being corporations of the State of Iowa, d/b/a Merchants National Indemnity Company (in California only) (herein collectively called the "Companies") do hereby make, constitute and appoint, individually,

Abigail A Bonney; Alec Gumpfer; Andrew Kerslake; Brenda Nolin; Charla M Boadle; Deanna M French; Derek Sabo; Elizabeth R Hahn; Francis Wirt; Gregory C Ryerson; Guy P Armfield; Jana M Roy; John N Bustard; John R Claeys; Justin Gwinn; Katelyn Cooper; Lauren Zakarian; Marie I Matetich; Mindee L Rankin; Nicholas Fredrickson; Roger Kaltenbach; Roland R Eugenio; Ronald J Lange; Sandy L Boswell; Scott A Garcia; Scott Fisher; Scott McGilvray; Sean K Spencer; Sharon L Pope; Shirley J Pace; Susan B Larson; William M Smith

their true and lawful Attorney(s)-in-Fact, to sign its name as surety(ies) and to execute, seal and acknowledge any and all bonds, undertakings, contracts and other written instruments in the nature thereof, on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

This Power-of-Attorney is granted and is signed and sealed by facsimile under and by authority of the following By-Laws adopted by the Board of Directors of Merchants Bonding Company (Mutual) on April 23, 2011 and amended August 14, 2015 and adopted by the Board of Directors of Merchants National Bonding, Inc., on October 16, 2015.

"The President, Secretary, Treasurer, or any Assistant Treasurer or any Assistant Secretary or any Vice President shall have power and authority to appoint Attorneys-in-Fact, and to authorize them to execute on behalf of the Company, and attach the seal of the Company thereto, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof."

"The signature of any authorized officer and the seal of the Company may be affixed by facsimile or electronic transmission 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 fixed."

In connection with obligations in favor of the Florida Department of Transportation only, it is agreed that the power and aut hority hereby given to the Attorney-in-Fact includes any and all consents for the release of retained percentages and/or final estimates on engineering and construction contracts required by the State of Florida Department of Transportation. It is fully understood that consenting to the State of Florida Department of Transportation making payment of the final estimate to the Contractor and/or its assignee, shall not relieve this surety company of any of its obligations under its bond.

In connection with obligations in favor of the Kentucky Department of Highways only, it is agreed that the power and authority hereby given to the Attorney-in-Fact cannot be modified or revoked unless prior written personal notice of such intent has been given to the Commissioner-Department of Highways of the Commonwealth of Kentucky at least thirty (30) days prior to the modification or revocation.

In Witness Whereof, the Companies have caused this instrument to be signed and sealed this 2nd day of February , 2024 .

MERCHANTS NATIONAL BONDING, INC. INCORPORATED -o- 2003

MERCHANTS BONDING COMPANY (MUTUAL) INCORPORATED -o- 1933

MERCHANTS BONDING COMPANY (MUTUAL)
MERCHANTS NATIONAL BONDING, INC.
d/b/a MERCHANTS NATIONAL INDEMNITY COMPANY

By Larry Taylor
President

STATE OF IOWA
COUNTY OF DALLAS ss.

On this 2nd day of February 2024 , before me appeared Larry Taylor, to me personally known, who being by me duly sworn did say that he is President of MERCHANTS BONDING COMPANY (MUTUAL) and MERCHANTS NATIONAL BONDING, INC.; and that the seals affixed to the foregoing instrument are the Corporate Seals of the Companies; and that the said instrument was signed and sealed in behalf of the Companies by authority of their respective Boards of Directors.

NOTARIAL SEAL IOWA

Penni Miller
Commission Number 787952
My Commission Expires
January 20, 2027

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

Notary Public

I, William Warner, Jr., Secretary of MERCHANTS BONDING COMPANY (MUTUAL) and MERCHANTS NATIONAL BONDING, INC., do hereby certify that the above and foregoing is a true and correct copy of the POWER-OF-ATTORNEY executed by said Companies, which is still in full force and effect and has not been amended or revoked.

In Witness Whereof, I have hereunto set my hand and affixed the seal of the Companies on this 4th day of April , 2024 .

MERCHANTS NATIONAL BONDING, INC. INCORPORATED -o- 2003

MERCHANTS BONDING COMPANY (MUTUAL) INCORPORATED -o- 1933

William Warner Jr.
Secretary

POA 0018 (1/24)

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT

PAYMENT BOND

Bond No.: ORC45530
Project Name: New Clackamas Village

Merchants Bonding Company (MUTUAL) (Surety #1)	Bond Amount No. 1:	$ 3,211,505.75
N/A (Surety #2)*	Bond Amount No. 2:*	$ N/A
* *If using multiple sureties*	Total Penal Sum of Bond:	$ 3,211,505.75

We, ASA Construction, LLC, 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) Three Million, Two Hundred Eleven Thousand, Five Hundred Five & 75/100ths (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 4th day of April, 20 24.

PRINCIPAL: ASA Construction, LLC

By: _____
Signature

_____
Official Capacity

Attest: _____
Corporation Secretary

SURETY: Merchants Bonding Company (MUTUAL)
[Add signatures for each if using multiple bonds]

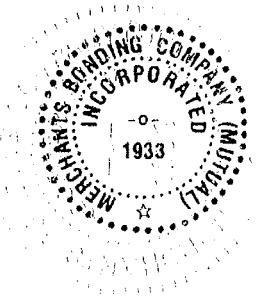
BY ATTORNEY-IN-FACT:
[Power-of-Attorney must accompany each bond]

Nicholas Fredrickson
Name

_____
Signature

2233 112th Avenue NE
Address

Bellevue	WA	98004
City	State	Zip
(425) 709-3600	(425) 709-7460	
Phone	Fax	



MERCHANTS BONDING COMPANY™

POWER OF ATTORNEY

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their true and lawful Attorney(s)-in-Fact, to sign its name as surety(ies) and to execute, seal and acknowledge any and all bonds, undertakings, contracts and other written instruments in the nature thereof, on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

This Power-of-Attorney is granted and is signed and sealed by facsimile under and by authority of the following By-Laws adopted by the Board of Directors of Merchants Bonding Company (Mutual) on April 23, 2011 and amended August 14, 2015 and adopted by the Board of Directors of Merchants National Bonding, Inc., on October 16, 2015.

"The President, Secretary, Treasurer, or any Assistant Treasurer or any Assistant Secretary or any Vice President shall have power and authority to appoint Attorneys-in-Fact, and to authorize them to execute on behalf of the Company, and attach the seal of the Company thereto, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof."

"The signature of any authorized officer and the seal of the Company may be affixed by facsimile or electronic transmission 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 fixed."

In connection with obligations in favor of the Florida Department of Transportation only, it is agreed that the power and aut hority hereby given to the Attorney-in-Fact includes any and all consents for the release of retained percentages and/or final estimates on engineering and construction contracts required by the State of Florida Department of Transportation. It is fully understood that consenting to the State of Florida Department of Transportation making payment of the final estimate to the Contractor and/or its assignee, shall not relieve this surety company of any of its obligations under its bond.

In connection with obligations in favor of the Kentucky Department of Highways only, it is agreed that the power and authority hereby given to the Attorney-in-Fact cannot be modified or revoked unless prior written personal notice of such intent has been given to the Commissioner-Department of Highways of the Commonwealth of Kentucky at least thirty (30) days prior to the modification or revocation.

In Witness Whereof, the Companies have caused this instrument to be signed and sealed this 2nd day of February , 2024 .

MERCHANTS NATIONAL BONDING, INC. -o- 2003

MERCHANTS BONDING COMPANY (MUTUAL) INCORPORATED -o- 1933

MERCHANTS BONDING COMPANY (MUTUAL)
MERCHANTS NATIONAL BONDING, INC.
d/b/a MERCHANTS NATIONAL INDEMNITY COMPANY

By Larry Taylor
President

STATE OF IOWA
COUNTY OF DALLAS ss.

On this 2nd day of February 2024 , before me appeared Larry Taylor, to me personally known, who being by me duly sworn did say that he is President of MERCHANTS BONDING COMPANY (MUTUAL) and MERCHANTS NATIONAL BONDING, INC.; and that the seals affixed to the foregoing instrument are the Corporate Seals of the Companies; and that the said instrument was signed and sealed in behalf of the Companies by authority of their respective Boards of Directors.

NOTARIAL SEAL IOWA

Penni Miller
Commission Number 787952
My Commission Expires
January 20, 2027

Notary Public

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

I, William Warner, Jr., Secretary of MERCHANTS BONDING COMPANY (MUTUAL) and MERCHANTS NATIONAL BONDING, INC., do hereby certify that the above and foregoing is a true and correct copy of the POWER-OF-ATTORNEY executed by said Companies, which is still in full force and effect and has not been amended or revoked.

In Witness Whereof, I have hereunto set my hand and affixed the seal of the Companies on this 4th day of April , 2024 .

MERCHANTS NATIONAL BONDING, INC. -o- 2003

MERCHANTS BONDING COMPANY (MUTUAL) INCORPORATED -o- 1933

William Warner Jr.
Secretary

POA 0018 (1/24)

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.

TABLE OF SECTIONS

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 (5^{th}) 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
1st Tier Sub Contractor	5%	$1,000.00
2nd 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 additional compensation or additional Contract Time 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 Contactor, 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 Contractors 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 not 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.

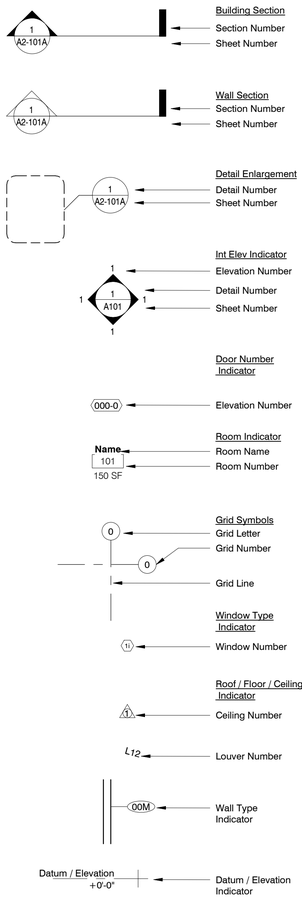
L.14 WAIVER

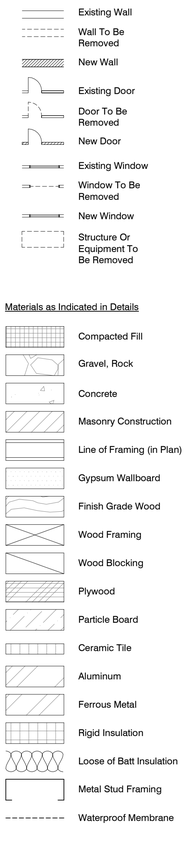
Failure of the Owner to enforce any provision of this Contract shall not constitute a waiver or relinquishment by the Owner of the right to such performance in the future nor of the right to enforce any other provision of this Contract.

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.

SYMBOLS





Materials as Indicated in Details

PROJECT SUMMARY

Development of emergency housing village on vacant lot. Structures are built through modular process consisting of a kitchen module, two office modules, two bathroom modules, and eight sleeping modules. All units are accessible by site built ramps and decks that are site built. Site work includes all foundations, utilities and paved areas.

Trade Permits under separate trade permits. Electrical, Plumbing, Mechanical, and Fire Arm

PROJECT CONTACTS:

Owner / Developer:

Clackamas County Community Development
Contact : Mark Sirois
2051 Kaen Road, Suite 245
Oregon City, OR 97045
Phone: 503.655.8591
Email: CDGeneral@clackamas.us

Architect:

Base Design and Architecture LLC Project
Manager: Drew Shreiner
1300 SE Stark Street #209
Portland, OR 97214
503.477.8268
drew@basedesignarchitecture.com

Structural:

All Structure Engineering
Contact: Ryan Hardie
16154 SW Upper Boones Ferry Road
Portland, OR 97224
Phone: 503.620.4314
Email: ryanh@allstructure.com

Civil Engineer:

DCI Engineers
Contact: Kyle England
921 SW Washington St. Suite 560
Portland, OR. 97205
Phone: 503.242.2448
Email: kengland@dci-engineers.com

Geotechnical Engineer:
Carlson Geotechnical
18270 SW Boones Ferry Road Suite 6
Durham, OR. 97224
Phone: 503.601.8250
Email: info@carlsontesting.com

SHEET INDEX:

ZONING SUMMARY

SITE INFORMATION		
Address:	16590 SE 114th Avenue Clackamas County, Oregon	
Applicable Zoning:	Clackamas County	
Tax Lot #:	22E15A 01200	
Neighborhood:		
Zoning:	Designation: GI Urban Growth Boundary: METRO UGB	
Lot Size:	3.85 Acres	
Elevation:	120 SF	

PROPOSED ZONING REGULATIONS		
Maximum FAR:	N/A	
Max Height:	35'-0" Max	
Lot Area:	3.818 Acres 166,313 SF	
Coverage Area:		PROPOSED:
Building Area:		1,947 SQ. FT.
Covered Patio Roof		418 SQ. FT.
Combined Coverage:		2,365 SQ. FT.
Building Areas:	PROPOSED:	
Office #1	504 SF	
Office #2	504 SF	
Kitchen / Laundry	784 SF	
(2) Bathroom Units	(2)	
(8) Sleeping Units	(8)	
Combined Building Area:		
Setbacks:	FRONT: 10'-0"	REAR: 10'-0"
	SIDE: 10'-0"	SIDE: 10'-0"
Parking Required	N/A	
Landscape Required	N/A	
Glazing Required	N/A	
Bike Parking	N/A	

ENERGY CODE SUMMARY

ENERGY CODE REQUIREMENTS (2021 OREGON ENERGY EFFICIENCY SPECIALTY CODE)	
Method of Analysis	Prescriptive
Climate Zone	4C
Building Type	Commercial
PRESCRIPTIVE BUILDING ENVELOPE REQUIREMENTS - OPAQUE ASSEMBLIES (5.5-4)	
BUILDING COMPONENT	REQUIRED PERFORMANCE (Standand Base Case)
Wall - Above Grade	R-9.5 Continuous Rigid Insulation
Wall - Below Grade	N/A
Roof (Attic & Other)	R-49
Roof (Insulation above deck)	R-30
Floors (wood -framed)	R-30
Opaque Doors (swinging)	U-0.37
Opaque Doors (non-swinging)	U-0.31

PRESCRIPTIVE BUILDING ENVELOPE REQUIREMENTS - Fenestration (5.5-4)		
WALL AREA:	WINDOW AREA:	GLAZING FRACTION:
BUILDING COMPONENT	max U-Factor	max SHGC
Fixed	U-0.36	U-0.36
Operable	U-0.45	U-0.33
Entrance Door	U-0.63	U-0.33
Skylights	U-0.50	U-0.40

AIR LEAKAGE REQUIREMENTS (5.8.3):

1. Reference Specifications for storefront, door, and window assembly requirements.
2. Reference Details for sealing of the building envelope sealing and Specifications for joint and sealant products.
3. Outdoor air intake and exhaust openings to be equipped with a Class I motorized leakage-rated damper with a max. leakage rate of 4cfm/sf at 1.0inwater guage per AMCA 500D.
4. Recessed light fixtures between conditioned and unconditioned spaces are to be sealed to limit air leakage and be IC rated and labeled per Specifications.

BUILDING MECHANICAL SYSTEMS (6.4):

1. Mechanical systems provided under separate trade permit with tenant improvements.
2. Mechanical sub-contractor to provide system to meet all requirements of Oregon Energy Efficiency Specialty Code Chapter 6.

BUILDING POWER & LIGHTING (8.4 & 9.4):

1. Electrical systems provided under separate trade permit with tenant improvements.
2. Electrical sub-contractor to provide system to meet all requirements of Oregon Energy Efficiency Specialty Code Chapter 8.
3. Reference Specifications for lighting controls requirements
4. Interior lighting power requirements & allowances are to be determined with Lighting Zone 4. Reference lighting Energy Forms.
5. Interior lighting power allowances & requirements are per the Prescriptive Method per Oregon Energy Efficiency Specialty Code Chapter 9. Reference Lighting Energy Forms.

CODE SUMMARY

CHAPTER 1	ADMINISTRATION
Address:	16590 SE 114th Avenue Clackamas County, Oregon
Jurisdictional Authority:	Clackamas County
Applicable Code:	2022 Oregon Structural Specialty Code (OSSC)

CHAPTER 3	USE AND OCCUPANCY CLASSIFICATION	
304.1	Proposed Occupancies:	Group B

CHAPTER 4	SPECIAL DETAIL REQUIREMENTS
404.6	N/A

CHAPTER 5	GENERAL BUILDING HEIGHTS & AREAS			
504.4, 506.2	Areas	Group	Allowable Area	Proposed Area
		B	9,000 SF	497 SF
	Stories	Group	Allowable Stories	Proposed Stories
		B	2	1

CHAPTER 6	TYPES OF CONSTRUCTION
Construction Type :	VB
Allowable Height:	40'-0" (Proposed 13'-9")
Sprinklers:	No
Special Provisions:	None

CHAPTER 7	FIRE AND SMOKE PROTECTION FEATURES		
Table 705.8	Exterior Wall Openings	0 to less than 3 FT	NOT PERMITTED
		3 FT to less than 5 FT	NOT PERMITTED
		5 FT to less than 10 FT	10%
		10 FT to less than 15 FT	15%
		15 FT to less than 20 FT	25%
		20 FT to less than 25 FT	45%
		25 FT to less than 30 FT	70%
		30 FT or greater	45%

CHAPTER 9	FIRE PROTECTION SYSTEMS (2021 Oregon Fire Code)	
Provided :	Type / Class:	Required or Optional:
Sprinkler System:	No	Not Requiered
Fire Alarm System:	Yes	
Standpipe System:	None	
Smoke Detection System	None	
Notes & Provisions:		

CHAPTER 10	MEANS OF EGRESS	
Table 1016.1	Exiting & Occupant Load	See Life Safety Occupant Load Schedule
	Travel Distance	250 FT Max Travel Distance 125 FT Max Common Path of Travel
	Area of Refuge	Not Requiered
	Corridors	

CHAPTER 29	PLUMBING FIXTURES : OFFICES 1 & 2			
Table 2902.1	WC: MALE	WC: FEMALE	LAVATORY	BATH/SHOWER
B : XXX	1 PER 25		1 PER 40	Not Required
Required				
Provided				

base

Permit Set
1/1/2024

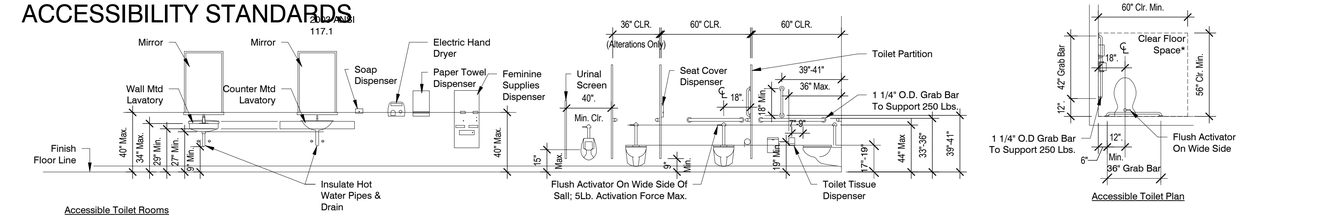
Revision
Date: Issue:

Clackamas Emergency Shelter Village
16590 SE 114th Ave
Clackamas, Oregon 97015

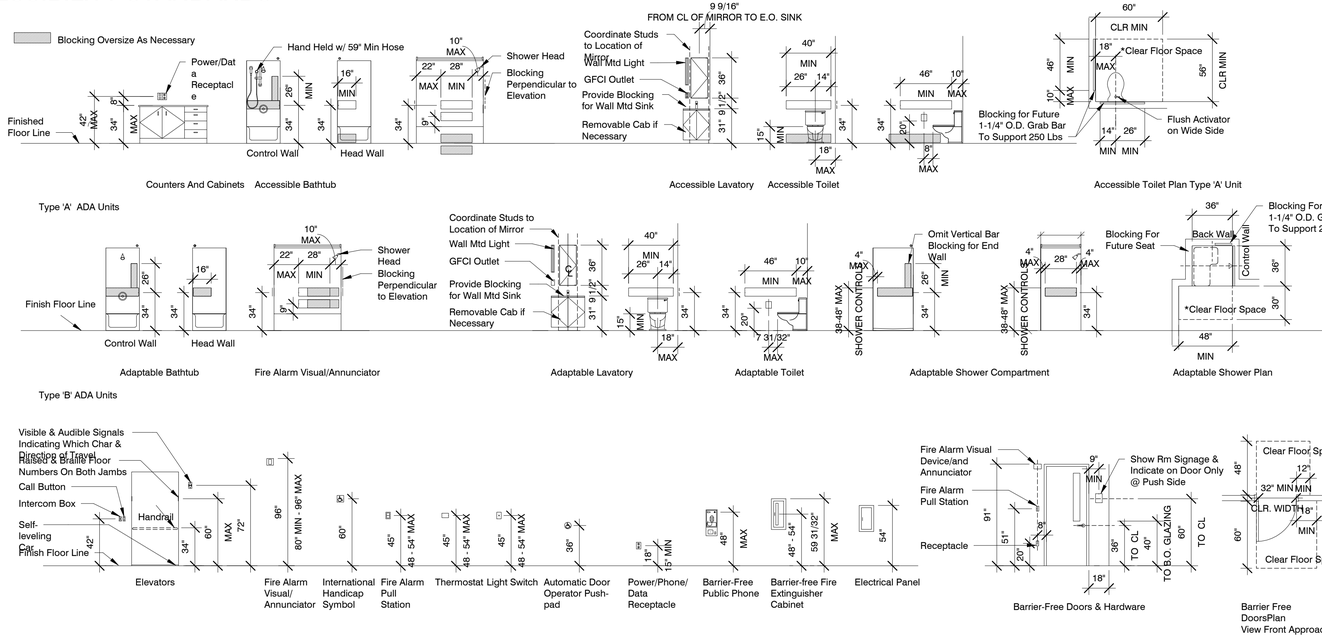
Sheet Title:
GENERAL INFORMATION

Sheet Number:
G001

ACCESSIBILITY STANDARDS



ACCESSIBILITY STANDARDS (ADAS 117.1)



base

Permit Set
1/1/2024

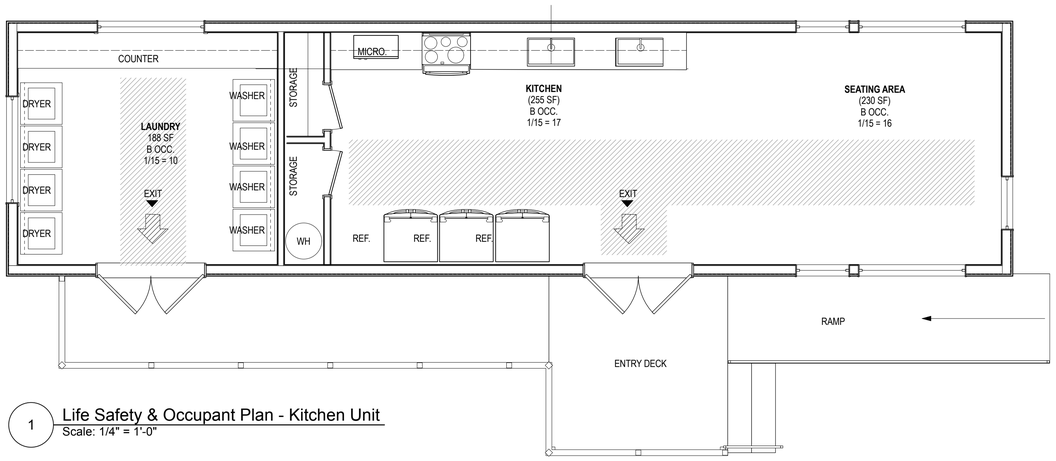
Revision	
Date:	Issue:

Clackamas Emergency Shelter Village
16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title:
ACCESSIBILITY REQUIREMENTS

Sheet Number:
G002

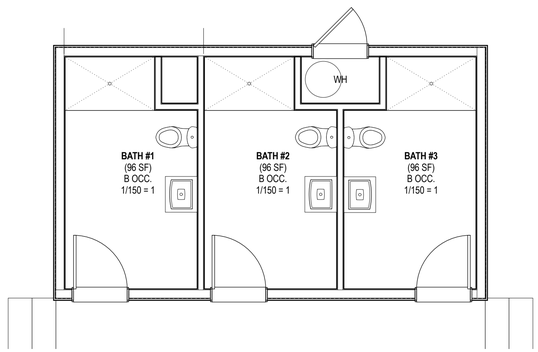
Occupancy SF Breakdown - Proposed Kitchen & Laundry				
Area	Occupant Type	Area	Occupant Load Factor	Occupant Load
Seating Area	B	230 SF	1/15	16 Occ.
Kitchen	B	255 SF	1/15	17 Occ.
Laundry	B	188 SF	1/15	10 Occ.
				10 Occupants



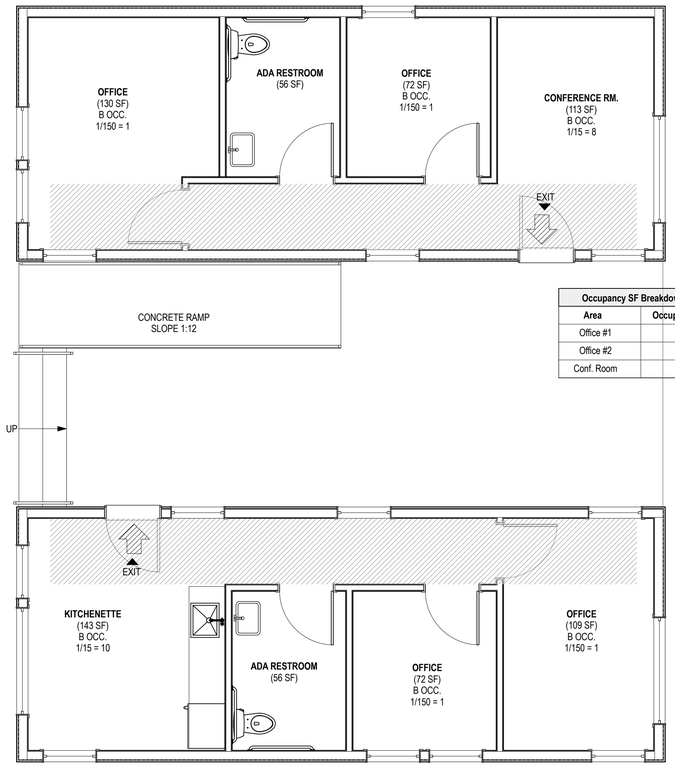
1 Life Safety & Occupant Plan - Kitchen Unit
Scale: 1/4" = 1'-0"

Occupancy SF Breakdown - Proposed Sleeping Unit				
Area	Occupant Type	Area	Occupant Load Factor	Occupant Load
Unit #1	R-1	96 SF	1/200	1 Occ.
Unit #2	R-1	96 SF	1/200	1 Occ.
Unit #3	R-1	96 SF	1/200	1 Occ.
				3 Occupants

3 Life Safety & Occupant Plan - 3 Unit
Scale: 1/4" = 1'-0"



2 Life Safety & Occupant Plan - 3 Unit Bath
Scale: 1/4" = 1'-0"



Occupancy SF Breakdown - Proposed Office #1				
Area	Occupant Type	Area	Occupant Load Factor	Occupant Load
Office #1	B	72 SF	1/150	1 Occ.
Office #2	B	130 SF	1/150	1 Occ.
Conf. Room	B	113 SF	1/15	8 Occ.
				10 Occupants

Occupancy SF Breakdown - Proposed Office #2				
Area	Occupant Type	Area	Occupant Load Factor	Occupant Load
Office #1	B	72 SF	1/150	1 Occ.
Office #2	B	109 SF	1/150	1 Occ.
Kitchenette	B	143 SF	1/15	10 Occ.
				12 Occupants

4 Life Safety & Occupant Plan - Office Units
Scale: 1/4" = 1'-0"

Occupancy SF Breakdown - Proposed Sleeping Unit				
Area	Occupant Type	Area	Occupant Load Factor	Occupant Load
Bath #1	B	96 SF	1/150	1 Occ.
Bath #2	B	96 SF	1/150	1 Occ.
Bath #3	B	96 SF	1/150	1 Occ.

Legend

- 1 HOUR FIRE RATED ENCLOSURE / BARRIER
- 2 HOUR FIRE RATED ENCLOSURE / BARRIER
- EXIT DISCHARGE TO PUBLIC WAY
- EGRESS PATH - MAINTAIN 44" CLEAR UNLESS OTHERWISE NOTED ON PLANS
  32" CLEAR WIDTH @ DOORS
- EXIT — EXIT SIGN
- FE — FIRE EXTINGUISHER (TYPE 2A) TO BE RECESSED IN WALL TYP.
  PROVIDE COVERAGE PER NFPA 10
  MIN 2A BC EXTINGUISHERS MAX TRAVEL IS 75'

base

Permit Set
1/1/2024

Revision	
Date:	Issue:

Clackamas Emergency Shelter Village
16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title:
LIFE SAFETY & OCCUPANCY & EGRESS PLAN

Sheet Number:
G003

CLACKAMAS COUNTY EMERGENCY SHELTER

CLACKAMAS, OR

GENERAL CONSTRUCTION NOTES:

1. UNLESS SPECIFICALLY EXCEPTED IN THE PLANS OR CONTRACT DOCUMENTS, ALL CONSTRUCTION METHODS AND MATERIALS SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND PLANS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION PROMULGATED BY THE OREGON STATE DEPARTMENT OF TRANSPORTATION AND CLACKAMAS COUNTY MUNICIPAL CODE.
2. THE PLANS ARE SCHEMATIC AND ARE NOT INTENDED TO DEPICT ALL DETAILS OF THE WORK REQUIRED. THE CONTRACTOR SHALL BE RESPONSIBLE TO FAMILIARIZE HIMSELF WITH ACTUAL SITE CONDITIONS, REQUIREMENTS AND FACTORS AFFECTING THE WORK. WHERE LACK OF DETAIL OR CONFLICT EXISTS BETWEEN THESE AND OTHER PLANS, THE CONTRACTOR SHALL NOTIFY THE OWNER TO RESOLVE THE ISSUE PRIOR TO PROCEEDING. IF THE CONTRACTOR DISCOVERS ANY DISCREPANCIES BETWEEN THE PLANS AND EXISTING CONDITIONS ENCOUNTERED, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER.
3. THIS PLAN MAY NOT SHOW ALL EXISTING UTILITIES. EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE. PRIOR TO CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES. CALL THE UNDERGROUND UTILITY LOCATION SERVICE AT (811) BEFORE YOU DIG. ANY CONFLICTING UTILITIES SHALL BE RELOCATED PRIOR TO CONSTRUCTION. IN THE CASE WHERE RELOCATION IS REQUIRED, THE APPLICABLE UTILITY COMPANY SHALL BE NOTIFIED AND ANY COST REQUIRED FOR RELOCATION OR ADJUSTMENTS SHALL BE AGREED UPON.
4. THE ENGINEER HAS ATTEMPTED TO SHOW ALL EXISTING UNDERGROUND UTILITIES AND STRUCTURES. APPEARANCE ON THESE PLANS, HOWEVER, DOES NOT GUARANTEE THE ACCURACY AND COMPLETENESS OF THE LOCATION OR EXISTENCE OF THESE UTILITIES AND/OR SUBSTRUCTURES. THE CONTRACTOR IS REQUIRED TO TAKE ALL REQUIRED PRECAUTIONARY MEANS TO LOCATE AND PROTECT ALL EXISTING UTILITIES AND SUBSTRUCTURES WHETHER SHOWN OR NOT, PRIOR TO EXCAVATION IN ANY AREA. THE CONTRACTOR SHALL MEET AT THE JOB SITE WITH REPRESENTATIVES OF THE UTILITY DISTRICTS, COMPANIES, AND OTHER OWNERS THAT MAY HAVE EXISTING FACILITIES AT THE SITE, AND DISCUSS THEIR PROTECTION.
5. THE CONTRACTOR IS REQUIRED TO HAVE A COMPLETE SET OF APPROVED PLANS ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS. THE CONTRACTOR SHALL HAVE A RESPONSIBLE PARTY, WHO HAS THE AUTHORITY TO REPRESENT AND ACT FOR THE CONTRACTOR, AT THE JOB SITE DURING ALL WORKING HOURS.
6. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS AND APPROVALS FROM CLACKAMAS COUNTY, AND OTHER JURISDICTIONS PRIOR TO THE START OF CONSTRUCTION. ABSENCE OF THE PERMIT MAY RESULT IN IMMEDIATE SHUT DOWN OF WORK AND POSSIBLE REMOVAL OF THE ITEMS CONSTRUCTED WITHOUT A PERMIT.
7. THE CONTRACTOR SHALL PROVIDE THE DESIGN ENGINEER WITH RECORD DRAWINGS PRIOR TO FINAL APPROVAL. ALL DEVIATIONS FROM THE ORIGINAL PLANS MADE DURING THE COURSE OF THE CONSTRUCTION INCLUDING LOCATION, INVERTS, AND DEPTHS OF UTILITIES SHALL BE CLEARLY MARKED ON THE RECORD DRAWINGS. THE ENGINEER SHALL PROVIDE THE CITY ENGINEER WITH "RECORD DRAWINGS" AS REQUIRED.
8. THE SURVEY IS FOR INFORMATIONAL PURPOSES ONLY. NO CERTIFICATIONS ARE EXPRESSED OR IMPLIED. THE SURVEY WAS PROVIDED BY CHASE, JONES & ASSOCIATES, INC.
9. CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, AND EQUIPMENT TO CONSTRUCT AND INSTALL TO PROPER WORKING ORDER, THE DESIGN SHOWN, AS DETAILED OR CALLED OUT IN THESE PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR BEING FAMILIAR WITH THE PROVISIONS AND REQUIREMENTS CONTAINED IN THE STANDARD SPECIFICATIONS.
10. IF CONSTRUCTION IS TO TAKE PLACE IN PUBLIC RIGHT-OF-WAY, THE CONTRACTOR SHALL NOTIFY THE GOVERNING MUNICIPALITY (CLACKAMAS COUNTY OR ODOT) AND OBTAIN ALL THE REQUIRED APPROVALS AND PERMITS. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL PLAN(S) IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AS REQUIRED. PRIOR TO DISRUPTION OF ANY TRAFFIC, A TRAFFIC PLAN SHALL BE PREPARED AND SUBMITTED TO THE GOVERNING MUNICIPALITY FOR APPROVAL. NO WORK SHALL COMMENCE UNTIL ALL APPROVED TRAFFIC CONTROL IS IN PLACE.
11. A PRE-CONSTRUCTION MEETING SHALL BE HELD WITH CLACKAMAS COUNTY PRIOR TO THE START OF CONSTRUCTION.
12. ANY CHANGES TO THE DESIGN SHALL FIRST BE REVIEWED AND APPROVED BY THE PROJECT ENGINEER AND CLACKAMAS COUNTY.
13. ALL TESTING SHALL BE IN ACCORDANCE WITH THE ODOT STANDARD SPECIFICATIONS (LATEST EDITION).
14. THE CONTRACTOR SHALL REMOVE ALL WASTE MATERIAL IN A SAFE AND APPROVED MANNER.
15. PORTLAND CEMENT CONCRETE ON SITE SHALL HAVE AN 28-DAY STRENGTH OF 3,000PSI, MINIMUM. CONTRACTOR SHALL SUBMIT DOCUMENTATION CONFIRMING THESE REPORTS TO THE ENGINEER DURING CONSTRUCTION. SLUMP SHALL BE 4", MAXIMUM.

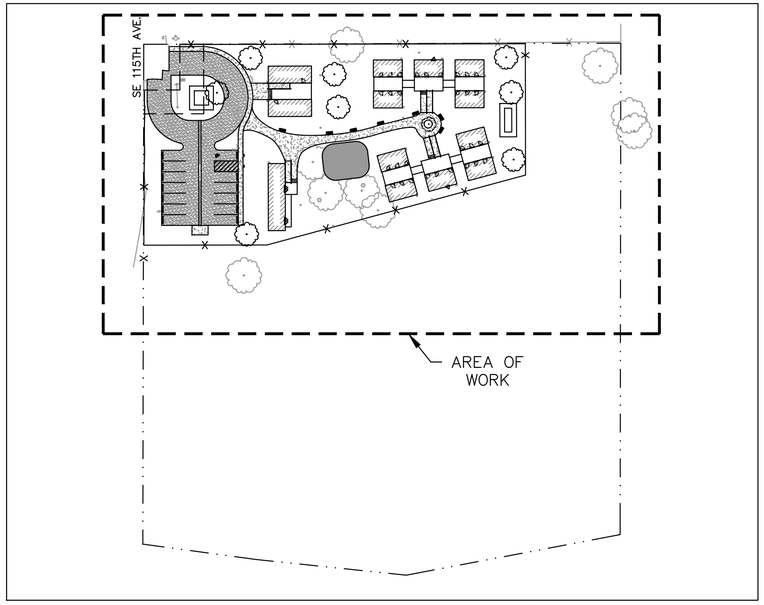
UTILITY NOTES:

1. RIM ELEVATIONS OF UTILITY STRUCTURES SHALL BE INSTALLED SO THAT THE RIM MAY BE ADJUSTED ±0.5 FEET TO MATCH FINISHED GRADES.
2. CONTRACTOR SHALL PLACE MARKING TAPE IN THE EXCAVATION TRENCH AT MID-DEPTH LOCATION FOR ALL UNDERGROUND SIDE SERVICE INSTALLATIONS FOR THE PURPOSE OF ALERTING ANY FUTURE EXCAVATION IN THE SPECIFIC AREA.
3. SLEEVING: PROVIDE SLEEVING AS REQUIRED UNDER SIDEWALKS, PATHS, CURBING, PAVING, ETC. AS NEEDED FOR IRRIGATION ACCESS. ALL SLEEVING SHALL BE 4" PVC WITH AT LEAST 12" OF COVER (1) FOOT BELOW FINISHED GRADE. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING SLEEVING BEFORE CURBING, SIDEWALKS, PAVING, ETC. IS INSTALLED. SEE LANDSCAPE PLANS.
4. UTILITY SEPARATIONS, INCLUDING WATER AND SEWER OR STORM CROSSINGS, SHALL BE IN ACCORDANCE WITH CLACKAMAS COUNTY STANDARDS OF CONSTRUCTION.
5. PRIOR TO BACKFILL, ALL MAINS AND APPURTENANCES SHALL BE INSPECTED AND APPROVED BY THE CLACKAMAS COUNTY CONSTRUCTION INSPECTOR. APPROVAL SHALL NOT RELIEVE THE CONTRACTOR FROM CORRECTION OF ANY DEFICIENCIES AND/OR FAILURES AS DETERMINED BY SUBSEQUENT TESTING AND INSPECTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY CLACKAMAS COUNTY FOR THE REQUIRED INSPECTIONS.

PROJECT LOCATION:
16590 S.E. 114TH AVE.
CLACKAMAS, OR 97015

VICINITY MAP
NOT TO SCALE

N



SITE MAP
SCALE: 1" = 60'

N

SHEET INDEX

SHEET #	SHEET TITLE
C0.00	COVERSHEET
C0.10	GENERAL NOTES
C0.11	GENERAL NOTES
C1.00	EXISTING CONDITIONS & DEMOLITION PLAN
C2.00	SITE LAYOUT PLAN
C2.10	SITE LAYOUT DETAILS
C3.00	GRADING PLAN
C3.10	FINE GRADING PLAN
C4.00	STORMWATER DRAINAGE PLAN
C4.10	STORMWATER DRAINAGE DETAILS
C5.00	UTILITY PLAN
C5.10	UTILITY DETAILS

LEGEND

EX. STORM LINE	EX-SD	FIRE HYDRANT	
EX. SANITARY SEWER LINE	EX-SS	FIRE DEPT. CONNECTION	
EX. WATER LINE	EX-W	WATER METER	
EX. FIRE WATER LINE	EX-FW	WATER VALVE	
EX. GAS LINE	EX-G	GAS METER	G
EX. COMMUNICATIONS LINE	EX-COMM	POWER POLE	
EX. OVERHEAD POWER LINE	EX-OHP	SIGN	
NEW STORM LINE	SD	CEMENT CONCRETE AREA	
NEW SANITARY SEWER LINE	SS	ASPHALT CONCRETE AREA	
NEW WATER LINE	W	DRAINAGE SWALE	
NEW FIRE WATER LINE	FW	PROPERTY LINE	
NEW GAS LINE	G	CENTER LINE	
NEW COMMUNICATIONS LINE	COMM	SAWCUT LINE	
NEW OVERHEAD POWER LINE	OHP	GRADE BREAK	
EXISTING CONTOUR	457	FENCE	X
NEW CONTOUR	457	EXISTING SURFACE ELEV.	FS (XXX.XX)
STORM DRAIN MANHOLE	SD	FINISHED SURFACE ELEV.	FS XXX.XX
SANITARY SEWER MANHOLE	SS	EXISTING TOP OF CURB/ BOTTOM OF CURB	(XXX.XX) TC / (XXX.XX) FS
COMMUNICATIONS MANHOLE	T	FINISHED TOP OF CURB/ BOTTOM OF CURB	XXX.XX TC / XXX.XX FS
CATCH BASIN			
CURB INLET			
DRY WELL	DW		
CLEANOUT			
ROOF DOWNSPOUT			

ABBREVIATIONS

ACP	ASPHALT CONCRETE PAVEMENT	IE	INVERT ELEVATION
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	IN (")	INCH(ES)
APPROX.	APPROXIMATE(LY)	INV	INVERT
ARCH	ARCHITECT(URAL)	LB	POUND(S)
BC	BACK OF CURB	LF	LINEAR FEET
BLDG	BUILDING	MAX	MAXIMUM
CB	CATCH BASIN	MH	MANHOLE
CC	CURB CUT	MIN.	MINIMUM
CF	CUBIC FEET (FOOT)	MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
CL	CENTER LINE	PC	POINT OF CURVATURE
CONC.	CONCRETE	PIV	POST INDICATOR VALVE
CONST.	CONSTRUCTION	PP	POWER POLE
CY	CUBIC YARD	PL	PROPERTY LINE
DI	DUCTILE IRON	PT	POINT OF TANGENCY
DIA (ø)	DIAMETER	PVC	POLYVINYL CHLORIDE
DIM	DIMENSION	RAD (R)	RADIUS
DS	DOWN SPOUT	ROW	RIGHT OF WAY
DWG	DRAWING	SD	STORM DRAIN
EL.=	ELEVATION	S.F.	SQUARE FEET
EOP	EDGE OF PAVEMENT	SQ	SQUARE
EV	ELECTRICAL VAULT	SROZ	SIGNIFICANT RESOURCE OVERLAY ZONE
FDC	FIRE DEPARTMENT CONNECTION	SS	SANITARY SEWER
FFE	FINISH FLOOR ELEVATION	STA	STATION
FH	FIRE HYDRANT	STD	STANDARD
FL	FLOW LINE	T	TRANSFORMER AND PAD
FS	FINISHED SURFACE	TBM	TEMPORARY BENCH MARK
FT (')	FOOT (FEET)	TC	TOP OF CURB
GB	GRADE BREAK	RIM	TOP OF GRATE
GM	GAS METER	TYP.	TYPICAL
GV	GATE VALVE	WM	WATER METER

REGISTERED PROFESSIONAL ENGINEER
86615
OREGON
MARCH 13, 2012
DIMON A. SMITH
EXPIRES: 6-30-2024

DCI ENGINEERS
921 SW WASHINGTON ST. ● SUITE 560
PORTLAND, OREGON 97205
PHONE: (503) 242-2448 ● FAX: (503) 242-2449
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CIVIL / STRUCTURAL

Design Development
11/12/2023

Revision	
Date:	Issue:

Clackamas Emergency Shelter
16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title: **COVERSHEET**

Sheet Number:

C0.00

General Specifications
CLACKAMAS EMERGENCY SHELTER
16590 SE 114TH AVE, CLACKAMAS OR 97015

DIVISION 1 – GENERAL

A. These specifications are general in nature and are intended to set minimum standards for construction and materials. Quality of materials and details of installation shall, at a minimum, comply with established industry and product manufacturer's standards. Higher standards, where stated in these specifications, in submitted literature, or on Drawings shall govern. Workmanship shall be maintained at good quality by the General Contractor.

B. EXAMINATION OF SITE AND CONTRACT DOCUMENTS

B.1. Bidders shall examine the site where the work is to be performed and ascertain for themselves all of the physical conditions and restrictions before submitting price quotations. They will also make careful examination of the Drawings, Specifications and other Contract Documents and inform themselves as to the quality of materials.

B.2. Bidders finding discrepancies, omissions or in doubt as to the true meaning of any part of the Drawings, Specifications and other Contract Documents, shall notify the Engineer in sufficient time to receive clarification prior to starting any work.

B.3. The Owner will not be responsible for any loss, or for any unanticipated costs which may be suffered by the Contractor in regards to conditions pertaining to the work, including conditions that can be seen on the site and/or are described in Drawings, Specifications, geotechnical reports, surveys, etc. That are available to the Contractor.

B.4. These Specifications may include material and/or performance specifications that may not be part of the Contract, but will be needed to coordinate work by others.

B.5. Contractor shall coordinate his work with the work by others to provide minimal delays to all parties.

B.6. The General Contractor is responsible to provide all design and engineering services, for design/build items noted. This includes coordination with other affected disciplines (mechanical, electrical, fire protections, structural, etc.) And all permit requirements (energy code compliance, etc.) Necessary for a complete system design.

C. SHOP DRAWINGS AND SUBMITTALS

C.1. Submit shop drawings of portions of the work indicated in individual sections of this Specification. Submittals of items not indicated may or may not be reviewed at Engineer's option.

C.2. For bidder designed items (Deferred Submittals), the drawings and calculations shall bear the stamp of an engineer (product engineer) registered in the state where the project is located. Such drawings shall certify that the drawings have not deviated from the DCI design drawings in any way, or shall call to the attention of DCI that the product engineer has deviated from the DCI design drawings. Such deviation may be cause for rejecting the shop drawings. See Drawings for items classified as Deferred Submittals.

C.3. Submittals to be provided at least 3 weeks prior to beginning fabrication.

C.4. General Contractor to review submittals before transmitting to Engineer, and place his review stamp date and marks on all copies.

C.5. DCI will review and mark–up a maximum of (3) Three copies of submittals. The contractor will be responsible for duplicating mark–ups if additional copies are required. Submittals will be stamped and returned to General Contractor within two weeks for copying and distribution.

D. SPECIAL INSPECTION AND TESTS (ALSO SEE COVER SHEET OF DRAWINGS)

D.1. Special inspections and tests as required by Engineer or local jurisdictions are to be performed by an independent testing agency and paid for by the Owner. Contractor to verify requirements for testing with the Engineer prior to beginning project and will be responsible for contacting testing agency with adequate prior notice and to allow full access to work.

D.2. Provide Engineer with copy of all inspection and testing reports. Fax report on the same day if irregularities are noted.

D.3. Testing performed at Contractor's option or re–testing of previously noted irregularities to be paid for by the Contractor.

E. TEMPORARY FACILITIES

E.1. Utilities. The Contractor shall be solely responsible for all other temporary facilities including all sanitation, water, electric, etc. Contractor to pay costs of all utilities until the time of substantial completion.

E.2. TEMPORARY BRACING

E.1. Contractor shall be solely responsible for the design and installation of all temporary bracing, shoring, anchors, etc., including, but not limited to, wall and roof bracing, lifting and handling inserts and devices, trench shoring, forms, etc.

E.2. Contractor shall consider construction loads whenever such loads are in excess of normal design loads. Particular attention should be given to forklifts, workman, wheel loads, storage of materials, etc. Contractor shall be solely responsible for all shoring, bracing, cribbing, etc. Required to support construction loads.

F. PROJECT CLOSEOUT

F.1. Record Drawings.

F.1.a. Maintain a record set on site during all phases of work.

F.1.b. Accurately record all field changes as they occur. Show all concealed changes in the work and the final location of all utilities. Underground utility as–built Drawings (marked up blueprints) shall be submitted as soon as the work is completed and not later than the request for payment for the work.

F.1.c. Deliver "record" set of Drawings to the Engineer on day of final completion.

F.2. Clean up: All areas of the site are to be finished, cleaned and suitable for use. Remove foreign matter, marks, stains, foreign paint, fixtures, equipment, etc.

F.3. All corrective work and the "closeout" shall occur on a timely basis.

DIVISION 2 – SITE WORK

A. GENERAL

A.1. Geotechnical Report. Foundation investigations have been completed and are available at the Engineer's office. All bidders shall familiarize themselves with the subsurface and site conditions.

A.2. Acceptance of site. Bidders shall inspect the site and be familiar with typical conditions in the area and the conditions under which the work is to be performed. The site shall be accepted in its existing condition and no claim shall be made for any visible condition not shown on the Drawings.

A.3. Construction use – Contractor shall:

A.3.a. Exercise caution in the use of the site, particularly when subgrade materials are moisture sensitive and wet conditions exist in the subgrade.

A.3.b. Make special provisions for construction access consistent with the requirements of the project and so that work can proceed under normal weather conditions.

A.3.c. Be responsible for correcting damage to the subgrade caused by construction activities.

A.3.d. Be solely responsible (unless otherwise provided for in the Contract) for the methods and cost for construction of access roads, added provisions to specified systems to support construction loads and for correction to site conditions and/or installed work that is damaged by construction activities.

A.3.e. Plan construction activities to prevent and/or mitigate damage to site.

B. QUALITY CONTROL

B.1. Contractor is to be experienced with the type of work and conditions where the work is to be performed. Contractor shall be responsible for the selection of the materials and methods for accomplishing the work. Special attention is directed to the conditions at the time the work is to be performed.

B.2. Finish subgrade for paving and concrete slab on grade to be within 0.06 foot of grades and contours shown on Drawings. Finish base rock for paving and slab on grade shall be plus or minus 0.04 foot. Verify compliance with Engineer before proceeding with next phase of work. Failure to do so will place responsibility for correction upon Contractor.

B.3. Place stakes at all locations of spot grades shown on Drawings.

B.4. Notify Engineer for observation of compliance of subgrade and fill with paragraph B.2 above. Obtain approval prior to placement of subsequent fill and paving.

C. CLEARING AND STRIPPING

C.1. Review requirements for protecting existing vegetation (trees, etc.) before start of work.

C.2. Notify Engineer immediately if unusual conditions are encountered.

C.3. Site shall be cleared and stripped of all vegetation, topsoil, and organic materials. Remove and dispose off–site unless specifically provided otherwise on the site work Drawings. Stockpile topsoil on site that is needed for later use.

C.4. Remove all stumps and roots over 1 inch diameter from all topsoil for landscaping use.

D. EXCAVATION

D.1. Excavate for footings, piers and slabs to sizes and levels shown or required. Utilize straight edge bucket to minimize soil disturbance. Clean all footing excavations of loose material.

D.2. All over–excavation shall be back–filled and compacted as "Engineered fill" or with concrete to same specifications as footing concrete.

D.3. If over–excavation is required to remove soft spots resulting from conditions beyond the control of the Contractor, the Contractor shall receive additional compensation. Notify Engineer before proceeding.

D.4. Soft spots created by the construction activities and special requirements for the construction process are the responsibility of the Contractor. (See paragraph "A" above)

D.5. Do not excavate closer than 2:1 slope below base of footings unless approved by Engineer.

D.6. All excavated material not approved or required for the project to be removed at no additional cost. Grade and cover stockpiled material as required to afford weather protection.

D.7. All footings shall be earth formed whenever possible.

E. FILL MATERIALS AND INSTALLATION

E.1. Notify Engineer prior to the start of all "Engineered fill" work so that the subgrade condition and fill material can be inspected. Obtain compaction tests if required.

E.2. "Engineered fills": on–site materials, free of organic material, may be used for structural fill (under buildings and paved areas) subject to maintenance of a proper moisture content and obtaining required compaction.

E.3. "Select Fill":

E.3.a. Under building and footings: 1–1/2 inch minus well graded clean crushed rock (less than 5 percent passing 200 sieve).

E.3.b. Under paving: Base course of 1–1/2 inch minus well graded clean crushed rock (less than 5 percent passing 200 sieve) of depth shown on Drawings.

E.3.c. Trench backfill. Unless otherwise specified, all trench backfill shall be 3/4 inch minus well–graded clean crushed rock. (Less than 8 percent passing 200 sieve).

E.3.d. Back fill where finish grade is above building floor: With free draining granular material, pea–gravel or round drain rock.

E.3.e. Drain rock backfill for drywell. Drain rock shall be clean, washed, crushed/angular drain rock with 5% maximum fines. Recommended size range 1½"–¾". Submit analysis to Engineer with #200 values included.

E.3.f. Rip Rap

E.4. Top soil: Natural topsoil from on–site or as required by the plans, suitable for growing plants and free of limbs, roots, and rocks over 1 inch diameter. Remove any concrete or debris from planting areas. Cut and remove any paving more than 6 inch behind curb in planting areas.

E.5. Compaction:

E.5.a. Selection of compaction equipment and processes shall be the sole responsibility of the Contractor.

E.5.b. Prepare areas to receive "Engineered" or "Select" fill by compacting subgrade. If subgrade moisture content is not suitable, confer with Engineer and condition material to near "optimum" and compact.

E.5.c. Install material (except topsoil) in lifts not to exceed 8 inches (loose) and compact with suitable equipment.

E.5.d. Minimum density (per ASTM D–1557) as follows:

E.5.d.a. APPLICATION (See note 3 below)	COMPACTION
– Beneath foundations	95%
– Beneath floor slabs	95%
– Beneath pavements (See Note 1 below)	95%
– Retaining or basement wall backfill (see Note 2 below)	92%
– Interior footing and wall backfill	95%
– Utility Trench Backfill:	
– Upper 3 ft beneath pavements, slabs or structures	95%
– Below 3 ft beneath pavements, slabs or structures	92%
– In landscaped areas above pipe zone	90%
– Landscape areas	90%

E.5.e. NOTES:

–Special attention to base rock and A.C. Paving placed against concrete at overhead doors to ensure proper compaction is achieved.

–Use lightweight, manually–guided compactors within 3 feet of all walls.

–Where conflicts occur between the above values, the highest percentage shall govern.

–Initial compaction tests will be provided by Owner. Contractor shall be responsible for all re–testing required by tests not meeting Specifications. Contractor shall assist in scheduling all tests.

F. GEOTEXTILE

F.1. Provide geotextile fabric (filtration or separation) and geogrid where indicated on the drawings. notify engineer prior to placement.

F.2. Stabilization geotextile fabric shall be woven fabric with minimum mullen burst strength – 300 psi; approved manufacturer/grades: mirafi 500x, fibertex (grade 300), or as approved.

F.3. Filtration (drainage) geotextile fabric shall be non–woven fabric with minimum values: permittivity – 0.5/s; grab strength – 80 lb; puncture strength – 35 lb; mullen burst strength – 130 psi; apparent opening size – us sieve 70. approved manufacturer/grades: thrace–linq 125ex; wellstone mills tns e040, r040, or r042; us fabrics us 90nw; propex geotex 401; mirafi 140N; or as approved.

F.4. Separation geotextile fabric shall be woven fabric with minimum values: permittivity – 0.01/s; grab strength – 180 lb; puncture strength – 80 lb; mullen burst strength – 290 psi; apparent opening size – us sieve 30. approved manufacturer/grades: thrace–linq gtf 200s; us fabrics us 200; propex geotex 200st; or as approved.

F.5. Material for geogrid shall be as noted on the drawings.

F.6. Area to receive geotextile fabric or geogrid to be graded smooth without abrupt elevation change so product will stretch tight and lay smooth over subgrade. installation methods, equipment used, staking, repair and layout direction shall be per manufacturers directions. provide adequate laborers to ensure that products are kept smooth as work progresses.

G. EROSION AND SEDIMENTATION CONTROL

G.1. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from drainage.

G.2. Install erosion–control measures to prevent erosion or displacement of soils and discharge of soil–bearing water runoff or airborne dust to adjacent properties and walkways.

G.3. Materials:

G.3.a. Gravel–filled sandbags (for gravel bag berms and gravel bag check dams): Burlap sacks filled with ¾" rock for ¼" pea gravel, stacked tightly, as shown on drawings.

G.3.b. Stabilized construction entrance: 1" to 3" coarse aggregate, places a minimum of 6" thick cover geo–synthetic fabric for stability.

G.3.c. Erosion–control fiber mesh: Biodegradable burlap or spun–coir mesh, a minimum of 0.92 lbs/sq. yd., with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches long.

G.3.d. Erosion–control mats: Cellular, non–biodegradable slope stabilization mats designed to isolate and contain small areas of soil over steeply sloped surface, of 3–inch nominal mat thickness. Include manufacturer's recommended anchorage system for slope conditions.

G.3.e. Silt fence: Filter fabric material 36" wide with stitched loops over 2"x2" posts.

G.3.f. Temporary Gravel Construction Entrance/Exit: material shall be at least 1½" clean rock with less than 5% passing the #200 sieve. Industrial, commercial, and subdivision sites shall use 2"–6" rock.

G.4. All erosion control measures shall be inspected after each runoff producing rainfall and regularly during prolonged rainfall.

G.5. All temporary erosion and sediment control measures shall be removed or stabilized onsite. Disturbed soil areas resulting from removal shall be permanently stabilized.

H. ASPHALTIC CONCRETE PAVING

H.1. Proof roll subgrade to verify stability. Notify Engineer to observe rolling. Remove and replace all soft spots encountered with compacted suitable material prior to rocking.

H.2. Base material to be select fill as specified above.

H.3. Check finished base rock for slope before starting paving. Notify Engineer before proceeding with paving if any site areas have insufficient slope. (Less than 1 percent)

H.4. Asphalt paving to be level 3, dense graded, 1/2" hmac mix (ODOT) thickness shown on drawings. Deliver and place asphalt paving in accordance with current ODOT standard specifications as applicable unless otherwise approved.

H.5. Slope all asphalt paving minimum one percent (0.01) to drainage (unless otherwise shown on Drawings).

I. STRIPING

I.1. Traffic and parking stripes to be 3 inch wide, color white. Paint word "COMPACT" in 1–1/2 inch x 6 inch lettering in stalls designated.

I.2. Provide signage at accessible (handicap) stalls to meet state and local standards. Cross–stripe landing area/walkway within stalls and accessible routes across traffic lane. Cross stripes to be 24 inches on center, color white.

I.3. Cross stripe all paved abrupt slopes exceeding 50 percent slope with safety yellow 3 inch wide stripes at 24 inches on center.

J. EXTRUDED CONCRETE CURBS

J.1. Curbs to be no–slump concrete with a minimum compressive strength of 3000 PSI at 28 days.

J.2. Spread epoxy bonding agent such as Concressive #1064 approved equal over surface to receive curb. Install curb within 20 minutes after applying bonding agent.

J.3. Provide joints as required.

J.4. Apply curing compound to all surfaces immediately following placement.

J.5. Use caution in starting work that requires traffic on fresh placed asphalt paving. Check condition of paving and verify schedule for start of work with Engineer.

K. SITE UTILITIES

K.1. General.

K.1.a. The work to be provided by the Contractor shall consist of furnishing all labor, materials, permits, surveying, supervision, coordination, and equipment necessary for the proper installation of the storm drainage, sewer system, and the water systems that are indicated on these Drawings. The work is to be completed so as to provide properly functioning systems that are acceptable to the governing authorities and as indicated on these Drawings.

K.1.b. Approvals: Different jurisdictions may prohibit the use of certain construction materials and/or procedures. Do no work without approval from the proper jurisdiction. Cost of changes incurred when work has proceeded without jurisdictional approval shall be the sole expense of the Contractor.

K.1.c. Safety: The safety (as it relates to this construction project) of workers, neighbors, and passers–by is to be the responsibility of the Contractor. Unsafe conditions shall be identified and corrected or, identified and secured. Work methods that may case an unsafe condition to exist, shall be avoided at all costs.

K.1.d. Drawings: Drawings provided are based on reported site conditions and dimensions. Actual site conditions, or dimensions, may vary and any such variation should be reported to the Engineer at the earliest opportunity. Unanticipated conditions may require the revision of a portion of these Drawings. All dimensions shall be verified in the field by the Contractor prior to fabrication or construction of any portion of the proposed work.

K.1.e. Permits. The Contractor shall arrange and pay for permits, fees, service charges and inspections and shall present the Owner with a properly executed "Certificate of Inspection", prior to making application for payment for any portion of the work.

K.1.f. Codes. All work methods and materials shall conform to all local, state and federal requirements, regulations, and laws.

K.2. MATERIAL: All materials used for the work shall be new unless noted on plans. Trade names denote character and quality of equipment desired and substitutions may be approved, if in the opinion of the Engineer, the proposed substitution is expected to perform properly. All costs associated with the Engineers review and changes in construction costs associated with the proposed substitution shall be the responsibility of the Contractor.

K.3. WATER:

K.3.a. Copper Pipe: Type K (soft copper 1/2" to 1–1/2", hard copper 2" and larger), underground piping, conforming to ASTM B–88. Fittings shall be wrought copper. Solder all joints and fittings.

K.3.b. Ductile Iron Pipe (D.I.P.): Shall be cement–mortar lined and shall conform to ANSI A21.51, Class 52. All joints shall use O–ring rubber gaskets. Fittings shall be 125–pound class, meeting the requirements of ANSI C110.

K.3.c. C–900 Polyvinyl Chloride Pipe (PVC C900 OR C905): Public and private FDC water pipe and fittings shall be Class 200 PVC C900. Private fire pipe and fittings shall be CLASS 150 PVC C900 OR C905 unless otherwise noted on the plans. C900 AND C905 PIPE shall meet the requirements of ASTM D–1784 in accordance with the requirements of AWWA C900. Gaskets at connections shall be used per ASTM F–477 to seal integral bell socket to the spigot of each joint, conforming to the requirements of ASTM D–3139.

K.3.d. Schedule 40 polyvinyl chloride pipe (SCH 40 PVC): private domestic and irrigation water pipe and fittings shall be schedule 40 PVC (1/2" – 4"). Schedule 40 pipe shall be manufactured in compliance with ASTM D–1785.

K.3.e. Water Service: Piping, valves, backflow prevention, vaults, meters, hydrants, and connection to main line shall be according to the requirements of the governing agencies.

K.3.f. Alternate materials may be used if approved by the governing agency and the current State of Oregon Plumbing Specialty Code.

K.4. STORM SEWER – All storm sewer pipe shown on the plans shall be Polyvinyl Chloride 3034 (PVC) pipe unless specified as other than PVC. Pipe materials other than those specified on the utility plan shall not be used unless authorized by Engineer. Likewise, pipe materials not listed below shall not be used without authorization from the Engineer.

K.4.a. Polyvinyl Chloride Pipe (PVC): Pipe and fittings shall be PVC and shall meet the requirements of ASTM D–3034 SDR 35 (4"–15", solid wall) and ASTM F679 (18"–36", solid wall). Corrugated PVC Profile pipe (smooth interior) shall meet the requirements of ASTM F794–01 (4"–48").

K.4.b. C900 Polyvinyl Chloride Pipe (PVC C900 OR C905): Pipe and fittings shall be PVC C900 (4" – 12", dr 25, dr 18 or dr 14) OR C905 (14" – 48", dr 25, dr 21 or dr 18) and shall meet the requirements of ASTM D–1784 in accordance with the requirements of AWWA C900. Gaskets at connections shall be used per ASTM F–477 to seal integral bell socket to the spigot of each joint.

K.4.c. High density polyethylene pipe (HDPE): pipe and fittings shall be HDPE and shall meet the requirements of AASHTO M–252 (3"–10"), M–294 (12" and larger), type S (4"–48" corrugated outside, smooth inside), type D (closed profile with smooth interior, 42"–48") and MP7 (54" and 60" type S and type D). HDPE meeting ASTM f 2648 (2"–60") may be used for private storm systems that do not operate under surcharge/pressure. pipe can be solid, perforated or slotted. all joints shall be gasketed, lab test certified to 3.5 psi joints: integral bell/spigot with a rubber gasket meeting ASTM f–477 installed on the spigot end.

K.4.d. Concrete Pipe: Pipe and fittings shall be concrete bell and spigot pipe with rubber gaskets in confined grooves conforming to ASTM C–14 for Non–reinforced Concrete Pipe (CONC) and ASTM C–76 for Reinforced Concrete Pipe (RCP).

K.4.e. Soil Pipe (Traffic areas where cover is less than 15 inches from finish grade to top of pipe): Pipe shall be hub and spigot cast iron pipe (CIP) or Schedule 52 ductile iron bell and spigot pipe (DIP) with fittings conforming to ASTM A–74, with rubber O–ring gaskets in confined grooves or, with compression type gasket fittings, Or PVC C900 (dr 25, dr 18 or dr 14), OR C905 (dr 25, dr 21 or dr 18 only).

K.4.f. Aluminized Steel Pipe (ASP): Pipe and fittings shall be Aluminized Steel and shall conform to ASTM A760/A760M, AASHTO M–36, and M274 for Aluminized Steel Pipe with a 75–year lifespan.

K.4.g. Corrugated Metal Pipe (CMP): Shall be of the type, diameter, and gauge indicated on the Drawings. Pipe and fittings shall be helical corrugated unless otherwise specified. Pipe and fittings ends shall be annular for a distance of 12 inches. Pipes shall be connected with 12–inch wide annular corrugated coupling bands and 1/2 inch thick by 12–inch wide rubber gaskets.

K.4.h. Catch Basins: Shall be 24 inch square and minimum 30 inch high (see plan for sump requirements), unless otherwise indicated, with 28 inch square standard cast iron grate and hinged drain access plates for clean–outs, all as manufactured by the Lynch Company, Inc., or by Gratemaster Ironworks. Catch basins to be constructed of 10 gauge steel and to be asphalt coated after fabrication.

K.4.i. Downspout Drains: Verify locations and special requirements with building elevation Drawings and with roof plans for downspout location. Adjust location as needed to assure plumb vertical downspout run. Notify Engineer of any discrepancy or other problem. Drains in paved areas to be cast iron soil pipe or Schedule 40 PVC.

K.4.j. Drains in landscaped areas may be PW storm drain Series 46 with 80 percent compaction and with compaction verification. Provide clean–out at each downspout. Use branch fitting with threaded plug for clean–out.

K.4.k. Manholes and Cleanouts:

K.4.k.a. PVC Storm Manhole: Main body and pipe stubs shall conform to ASTM D1784 cell class 12454. Gaskets shall be made from material meeting the requirements of ASTM F477. Ductile iron shall be used to manufacture the castings, and shall conform to ASTM A536 grade 70–50–05.

K.4.k.b. See SANITARY SEWER below.

K.5. SANITARY SEWER

K.5.a. Polyvinyl Chloride (PVC) Pipe: Pipe and fittings shall be PVC and shall meet the requirements of ASTM D–3034 SDR 35 (4"–15") and ASTM F679 (18"–27"); Schedule 40 PVC (or PVC C–900) shall be used in areas where the pipe cover is to be less than 15 inches from finish grade to top of pipe.

K.5.b. C900 Polyvinyl Chloride Pipe (PVC C900 OR C905): Pipe and fittings shall be PVC C900 OR C905 and shall meet the requirements of ASTM D–1784 in accordance with the requirements of AWWA C900. Gaskets at connections shall be used per ASTM F–477 to seal integral bell socket to the spigot of each joint.

K.5.c. Concrete Manholes: Shall be fabricated per ASTM C–478 and shall be 48–inch diameter (minimum) with a 3–foot eccentric cone over standard sections. Where manhole depths are not adequate for cones, use 8–inch thick (State Highway) flat top slabs. Use standard cast iron frames and covers for storm and use watertight standard cast iron frames and covers for sanitary sewers.

K.5.d. Corrugated Manholes: Shall be of the same material, gauge, and coating as the corrugated pipe. Manhole lid and frame shall be constructed as to not directly bear upon the top end of the corrugated manhole.

K.6. EXECUTION.

K.6.a. Sewer Clean–Outs: Shall be installed in the storm and sanitary systems where noted on Drawings (CO) and where specifically required by the governing code. Clean–outs in exterior paved areas shall be heavy duty cast iron access box with secured cover, anchoring flanges, and cast iron clean–out with serrated cut–off sections and threaded bronze plug. Provide an 18 inch square by 6 inch thick concrete pad around the clean–out IN UNPAVED AREAS.

K.6.b. Rim elevations of utility and drainage structures shall be installed so that rims may be adjusted ±0.5' to match finish grade.

K.6.b.a. Rimriser, or approved equal, may be used to facilitate installation of rim to be flush with finished grade.

K.6.c. Bedding: Bed all piping on a 4 inch thick layer of sand or 3/4 inch minus crushed rock. Inspection of the excavated trench by the Engineer may provide for the use of compacted native material for bedding. Provide Owner with deductive alternate for use of native bedding material. Bedding shall be removed to the necessary depth for piping bells and couplings to maintain contact of the pipe on the bedding for its entire length.

K.6.d. Pre–Cover: Cover the pipe to a minimum depth of 5 inches with compacted sand or 3/4 inch minus crushed rock. Inspection of the excavated trench by the Engineer may provide for the use of compacted native material pre–cover. Provide the Owner with deductive alternate for use of native pre–cover material.

K.6.e. Back Fill: All back fill for site utilities shall be placed in layers and compacted as required by Division 2, Fill Materials and Installation.

K.6.f. Grading: Following back filling, grade trenches to the level of surrounding soil. All excess soil shall be disposed of off–site, unless otherwise directed by the Engineer.

L. ACCESSIBLE (HANDICAP) SIGNAGE

L.1. Signs to be metal panels with permanent contrasting characters and background complying with state and local regulations and ADAAG requirements. (See Division 10, SIGNS, for additional information).

L.2. Provide freestanding sign on 1–1/2 inch diameter metal post (galvanized pipe) in landscape area adjacent to each accessible handicap parking space. Embed post in 6 inch diameter, 12 inch deep concrete fill. Top of footing at 3 inches below finish grade.

REGISTERED PROFESSIONAL ENGINEER
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MARCH 13, 2012
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EXPIRES: 6–30–2024

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16590 SE 114th Ave
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DIVISION 2 – SITE WORK (CONTINUED)

M. FENCING

M.1. Provide chain link fence as shown on Drawings. Submit layout and details for approval of Engineer prior to fabrication.

M.2. Fabric: 9 ga 2" x 2" mesh fabric.galvanized or pvc coated. pvc color selected from standard colors.

M.3. Top rail: 1 5/8" o.d. 0.065 tube 1.11 lbs. per foot joined with 1 5/8" sleeve. galvanized or powder coated to match fabric.

M.4. Line posts: 1 7/8" o.d. 0.065 tube 1.27 lbs. per foot.galvanized or powder coated to match fabric. posts to be set 10'–0" maximum on center. footing to be 12" diameter by 3'–0" deep concrete.

M.5. Terminal posts: 2 3/8" o.d. 0.065 tube 1.60lbs. per foot. galvanized or powder coated to match fabric. footing minimum 12" diameter by 3'–0" deep.

M.6. Fittings: regular brace band and carriage bolt, pressed steel rain end,eye–top or steel cap, 3/16" x 3/4" tension bar and regular tension band and carriage bolt. galvanizeed or powder coated to match fabric.

M.7. Tie wire: 6 1/2" 9 ga. aluminum tie wire at 15" on center at line posts and 24" on center at rails. powder coated to match fabric.

M.8. Slats: wood or pvc as noted on drawings. pvc color to match fence fabric.

N. FENCING

N.1. Provide chain lined fence and gates as shown on Drawings. Top with 3 strand barbed wire on 45 degree arms. All components of system to be aluminum coated or hot dip galvanized steel. Provide all required bracing.

N.2. Fabric to be 9 gauge 2 inch x 2 inch diagonal mesh.

N.3. Barbed wire to be double strand twisted wire with 14 gauge 4 point barbs 5 inches on center.

N.4. Line posts to be 2 3/8 inches outside diameter standard steel pipe. Top and brace rails to be pipe section with minim vertical bending strength of 200 lbs. At 10 foot span.

N.5. Gates to be tubular framed with braces and trusses required to maintain rigidity, and non–removable locking hardware. Gate posts to be sized as required or shown.

N.6. Provide concrete footings for all line, gate and terminal posts allowing 3'–0" minimum embedment. Footings to be 12 inch minimum diameter at line posts.

DIVISION 3 – CONCRETE

A. GENERAL

A.1. All work to comply with ACI codes and standards.

A.2. Inspections/testing.

A.2.a. Owner will provide a part–time concrete inspector and will conduct laboratory tests as required to verify compliance with the project Specifications. Contractor shall be solely responsible for compliance with the Specifications.

A.2.b. Contractor shall be responsible for any extra concrete sampling or testing such as field cured cylinders for determining strength for lifting panels, etc.

A.3. Tolerances:

A.3.a. Walls, columns: Maximum deviation from plumb = 1/4 inch.

B. FORMWORK AND SHORING

B.1. Contractor shall be solely responsible for providing the necessary formwork and shoring suitable for the conditions involved and compatible with the finished appearances.

B.2. Ground forms. To the extent practical all isolated footings should be ground formed or partially ground formed. Clean all ground formed footings of loose debris and use caution during concrete placing to avoid cave–ins.

B.3. Chairs for reinforcing steel shall be adequate to securely support and hold reinforcing steel in place. For concrete slab on grade and tilt wall panels reinforcing shall be supported at not greater than 6'–0" on center for #5 bars or larger. For tilt wall panel reinforcing shown each face on Drawings, the top bar shall adequately be supported using metal chairs.

C. CONCRETE MIX/MATERIAL

C.1. Strength: Average 28 day concrete strength determined by job cast lab cured cylinder to be as indicated below plus increase depending on the plant's standard deviation as specified in ACI 318. Provide mix designs to the Engineer for all concrete to be used. Clearly label all mix designs for proposed area of use.

C.2. Minimum mix requirements:

LOCATION	MIN. COMP. STRENGTH	SLUMP (a)	MIN. CEM CONTENT	ADMIXTURES
Miscellaneous	3,000 PSI	0" – 5"	470 LB.	(b)

NOTES:

(a) – Slump exceeding specified limits shall not be incorporated in the project except by written approval from Engineer.

(b) – WRA = water reducing agent.

C.3. Use Type I Cement, per ASTM C–150 unless otherwise approved.

C.4. Aggregate ASTM C33. Size to be 3/4 inch maximum size aggregate.

C.5. Water Reducing Agent (WRA) shall be Polyheed R–1 or Duracem 55 (minimum 6 oz. Per 100 pounds cement). Comply with ASTM C–494.

D. REINFORCING

D.1. All reinforcing to be ASTM A615 Grade 60 unless otherwise noted.

D.2. Use only A706 weldable rebar if rebar is to be welded. Use only low hydrogen electrodes. All welding to be in compliance with AWS D1.4.

D.3. Fabricate and install reinforcing steel according to the Manual of Standard Practice for Detailing Reinforced Concrete Structures–ACI Standard 315.

D.4. Provide 2'–0" x 2'–0" corner bars to match horizontal reinforcing in poured–in–place walls and footings at all corners and intersections.

D.5. Splices in wall reinforcing shall be lapped 40 bar diameters (2'–0" minimum) and shall be staggered at least 4 feet at alternate bars.

D.6. All openings smaller than 30 inches x 30 inches that disrupt reinforcing shall have an amount of reinforcing equal to the amount disrupted placed both sides of opening.

D.7. Provide the following reinforcing around wall openings larger than 30 inch x 30 inch.

D.7.a. (2) #5 over opening x opening width plus 2' – 0" each side.

D.7.b. (2) #5 under opening x opening width plus 2' – 0" each side.

D.7.c. (2) #5 each side of opening x full story height.

D.7.d. Provide 90 degree hook for bars at openings if required extension past opening cannot be obtained.

D.8. Provide (2) #4 continuous bars at top and bottom and at discontinuous ends of all walls.

D.9. Provide dowels from footings to match all vertical wall, pilaster and column reinforcing. (Poured–in–place columns and walls).

D.10. Lap all bars in continuous and intersecting footings 2'–0" or 40 bar diameters, whichever is greater.

D.11. All vertical wall reinforcing to be placed in center of wall unless shown otherwise on Drawings.

D.12. Extend reinforcing to within 1 inch of wall and slab edges.

E. CONTROL JOINTS AND EXPANSION JOINTS

E.1. Provide joints in exterior walks as follows unless otherwise shown: Heavy (3/4 inch) tooled joint at 5 feet on center.

E.2. Keyed joints: Where keyed joints are required or allowed, follow precisely the key configurations. Use of premolded plastic keys will not be allowed.

E.3. Doweled joints: Where doweled joints are required or allowed, take precautions to maintain square alignment both horizontal and vertical. All dowel material to be saw cut or ground smooth to maintain cross–section at ends.

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Design Development
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Clackamas Emergency Shelter
16590 SE 114th Ave
Clackamas, Oregon 97015

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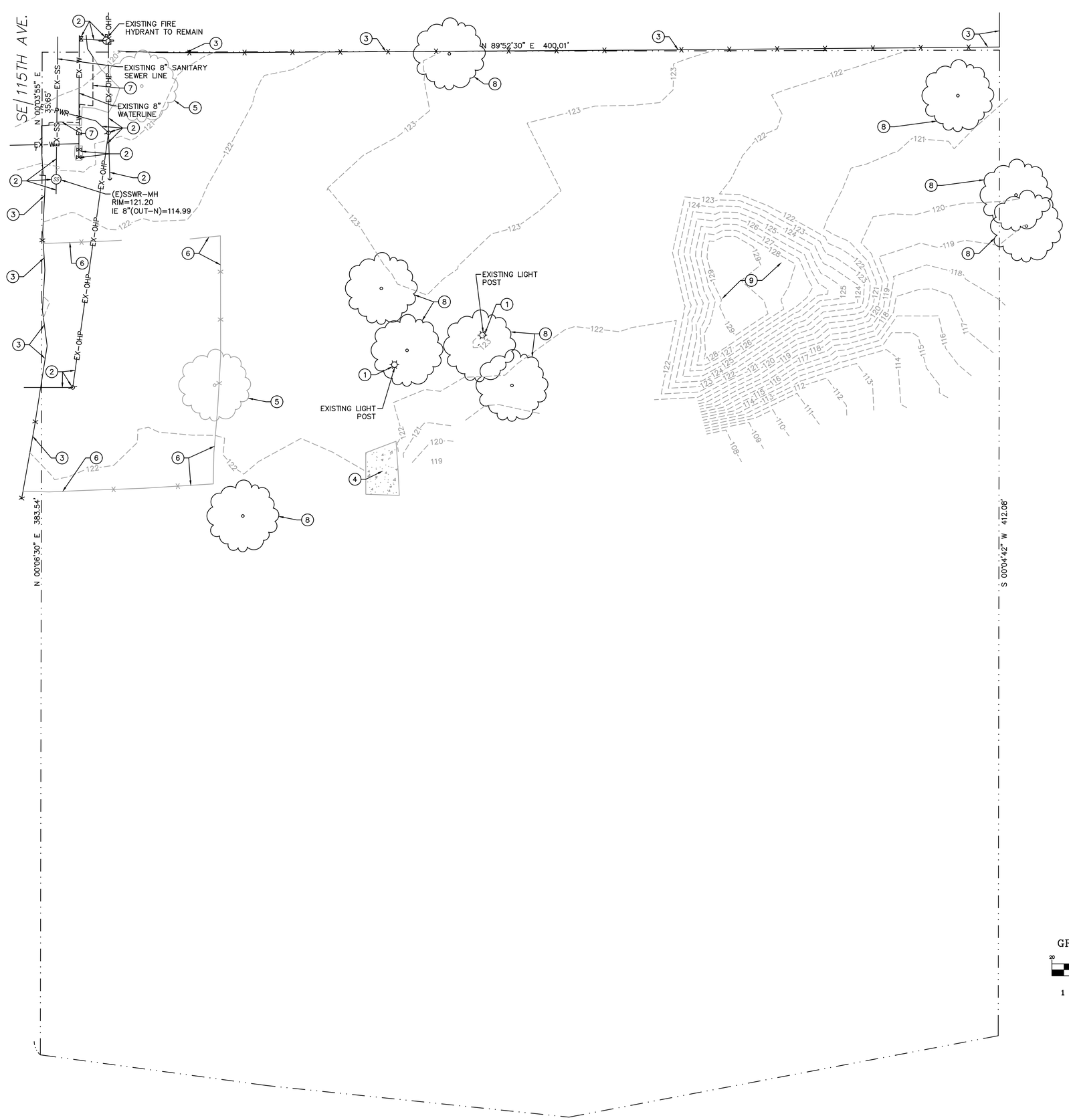

(X) DEMOLITION NOTES:

1. COORDINATE REMOVAL/RELOCATION OF EXISTING LIGHT POLE AND CONNECTED POWER LINES (IF ANY) WITH FRANCHISE UTILITY COMPANY.
2. PRESERVE AND PROTECT EXISTING IMPROVEMENT.
3. PRESERVE EXISTING FENCE.
4. REMOVE EXISTING CONCRETE AREA.
5. REMOVE EXISTING TREE.
6. REMOVE EXISTING FENCE, POSTS, AND FOOTINGS IN FULL. COORDINATE WITH OWNER FOR POTENTIAL RE-USE.
7. SAWCUT EXISTING ASPHALT CONCRETE PAVEMENT. CUT SHALL PROVIDE A CLEAN VERTICAL EDGE. COORDINATE EXTENTS WITH SHEETS C2.00 AND C3.00.
8. PRESERVE EXISTING TREE AND ROOT SYSTEM.
9. GRADE EXISTING MOUND TO BE LEVEL. COORDINATE WITH GRADING PLAN AND ENGINEER FOR EXCESS SOIL NOT USED DURING GRADING OF THE SITE.

PRE-CONSTRUCTION, CLEARING, AND DEMOLITION NOTES:

1. THE CONTRACTOR SHALL BE REQUIRED TO VISIT THE SITE PRIOR TO CONSTRUCTION TO FAMILIARIZE THEMSELVES WITH DEMOLITION, GRADING, ETC., AND IMPROVEMENTS TO REMAIN.
2. CONTRACTOR SHALL BE RESPONSIBLE TO REMOVE ANY AND ALL ITEMS NOT OTHERWISE LISTED HEREIN THAT CONFLICT WITH THE CONSTRUCTION OF THE PROJECT. CONTRACTOR SHALL CONTACT ENGINEER IMMEDIATELY TO DETERMINE IF ANY ITEMS NOT SHOWN ON THE PLANS MUST BE REMOVED. FAILURE TO DO SO DOES NOT RELIEVE CONTRACTOR OF RESPONSIBILITY AND COST FOR REMOVING ITEMS REQUIRED.
3. CONTRACTOR IS RESPONSIBLE FOR REVIEWING (IF APPLICABLE) ALL KNOWN ENVIRONMENTAL INVESTIGATION STUDIES AND REPORTS PRIOR TO BIDDING. REPORTS ARE INCLUDED IN THE PROJECT'S SPECIFICATIONS. THE CONTRACTOR SHALL COORDINATE WITH THE ENVIRONMENTAL ENGINEER ON EXACT AREAS OF CONTAMINATION, IF ANY.
4. THE CONTRACTOR SHALL TAKE EFFECTIVE ACTION TO PREVENT THE FORMATION OF ANY AIRBORNE DUST NUISANCE, AND SHALL BE RESPONSIBLE FOR ANY DAMAGE RESULTING FROM FAILURE TO FOLLOW THE CONSTRUCTION STORMWATER GENERAL PERMIT AND EROSION & SEDIMENT CONTROL GUIDELINES.
5. ALL EXISTING REMAINING UTILITIES AND REMAINING IMPROVEMENTS THAT BECOME DAMAGED DURING CONSTRUCTION SHALL BE COMPLETELY RESTORED TO THE SATISFACTION OF THE OWNER, LOCAL AGENCY, AND THE ENGINEER AT THE CONTRACTOR'S SOLE EXPENSE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DOCUMENT ANY PRIOR DAMAGES.
6. DO NOT CUT ANY ROOTS OVER 3". ROOTS THAT ARE CUT SHALL RESULT IN A FLAT SURFACE WITH ADJACENT BARK FIRMLY ATTACHED. DO NOT TEAR OR CRUSH ROOTS.
7. ALL BASE ESC MEASURES (INLET PROTECTION, PERIMETER SEDIMENT CONTROL, GRAVEL CONSTRUCTION ENTRANCES, ETC.) MUST BE IN PLACE, FUNCTIONAL, AND APPROVED IN AN INITIAL INSPECTION, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
8. SEDIMENT BARRIERS APPROVED FOR USE INCLUDE SEDIMENT FENCE, BERMS CONSTRUCTED OUT OF MULCH, CHIPPINGS, OR OTHER SUITABLE MATERIAL, STRAW WATTLES, OR OTHER APPROVED MATERIALS.
9. SENSITIVE RESOURCES INCLUDING, BUT NOT LIMITED TO, TREES, WETLANDS, AND RIPARIAN PROTECTION AREAS SHALL BE CLEARLY DELINEATED WITH 4' HIGH ORANGE CONSTRUCTION FENCING OR CHAIN LINK FENCING IN A MANNER THAT IS CLEARLY VISIBLE TO ANYONE IN THE AREA. NO ACTIVITIES ARE PERMITTED TO OCCUR BEYOND THE CONSTRUCTION BARRIER.
10. CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES INCLUDING, BUT NOT LIMITED TO, STREET SWEEPING, AND VACUUMING, MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
11. RUN-ON AND RUN-OFF CONTROLS SHALL BE IN PLACE AND FUNCTIONING PRIOR TO BEGINNING SUBSTANTIAL CONSTRUCTION ACTIVITIES. RUN-ON AND RUN-OFF CONTROL MEASURES INCLUDE: SLOPE DRAINS (WITH OUTLET PROTECTION), CHECK DAMS, SURFACE ROUGHENING, AND BANK STABILIZATION.

UTILITIES STATEMENT

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM LOCATION PAINT MARKINGS TIED IN THE FIELD SURVEY AND AS-BUILT DRAWINGS PROVIDED BY UTILITY COMPANIES. THIS SURVEY DOES NOT SHOW ANY PAINT MARKING PROVIDED AFTER THE FIELD SURVEY WAS COMPLETED. AS-BUILT DRAWING INFORMATION THAT WAS NOT PROVIDED IS NOT REFLECTED ON THIS SURVEY. AS-BUILT INFORMATION, IF PROVIDED, WAS USED TO IDENTIFY UNDERGROUND PIPE SIZE AND TYPE IF NO LOCATION PAINT MARKINGS WERE PROVIDED. AS-BUILT INFORMATION WAS USED TO HORIZONTALLY LOCATE UNDERGROUND UTILITIES.

THIS SURVEY MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE OF ALL SUCH UTILITIES IN THE AREA. THE UNDERGROUND UTILITIES SHOWN MAY NOT BE IN THE EXACT LOCATION AS NOTED ON THIS SURVEY, BUT ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION PROVIDED.

GRAPHIC SCALE

20 0 10 20

(IN FEET)
1 INCH = 20 FEET

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REGISTERED PROFESSIONAL ENGINEER
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MARCH 13, 2012
DAMON A. SMITH
EXPIRES: 6-30-2024

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Clackamas Emergency Shelter
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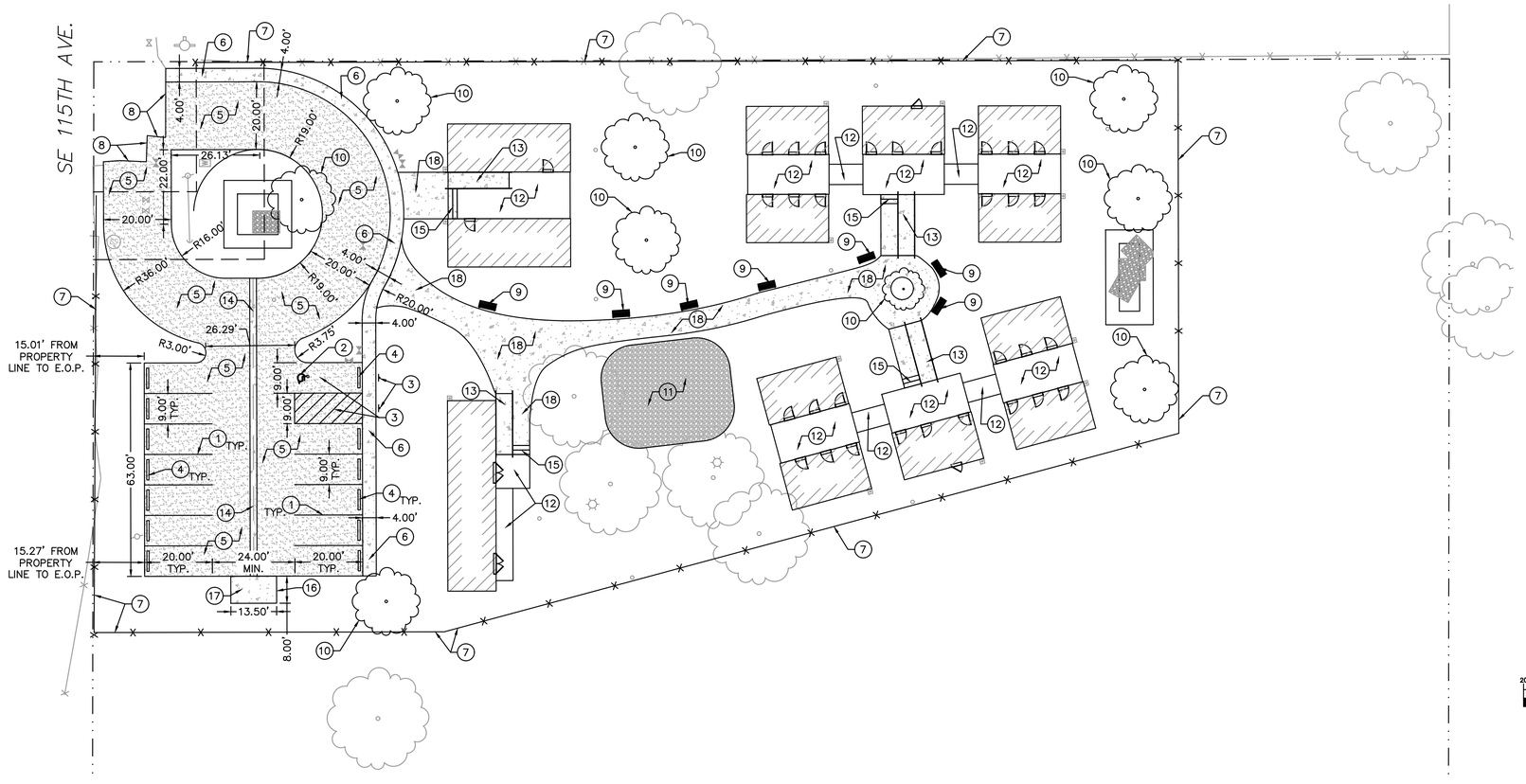
Sheet Title:
EXISTING CONDITIONS & DEMOLITION PLAN

Sheet Number:
C1.00



SITE LAYOUT GENERAL NOTES:

1. TRAFFIC CONTROL FOR THE SITE SHALL FOLLOW THE PROVISIONS IN THE LATEST VERSION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. SIDEWALK CROSS SLOPES SHALL BE 1.5% MAXIMUM TOWARDS THE PARKING AREA, WHERE APPLICABLE.
3. ACCESSIBLE STALLS, STRIPING, AND SIGNAGE SHALL BE INSTALLED PER OREGON TRANSPORTATION COMMISSION STANDARDS FOR ACCESSIBLE PARKING PLACES (LATEST EDITION).

(X) SITE LAYOUT KEYNOTES:

1. PAINT NEW 4" WIDE, WHITE STRIPE.
2. PAINT NEW ADA SYMBOL. SEE DETAIL 1/C2.10.
3. CONSTRUCT NEW VAN-ACCESSIBLE PARKING AREA AND LOADING ZONE. PROVIDE SIGNAGE AT THE HEAD OF PARKING AREA. SEE DETAIL 1/C2.10. AREA SHALL NOT EXCEED 1.8% IN ANY DIRECTION.
4. INSTALL CONCRETE WHEELSTOP, 6' LONG, 8" WIDE, 2' FROM STALL HEAD. CENTER BETWEEN SPACES AND SECURE TO PAVEMENT. SEE DETAIL 2/C2.10
5. CONSTRUCT ASPHALT CONCRETE PAVEMENT SECTION PER CLACKAMAS COUNTY STANDARD DRAWING C100, SHEET C2.10. PAVEMENT SECTIONS SHALL BE PER "LOCAL" FUNCTIONAL CLASSIFICATION. SUBGRADE SHALL BE PREPARED PER GEOTECHNICAL REPORT.
6. CONSTRUCT NEW FLUSH CONCRETE SIDEWALK PER CLACKAMAS COUNTY STANDARD DRAWING S960, SHEET C2.10. SEE GRADING PLAN, SHEET C3.00, FOR ELEVATION DETAILS.
7. INSTALL NEW FENCE. COORDINATE MATERIAL AND FENCE POST REQUIREMENTS WITH OWNER AND ARCHITECT.
8. CONNECT TO EXISTING PAVEMENT. COORDINATE WITH GRADING PLAN, SHEET C3.00, AND CONTACT ENGINEER IF ANY DISCREPANCIES OCCUR.
9. INSTALL BENCH. COORDINATE STYLE WITH ARCHITECT AND OWNER.
10. INSTALL NEW TREE PER CLACKAMAS COUNTY STANDARD DRAWING L100, SHEET C2.10. COORDINATE SPECIES WITH ARCHITECT.
11. CONSTRUCT NEW GRAVEL AREA PER DETAIL 4/C2.10.
12. CONSTRUCT NEW DECK PER ARCHITECTURAL PLANS.
13. CONSTRUCT NEW RAMP WITH RAILS PER ARCHITECTURAL PLANS.
14. CONSTRUCT NEW 2' WIDE VALLEY GUTTER PER DETAIL 3/C2.10. COORDINATE WITH GRADING PLAN, SHEET C3.00.
15. CONSTRUCT NEW STAIRS PER ARCHITECTURAL PLANS.
16. CONSTRUCT NEW TRASH ENCLOSURE. COORDINATE LAYOUT AND FENCING WITH ARCHITECTURAL PLANS.
17. CONSTRUCT NEW PORTLAND CONCRETE PAVEMENT SECTION PER DETAIL 5/C2.10.
18. CONSTRUCT NEW CONCRETE SIDEWALK PER CLACKAMAS COUNTY STANDARD DRAWING S960, SHEET C2.10. SEE GRADING PLAN, SHEET C3.00, FOR ELEVATION DETAILS.

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20 0 10 20

(IN FEET)
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CIVIL / STRUCTURAL

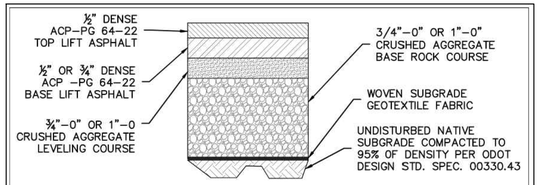
Design Development
11/12/2023

Revision	
Date:	Issue:

Clackamas Emergency Shelter
16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title:
SITE LAYOUT PLAN

Sheet Number:
C2.00



ASPHALTIC CONCRETE STANDARD STRUCTURAL SECTION

FUNTIONAL CLASSIFICATION	LEVEL ACP	ACP DEPTH (IN.)	AGGREGATE LEVELING COURSE DEPTH (IN.)	AGGREGATE BASE COURSE DEPTH (IN.)
LOCAL	2	4	3	6
CONNECTOR	2	4	3	6
COLLECTOR	3	6	4	10
LOCAL, CONNECTOR, OR COLLECTOR SERVING COMMERCIAL	3	7–1/2	4	10
MINOR/MAJOR ARTERIALS	3	7–1/2	4	10

NOTES

1. THE STREET SECTIONS ARE A MINIMUM. IF THE EXISTING STREET SECTION IS GREATER THAN THE MINIMUM REQUIRED, THE PROPOSED STREET SECTION SHALL BE CONSTRUCTED IN KIND. THE ENGINEER OF RECORD IS RESPONSIBLE FOR AN ADEQUATE STRUCTURAL SECTION.
2. FOR IMPROVEMENTS TO EXISTING STREETS, SAW CUT LINE SHALL BE APPROVED BY COUNTY ENGINEERING STAFF PRIOR TO COMMENCEMENT OF WORK, AND MAY BE REQUIRED TO EXCEED CENTERLINE. THE SAWCUT LOCATION SHALL NOT BE LOCATED IN A WHEEL TRACK.
3. ASPHALTIC CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF OREGON STANDARD SPECIFICATIONS SEC. 00744.40. ACP TO BE PLACED IN LIFTS BETWEEN 2 INCHES AND 3 INCHES IN THICKNESS.
4. WITHIN A DEVELOPMENT, THE FINAL LIFT OF ASPHALTIC CONCRETE SHALL NOT BE PLACED ON LOCAL STREETS UNTIL ALL UTILITIES WITHIN THE ROADWAY HAVE BEEN ACCEPTED AND ALL CURB REPAIRS COMPLETED.
5. MATERIAL AND INSTALLATION SHALL CONFORM TO CURRENT OREGON STANDARD SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS.
6. THE WIDTH AND EXTENT OF THE IMPROVEMENT SHALL BE DETERMINED BY ENGINEERING ACCORDING TO STREET CLASSIFICATION.
7. CRUSHED AGGREGATE USED FOR BASE ROCK AND LEVELING COURSE SHALL CONFORM TO THE REQUIREMENTS OF OREGON STANDARD SPECIFICATIONS SEC. 02630.

REVISION	DATE	BY
REVISED	11/19	BP
REVISED	12/19	SC
REVISED	3/20	RM

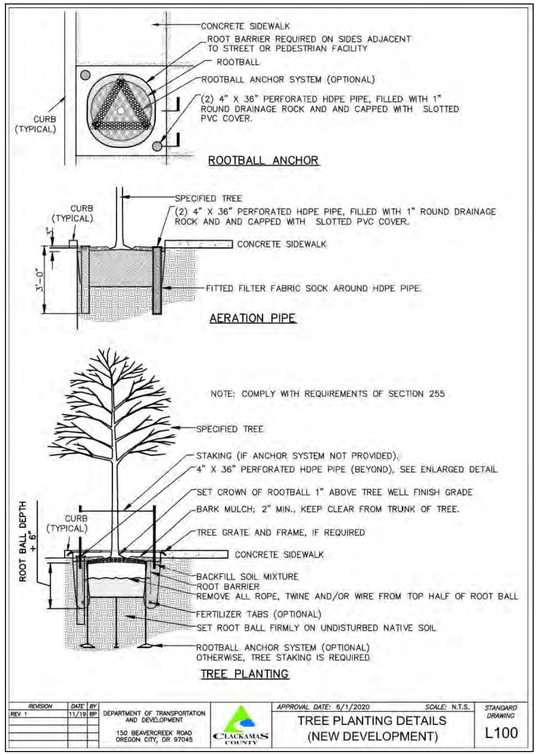
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

CLACKAMAS COUNTY

APPROVAL DATE: 6/1/2020 SCALE: N.T.S.

STREET STRUCTURAL SECTION

STANDARD DRAWING C100



REVISION	DATE	BY
REV 1	11/19	BP

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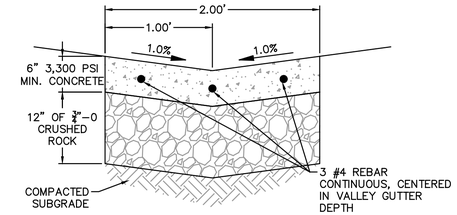
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

CLACKAMAS COUNTY

APPROVAL DATE: 6/1/2020 SCALE: N.T.S.

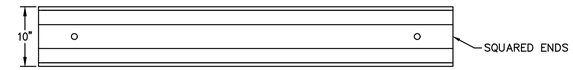
TREE PLANTING DETAILS (NEW DEVELOPMENT)

STANDARD DRAWING L100

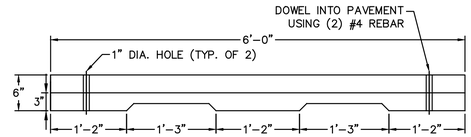


* NO CONTRACTION JOINTS IN VALLEY GUTTER.

VALLEY GUTTER 3 C2.10
SCALE: N.T.S.

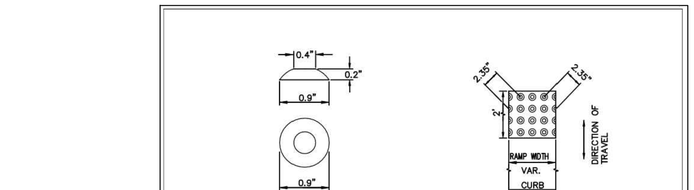


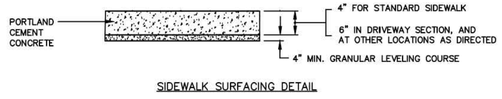
PLAN



ELEVATION

CONCRETE WHEEL STOP 2 C2.10
SCALE: N.T.S.





SIDEWALK SURFACING DETAIL

NOTES

1. CONCRETE AND MISC. MATERIALS USED IN CONSTRUCTION SHALL CONFORM TO CURRENT OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION. DETECTABLE WARNINGS ON WALKING SURFACES AS PER ADA REQUIREMENTS.
2. DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9 in (23 mm) A HEIGHT OF NOMINAL 0.2 in (5 mm) AND A CENTER–TO–CENTER SPACING OF NOMINAL 2.35in (60mm) AND YELLOW IN COLOR. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE. DETECTABLE WARNINGS USED ON INTERIOR SURFACES SHALL DIFFER FROM ADJOINING WALKING SURFACES IN RESILIENCY OR SOUND–ON–CANE CONTACT.
3. EXPANSION JOINT SPACING EVERY 45' MIN. OR AT EQUAL INTERVALS CORRESPONDING TO CURB LINE. JOINTS SHALL BE PROVIDED PER ODOT STD. DWG. RD722.
4. THE SURFACE FINISH SHALL BE CROSS BROOMED.
5. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3300 PSI IN 28 DAYS.

REVISION	DATE	BY
EDIT NOTE 1	12/12	RN
EDIT NOTE 6	12/12	RN
REVISION	11/19	BP
REVISION	3/20	RM

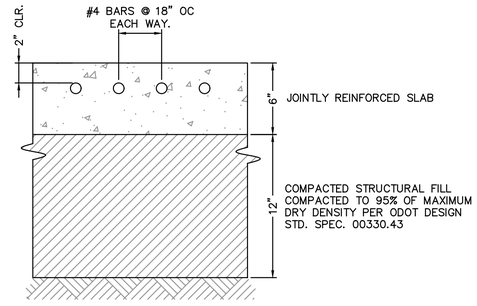
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

CLACKAMAS COUNTY

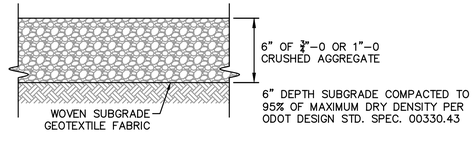
APPROVAL DATE: 6/1/2020 SCALE: N.T.S.

STANDARD SIDEWALK & CURB RAMP NOTES & DETAILS

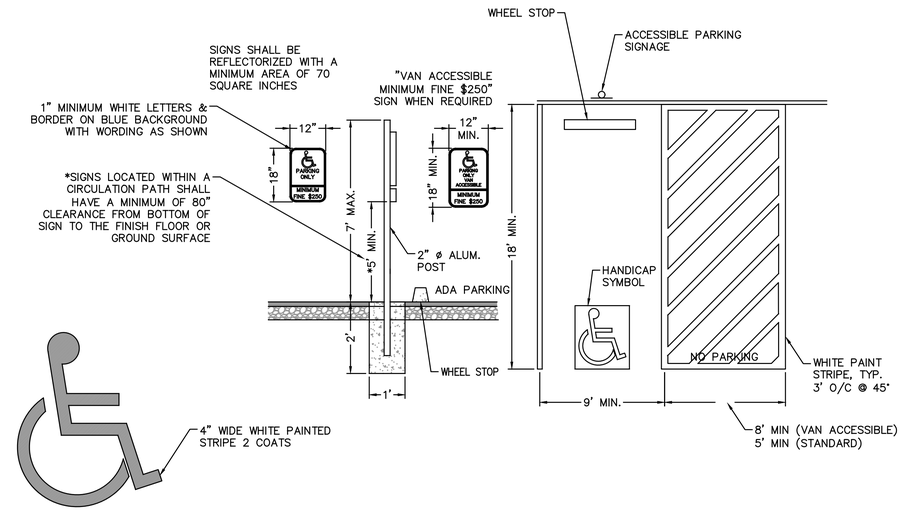
STANDARD DRAWING S960



PORTLAND CONCRETE SECTION DETAIL 5 C2.10
SCALE: N.T.S.



GRAVEL SECTION DETAIL 4 C2.10
SCALE: N.T.S.



ACCESSIBLE PARKING SPACE 1 C2.10
SCALE: N.T.S.

REGISTERED PROFESSIONAL ENGINEER
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OREGON
MARCH 13, 2012
DAMON A. SMITH
EXPIRES: 6-30-2024

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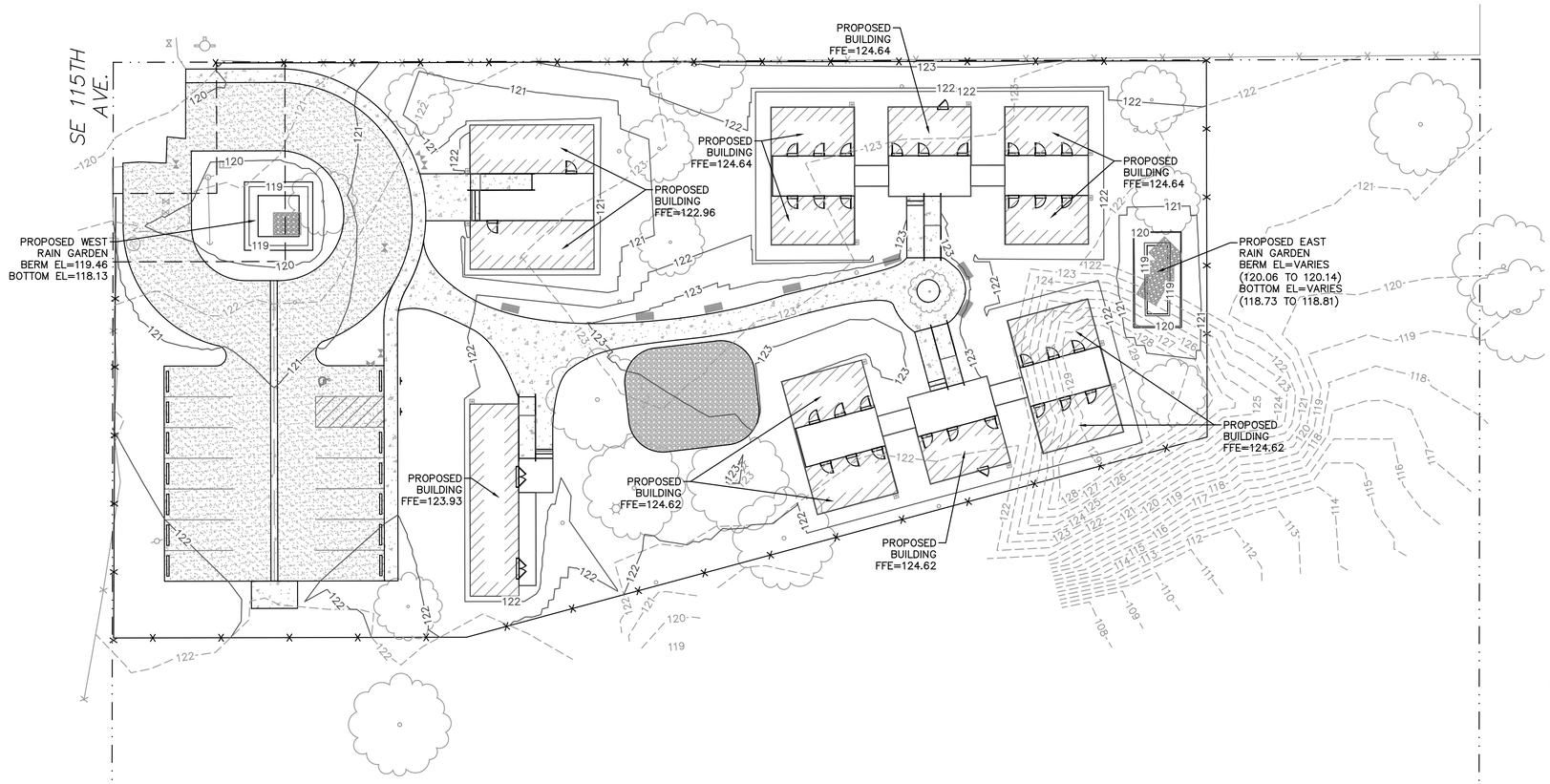
Clackamas Emergency Shelter
16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title:
SITE LAYOUT DETAILS

Sheet Number:
C2.10

GRADING GENERAL NOTES:

1. TRAFFIC CONTROL FOR THE SITE SHALL FOLLOW THE PROVISIONS IN THE LATEST VERSION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. SIDEWALK AND ACCESSIBLE STRIPED PATH CROSS SLOPES SHALL NOT EXCEED 1.5% CROSS SLOPE, WHERE APPLICABLE. NOTIFY ENGINEER IF ANY DISCREPANCIES OCCUR.
3. ADA AREAS SHALL NOT EXCEED 1.8% IN ANY DIRECTION.
4. ALL DRAINAGE AND UTILITY STRUCTURES SHALL BE INSTALLED SO THAT RIM ELEVATIONS CAN BE ADJUSTED TO MATCH FINISHED GRADE.
5. REFER TO FINE GRADING PLAN, SHEET C3.10, FOR ELEVATION AND GRADE INFORMATION NOT SHOWN HERE.



GRAPHIC SCALE

20 0 10 20

(IN FEET)
1 INCH = 20 FEET

N

REGISTERED PROFESSIONAL ENGINEER
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Clackamas Emergency Shelter
16590 SE 114th Ave
Clackamas, Oregon 97015

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GRADING PLAN

Sheet Number:
C3.00

GRADING GENERAL NOTES:

1. TRAFFIC CONTROL FOR THE SITE SHALL FOLLOW THE PROVISIONS IN THE LATEST VERSION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. SIDEWALK AND ACCESSIBLE STRIPED PATH CROSS SLOPES SHALL NOT EXCEED 1.5% CROSS SLOPE, WHERE APPLICABLE. NOTIFY ENGINEER IF ANY DISCREPANCIES OCCUR.
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4. ALL DRAINAGE AND UTILITY STRUCTURES SHALL BE INSTALLED SO THAT RIM ELEVATIONS CAN BE ADJUSTED TO MATCH FINISHED GRADE.

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PROPOSED WEST RAIN GARDEN
BERM EL=119.46
BOTTOM EL=118.13

PROPOSED EAST RAIN GARDEN
BERM EL=VARIES
(120.06 TO 120.14)
BOTTOM EL=VARIES
(118.73 TO 118.81)

GRAPHIC SCALE
10 0 5 10
(IN FEET)
1 INCH = 10 FEET

N

Clackamas Emergency Shelter

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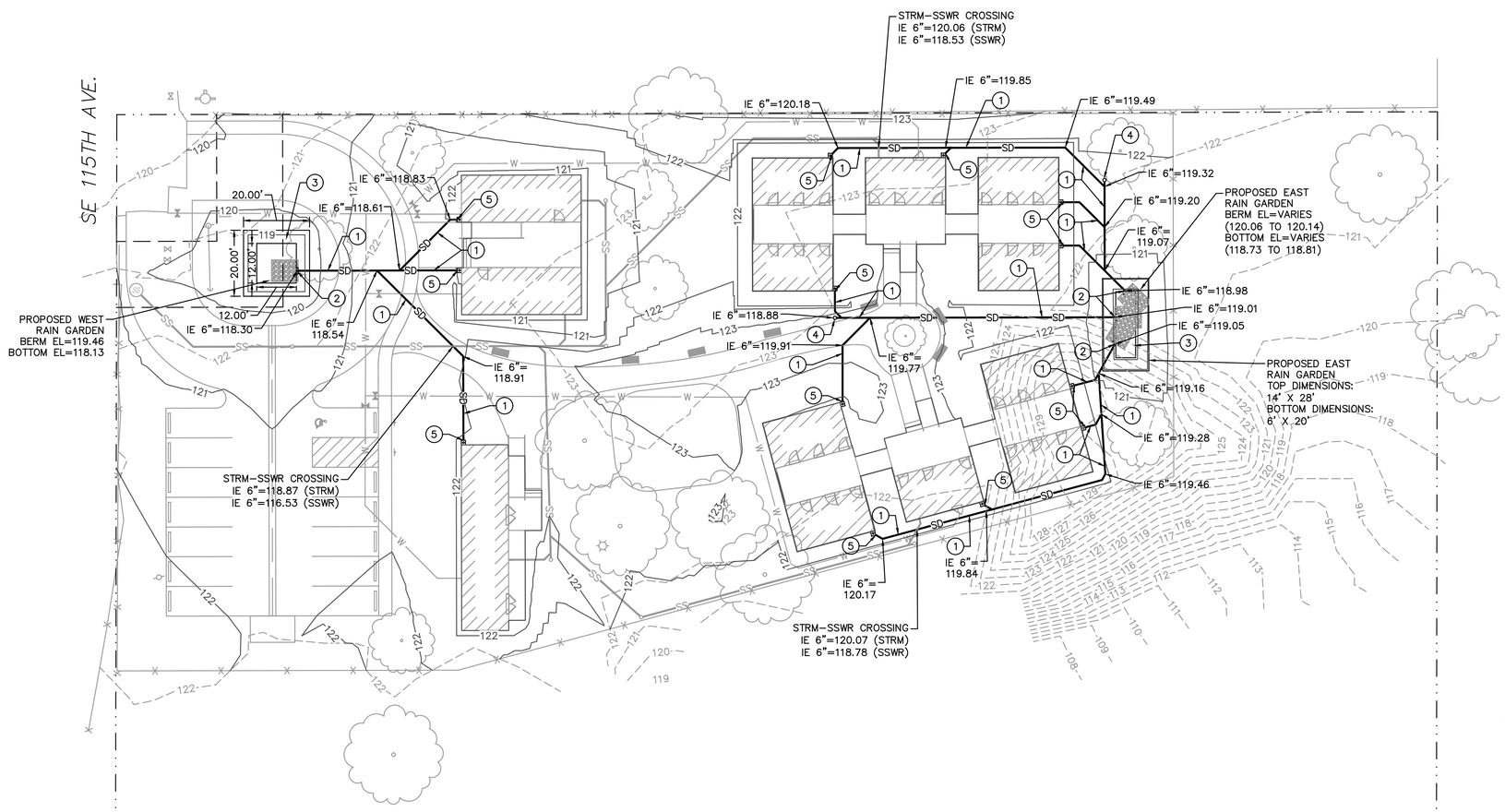
Sheet Title:
FINE GRADING PLAN

Sheet Number:
C3.10



GRAPHIC SCALE

20 0 10 20

(IN FEET)
1 INCH = 20 FEET

N

GENERAL STORMWATER NOTES:

1. IN AREAS WHERE COVER OVER STORMWATER LINES IS LESS THAN 36", LINES SHALL BE COMPRISED OF DUCTILE IRON, CLASS–51 CEMENT–LINED PIPE (DI CL–51), OR APPROVED EQUAL.
2. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL TEST SOIL BELOW INFILTRATION SYSTEM FACILITY TO ENSURE SOIL SATISFIES CRITERIA FOR WATER QUALITY.
3. UTILITY TRENCHING SHALL BE CONSTRUCTED PER CLACKAMAS COUNTY STANDARD DRAWING SWM–38, SHEET C4.10.

(#) STORMWATER UTILITY KEYNOTES:

1. CONSTRUCT NEW 6" DUCTILE IRON STORM DRAINAGE PIPE. SLOPE SHALL BE 1% MIN., UNLESS PLAN ELEVATIONS SHOW OTHERWISE.
2. DAYLIGHT PIPE IN SWALE SIDE SLOPE. PROVIDE 18" THICK, 6.5' X 8' ODOT CLASS 50 RIPRAP PAD AT OUTLET LOCATIONS PER CLACKAMAS COUNTY STANDARD DRAWINGS SWM–45 SHEET C4.10. THE FINAL LENGTH OF PIPE THAT DAYLIGHTS INTO PONDS SHALL BE D.I. OR CONCRETE.
3. CONSTRUCT STORMWATER RAIN GARDEN PER CLACKAMAS COUNTY STANDARD DRAWING SWM–04, SHEET C4.10. AREA WITHIN BASIN SHALL BE PROTECTED FROM USE AS CONSTRUCTION STORAGE AREAS AND OVER–COMPACTION BY EQUIPMENT THROUGHOUT THE CONSTRUCTION PERIOD.
4. CONSTRUCT NEW CLEANOUT PER DETAIL 1/C4.10.
5. CONNECT STORM DRAINAGE PIPE TO ROOF DOWNSPOUT PER DETAIL 2/C4.10. COORDINATE WITH ARCHITECTURAL PLANS.

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STORMWATER DRAINAGE PLAN

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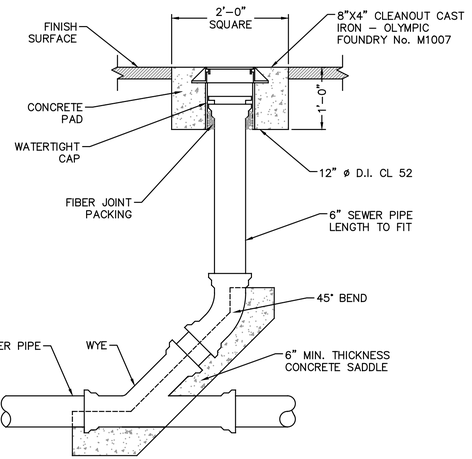
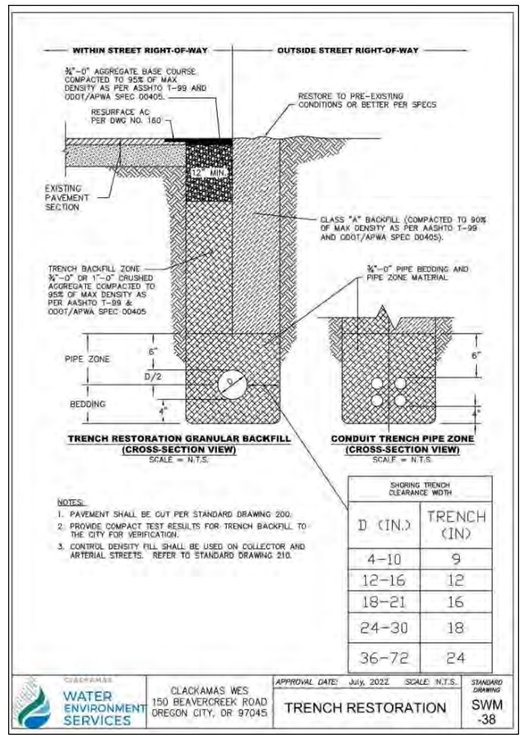


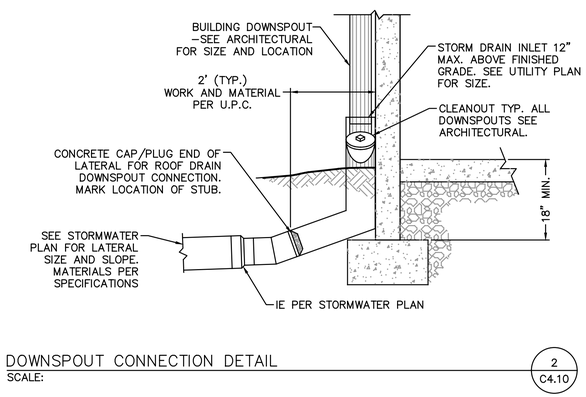
STORMWATER CLEANOUT DETAIL
SCALE:

1
C4.10



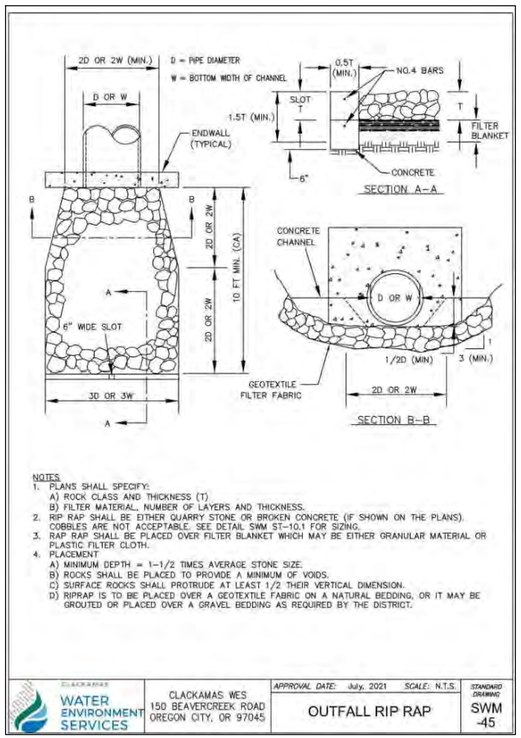
SHORING TRENCH CLEARANCE WIDTH	
D (IN.)	TRENCH (IN)
4-10	9
12-16	12
18-21	16
24-30	18
36-72	24

CLACKAMAS WATER ENVIRONMENT SERVICES	CLACKAMAS WES 150 BEAVERCREEK ROAD OREGON CITY, OR 97045	APPROVAL DATE: July, 2022 SCALE: N.T.S. TRENCH RESTORATION	STANDARD DRAWING SWM -38

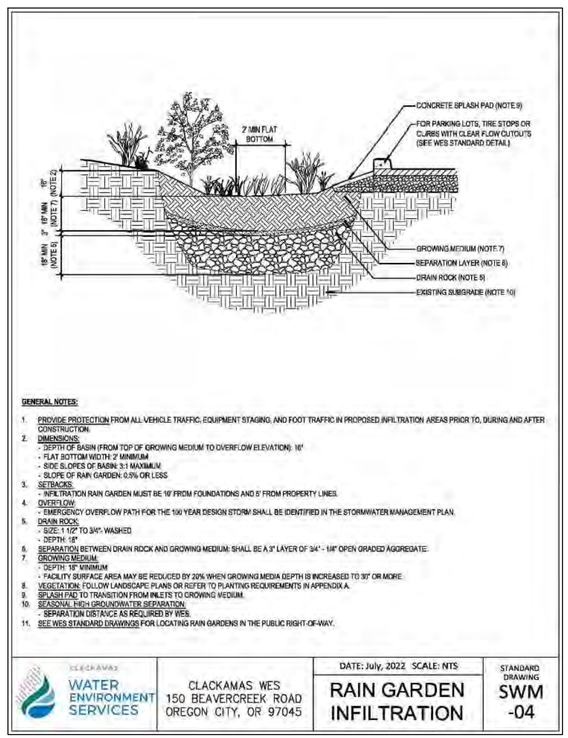


DOWNSPOUT CONNECTION DETAIL
SCALE:

2
C4.10



CLACKAMAS WATER ENVIRONMENT SERVICES	CLACKAMAS WES 150 BEAVERCREEK ROAD OREGON CITY, OR 97045	APPROVAL DATE: July, 2021 SCALE: N.T.S. OUTFALL RIP RAP	STANDARD DRAWING SWM -45



GENERAL NOTES:

1. PROVIDE PROTECTION FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC IN PROPOSED INFILTRATION AREAS PRIOR TO, DURING AND AFTER CONSTRUCTION.
2. DIMENSIONS:
   - DEPTH OF BASIN (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 18"
   - FLAT BOTTOM WIDTH: 2' MINIMUM
   - SIDE SLOPES OF BASIN: 3:1 MAXIMUM.
   - SLOPE OF RAIN GARDEN: 0.5% OR LESS.
3. SETBACKS:
   - INFILTRATION RAIN GARDEN MUST BE 10' FROM FOUNDATIONS AND 5' FROM PROPERTY LINES.
4. OVERFLOW:
   - EMERGENCY OVERFLOW PATH FOR THE 100 YEAR DESIGN STORM SHALL BE IDENTIFIED IN THE STORMWATER MANAGEMENT PLAN.
5. DRAIN ROCK:
   - SIZE: 1 1/2" TO 3/4"- WASHED
   - DEPTH: 18"
6. SEPARATION BETWEEN DRAIN ROCK AND GROWING MEDIUM: SHALL BE A 3" LAYER OF 3/4" - 1/8" OPEN GRADED AGGREGATE.
7. GROWING MEDIUM:
   - DEPTH: 18" MINIMUM
   - FACILITY SURFACE AREA MAY BE REDUCED BY 20% WHEN GROWING MEDIA DEPTH IS INCREASED TO 30" OR MORE.
8. VEGETATION: FOLLOW LANDSCAPE PLANS OR REFER TO PLANTING REQUIREMENTS IN APPENDIX A.
9. SPLASH PAD TO TRANSITION FROM INLETS TO GROWING MEDIUM.
10. SEASONAL HIGH GROUNDWATER SEPARATION:
    - SEPARATION DISTANCE AS REQUIRED BY WES.
11. SEE WES STANDARD DRAWINGS FOR LOCATING RAIN GARDENS IN THE PUBLIC RIGHT-OF-WAY.

CLACKAMAS WATER ENVIRONMENT SERVICES	CLACKAMAS WES 150 BEAVERCREEK ROAD OREGON CITY, OR 97045	DATE: July, 2022 SCALE: NTS RAIN GARDEN INFILTRATION	STANDARD DRAWING SWM -04

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STORMWATER DRAINAGE DETAILS

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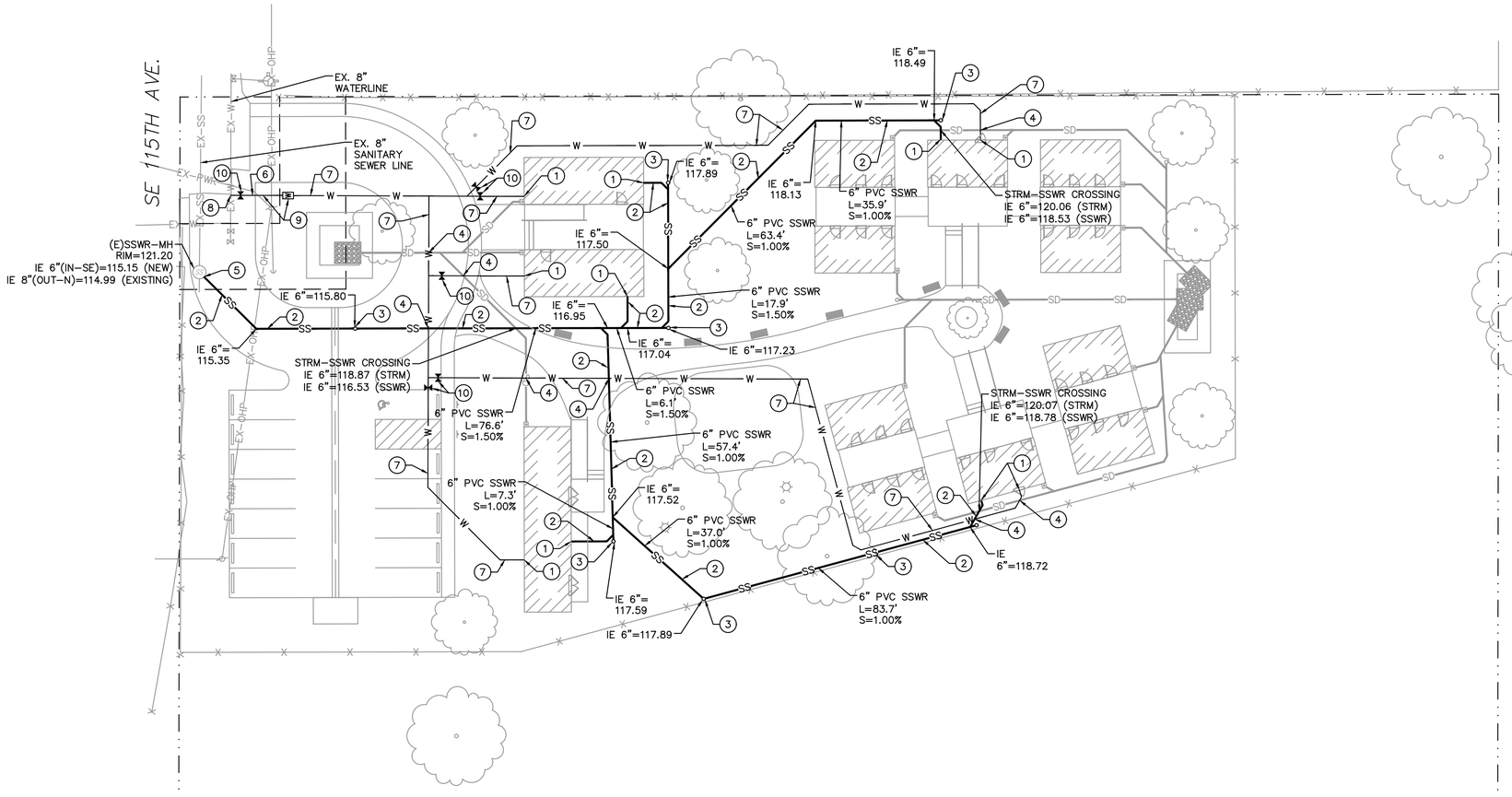

GENERAL UTILITY NOTES:

1. ALL UTILITY STRUCTURES SHALL BE INSTALLED SO THAT RIM ELEVATIONS CAN BE ADJUSTED TO MATCH FINISHED GRADE.
2. IN AREAS WHERE COVER OVER SANITARY SEWER LINES ARE LESS THAN 36", THE SANITARY SEWER LINE SHALL BE COMPRISED OF DUCTILE IRON, CLASS-51 CEMENT-LINED PIPE (DI CL-51).
3. BUILDING TIE-IN CONNECTIONS SHALL BE COORDINATED WITH PLUMBING DRAWINGS.
4. SANITARY SEWER UTILITY TRENCHING SHALL BE CONSTRUCTED PER CLACKAMAS COUNTY STANDARD DRAWING SAN-001, SHEET C5.10.
5. DOMESTIC WATER UTILITY TRENCHING SHALL BE CONSTRUCTED PER CLACKAMAS RIVER WATER STANDARD DETAIL 101A, SHEET C5.10.
6. CONTRACTOR SHALL LOCATE CONCRETE CURB LOCATIONS IN FIELD PRIOR TO SETTING UTILITY LIDS. LIDS SHALL BE INSTALLED OUTSIDE OF CURB LINES.
7. ALL NEW UTILITY TURNS, RADII, UNIONS, OR CONNECTION LOCATIONS SHALL BE RECORDED VERTICALLY AND HORIZONTALLY ON THE CONTRACTORS AS-BUILTS.
8. ALL SANITARY SEWER PIPES DESIGNED WITH GRADES LESS THAN 2% MUST HAVE INVERT ELEVATIONS VERIFIED PRIOR TO BACKFILLING.
9. THE CONTRACTOR SHALL PROVIDE PASSING TEST REPORTS FOR ALL BACKFLOW ASSEMBLIES (E.G. IRRIGATION AND FIRE SYSTEMS) TO THE CLACKAMAS COUNTY PUBLIC WORKS. THE PASSING BACKFLOW ASSEMBLY TESTS AND THEIR SUBMITTALS TO THE COUNTY ARE REQUIRED PRIOR TO ISSUING THE CERTIFICATE OF OCCUPANCY.
10. CONTRACTOR SHALL FOLLOW ALL CLACKAMAS COUNTY PUBLIC WORKS RULES AND REGULATIONS FOR WATER SERVICE INSTALLATIONS.

(#) UTILITY CONSTRUCTION KEYNOTES:

1. COORDINATE CONNECTION TO BUILDING WITH PLUMBING AND MECHANICAL DRAWINGS. FIELD VERIFY LOCATION PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
2. CONSTRUCT NEW 6" SDR35 PVC SANITARY SEWER PIPE. MINIMUM PIPE SLOPE SHALL BE 1.5%, UNLESS ELEVATIONS SHOW OTHERWISE.
3. CONSTRUCT NEW CLEANOUT TO GRADE PER CLACKAMAS COUNTY STANDARD DRAWINGS SAN-018 AND SAN-020, SHEET C5.10.
4. PROVIDE 18" MINIMUM VERTICAL SEPARATION AT DOMESTIC WATER-UTILITY CROSSING. USE ONE FULL LENGTH OF THE WATER LINE CENTERED AT THE CROSSING. NOTIFY ENGINEER IF ANY DISCREPANCIES OCCUR.
5. CONNECT TO EXISTING SEWER MANHOLE PER CLACKAMAS COUNTY STANDARD DRAWING SAN-022/C5.10.
6. CONSTRUCT NEW 2" TYPE K COPPER DOMESTIC WATER LINE.
7. CONSTRUCT NEW 2" HDPE DOMESTIC WATER LINE.
8. CONSTRUCT 2" WET TAP ON EXISTING 8" WATER LINE PER CLACKAMAS RIVER WATER STANDARD DETAIL 105/C5.10.
9. CONSTRUCT NEW 2" SERVICE ASSEMBLY PER CLACKAMAS RIVER WATER STANDARD DETAIL 109/C5.10.
10. CONSTRUCT NEW 2" GATE VALVE PER CLACKAMAS RIVER WATER STANDARD DETAIL 104A/C5.10.

GRAPHIC SCALE

20 0 10 20

(IN FEET)
1 INCH = 20 FEET

N

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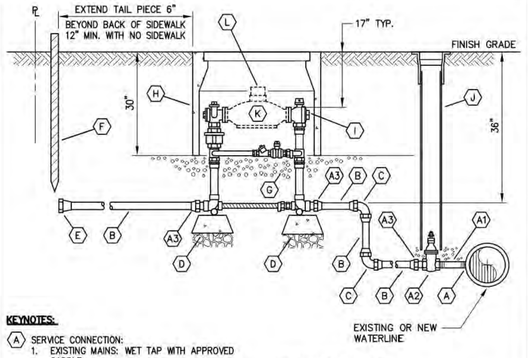


KEYNOTES:

(A) SERVICE CONNECTION:
1. EXISTING MAINS: WET TAP WITH APPROVED SADDLE.
2. NEW MAINS: USE APPROVED CAST TEE.

(A1) 2" I.P.T BRASS NIPPLE (2"–4" LENGTH)

(A2) 2" I.P.T.xI.P.T. GATE VALVE WITH VALVE BOX AND LID

(A3) 2" M.I.P.T.xC.U. RESTRAINED COUPLER

(B) 2" TYPE K RIGID COPPER TUBING, TYPICAL

(C) 2" 90° CUxCU FORD TYPE G COMPRESSION COUPLING OR APPROVED EQUAL

(D) CONCRETE PIER BLOCKS FOR SETTER SUPPORT

(E) 2" STRAIGHT JOINT COMPRESSION COUPLING (FIPxCU). PLUG WITH PVC IP PLUG. LEAK TEST ASSEMBLY AT SYSTEM PRESSURE.

(F) 2"x2" TEMPORARY MARKER STAKE, PAINTED BLUE

KEYNOTES: (CONTINUED)

(G) PROVIDE 3/4"–MINUS COMPACTED GRAVEL BACKFILL TO BOTTOM OF BYPASS TO SET METER BOX TO FINISH GRADE

(H) OLDCASTLE 2436–30 METER BOX WITH DFW B40C–4EPA–LID OR OLDCASTLE STEEL COVER AS APPROVED

(I) 2" METER SETTER (FORD 70 SERIES COPPERSETTER MODEL #VBH77–95035–003–NL) OR EQUAL

(J) VALVE BOX ASSEMBLY PER CRW STANDARD DETAIL 104

CRW–FURNISHED METER ASSEMBLY INCLUDES:

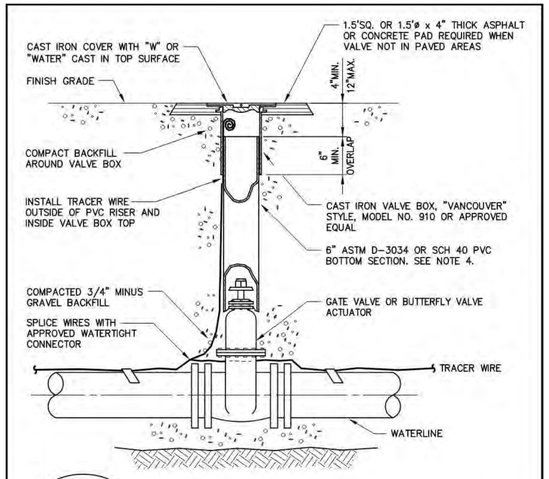
(K) 1–1/2" OR 2" METER AS SPECIFIED

(L) RADIO READ METER REGISTER

NOTES:
1. REFERENCE CRW TECHNICAL SPECIFICATION SECTION 15150.
2. ALL SERVICE MATERIALS SHALL COMPLY WITH "LEAD–FREE" REQUIREMENTS OF THE SPECIFICATIONS.
3. PROVIDE PROPER SHORING FOR EXCAVATIONS AS REQUIRED. COMPLY WITH OREGON OSHA REGULATIONS.

NO	REVISION	1-1/2" OR 2" SERVICE ASSEMBLY
		NEW
		SCALE: N.T.S. DATE: MAY 2021
		DRAWING: CRW.STD.DTL109.dwg — 109

Clackamas River Water

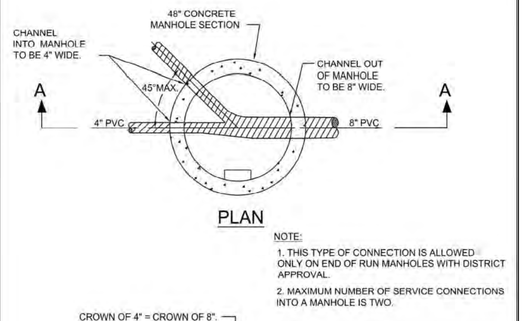


"VANCOUVER" STYLE VALVE BOX

NOTES:
1. REFERENCE CRW TECHNICAL SPECIFICATION SECTION 15200.
2. VALVE BOXES SHALL BE CENTERED DIRECTLY OVER THE VALVE NUT IN A VERTICAL POSITION.
3. VALVE BOX TOP SHALL BE ADJUSTED TO FINISH GRADE.
4. PVC LOWER SHALL BE A CONTINUOUS PIECE – NO BELLS OR COUPLERS.
5. FOR VALVES 6–FEET OR DEEPER, PROVIDE STEEL EXTENSION STEM TO RAISE OPERATING NUT TO WITHIN 3'–4" BELOW GRADE.

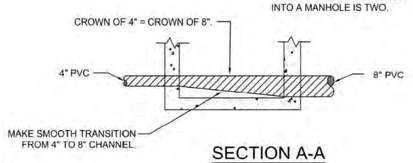
NO	REVISION	TYPICAL VALVE AND ACCESSORIES
		SCALE: N.T.S. DATE: MAY 2021
		DRAWING: CRW.STD.DTL104A.dwg — 104A

Clackamas River Water



PLAN

NOTE:
1. THIS TYPE OF CONNECTION IS ALLOWED ONLY ON END OF RUN MANHOLES WITH DISTRICT APPROVAL.
2. MAXIMUM NUMBER OF SERVICE CONNECTIONS INTO A MANHOLE IS TWO.

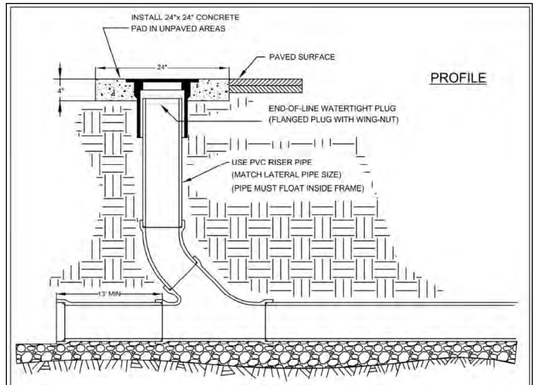


SECTION A-A

SERVICE CONNECTION INTO MANHOLE

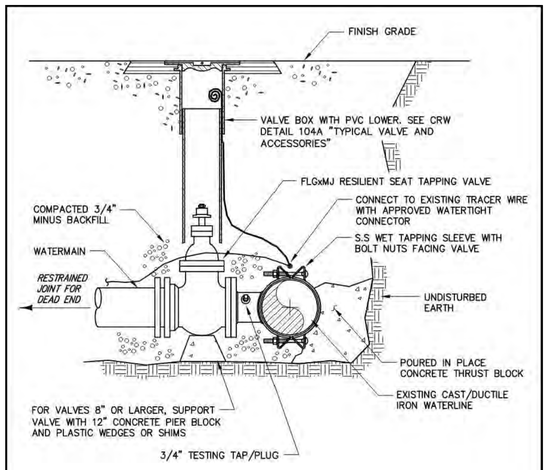
SCALE: NTS

CLACKAMAS WATER ENVIRONMENT SERVICES | CLACKAMAS WES 150 BEAVERCREEK ROAD OREGON CITY, OR 97045 | APPROVAL DATE: July, 2022 SCALE: N.T.S. | SERVICE CONNECTION INTO MANHOLES | STANDARD DRAWING SAN-022



CLEANOUT PAD

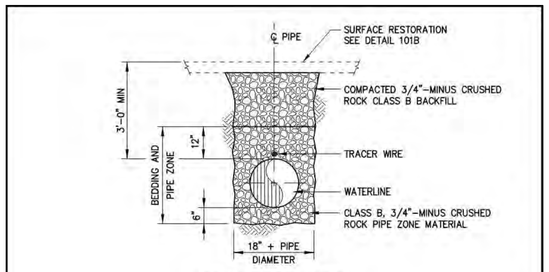
CLACKAMAS WATER ENVIRONMENT SERVICES | CLACKAMAS WES 150 BEAVERCREEK ROAD OREGON CITY, OR 97045 | APPROVAL DATE: July, 2022 SCALE: N.T.S. | CLEANOUT PAD | STANDARD DRAWING SAN-018



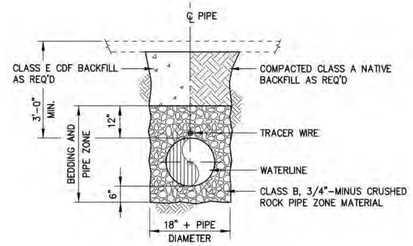
NOTES:
1. REFERENCE CRW TECHNICAL SPECIFICATION SECTION 15100.
2. EXISTING WATERLINE SURFACE SHALL BE CLEANED PRIOR TO ATTACHING SLEEVE.
3. PRESSURE TEST AND TAP SHALL BE MADE IN THE PRESENCE OF AN AUTHORIZED DISTRICT REPRESENTATIVE.
4. TAP SHALL BE MADE NO CLOSER THAN 18" FROM THE NEAREST JOINT OR TAP.
5. WET TAPPING SLEEVE SHALL BE WRAPPED IN (4–6 MIL) VISQUEEN.
6. ALL NUTS, BOLTS, AND WASHERS SHALL BE STAINLESS STEEL ON SADDLE (USE ANTI–GALL COATING ON ALL THREADS).
7. SLEEVE AND VALVE SHALL BE AS LEVEL AS POSSIBLE.
8. TAPPING SLEEVE SHALL BE PER CRW SPECIFICATION FOR EXISTING PIPE MATERIAL AND PRESSURE.

NO	REVISION	WET TAP ASSEMBLY
		SCALE: N.T.S. DATE: MAY 2021
		DRAWING: CRW.STD.DTL105.dwg — 105

Clackamas River Water



TYPICAL TRENCH DETAIL

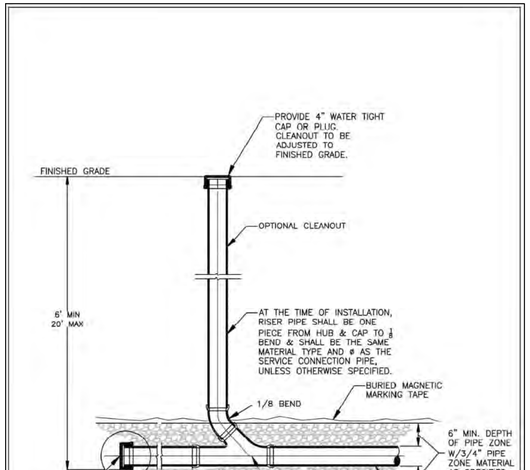


ALTERNATE TRENCH DETAIL
(AS DIRECTED BY DISTRICT)

NOTES:
1. REFERENCE CRW TECHNICAL SPECIFICATION SECTION 02225.
2. ALL CRUSHED ROCK AND NATIVE BACKFILL SHALL BE COMPACTED TO 95% MAXIMUM RELATIVE DENSITY, UNLESS OTHERWISE SPECIFIED.
3. PROVIDE PROPER SHORING AS REQUIRED. COMPLY WITH OREGON OSHA REGULATIONS.

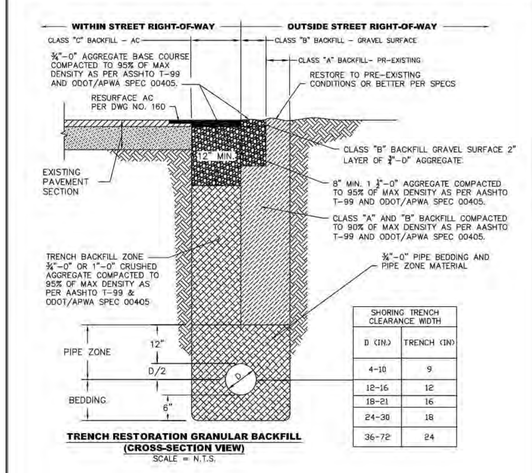
NO	REVISION	TYPICAL TRENCH
		SCALE: N.T.S. DATE: MAY 2021
		DRAWING: CRW.STD.DTL101A.dwg — 101A

Clackamas River Water



1. ALL PIPE AND FITTINGS SHALL BE ASTM D-3034, SDR 35.
2. ON LOTS WITH EXISTING HOMES, CONTRACTOR SHALL INSTALL APPROVED HUBS AND CAPS FLUSH WITH FINISHED GRADE.
3. CLEANOUTS SHALL NOT BE CONSTRUCTED SO THE CLEANOUTS CAP WILL END UP IN SIDEWALKS, STEPS OR DRIVEWAYS.

CLACKAMAS WATER ENVIRONMENT SERVICES | CLACKAMAS WES 150 BEAVERCREEK ROAD OREGON CITY, OR 97045 | APPROVAL DATE: July, 2022 SCALE: N.T.S. | SERVICE CONNECTION CLEANOUT | STANDARD DRAWING SAN-020



SHORING TRENCH CLEARANCE WIDTH	
D (IN)	TRENCH (IN)
4–10	9
12–16	12
18–21	16
24–30	18
36–72	24

TRENCH RESTORATION GRANULAR BACKFILL (CROSS-SECTION VIEW)
SCALE = N.T.S.

NOTES:
1. PAVEMENT SHALL BE CUT PER STANDARD DRAWING 200.
2. PROVIDE COMPACT TEST RESULTS FOR TRENCH BACKFILL.

CLACKAMAS WATER ENVIRONMENT SERVICES | CLACKAMAS WES 150 BEAVERCREEK ROAD OREGON CITY, OR 97045 | APPROVAL DATE: July, 2022 SCALE: N.T.S. | TRENCH RESTORATION CLASS "A", "B" & "C" | STANDARD DRAWING SAN -001

REGISTERED PROFESSIONAL ENGINEER
86615
OREGON
MARCH 13, 2012
DIMON A. SMITH
EXPIRES: 6-30-2024

DCI ENGINEERS
921 SW WASHINGTON ST. ● SUITE 560
PORTLAND, OREGON 97205
PHONE: (503) 242-2448 ● FAX: (503) 242-2449
WEBSITE: WWW.DCI-ENGINEERS.COM
CIVIL / STRUCTURAL

Design Development
11/12/2023

Revision	
Date:	Issue:

Clackamas Emergency Shelter
16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title: **UTILITY DETAILS**

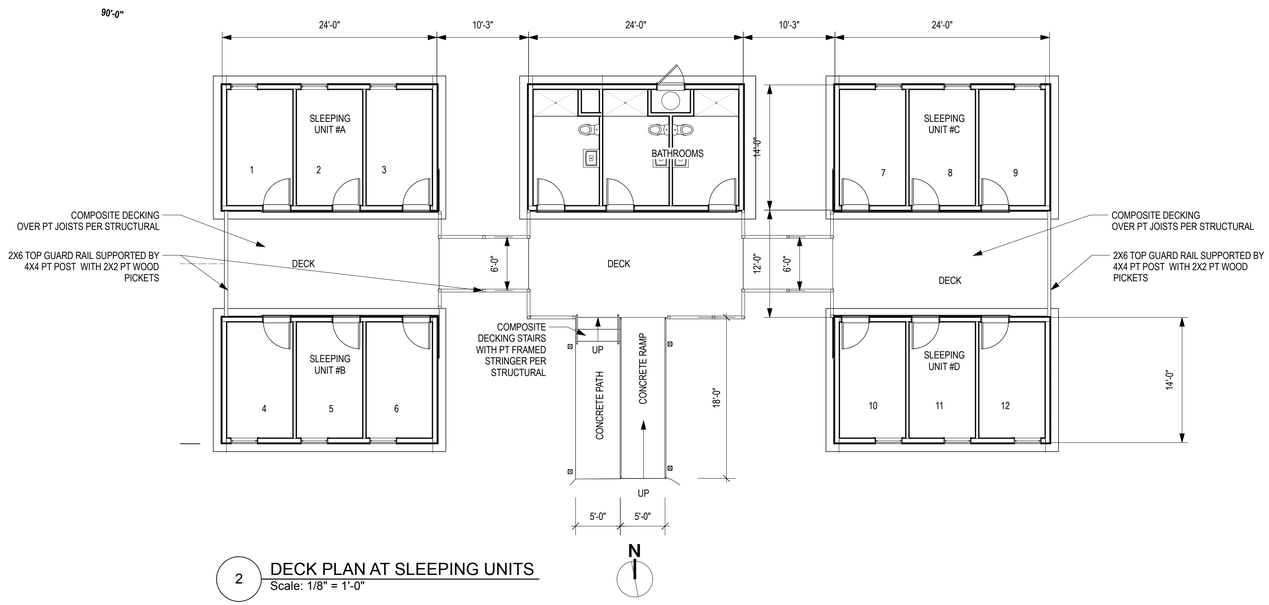
Sheet Number: **C5.10**

1 SITE PLAN
Scale: 1" = 20'-0"

N

SITE PLAN KEYNOTES

1. RAIN GARDEN PER CIVIL
2. 6'-0" HT. CHAIN LINK FENCE
3. LED BOLLARD LIGHTS 42" HT x 6" DIAM. ALL UNDERGROUND WIRING BY DESIGNED BY ELECTRICAL CONTRACTOR
4. 6' HT. WOOD FENCE ENCLOSURE 4X4 WOOD POST ANCHORED TO 4" CONCRETE SLAB
5. ALL SITE FURNISHING PROVIDED BY SERVICE PROVIDER
6. ALL DECKS TO BE COMPOSITE DECKING OVER PT. FRAMING PER STRUCTURAL



2 DECK PLAN AT SLEEPING UNITS
Scale: 1/8" = 1'-0"

N

base
REGISTERED ARCHITECT
KEGAN C. FLANDERKA
PORTLAND, OREGON
11773
STATE OF OREGON

1300 SE Stark Street #209
Portland OR, 97214
(503) 477-8268
www.basedesignarchitecture.com

Permit Set
1/1/2024

Revision	
Date:	Issue:

Clackamas Emergency Shelter Village
16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title:
SITE PLAN

Sheet Number:
A001

OFFICE VIEW LOOKING OFFICE NW - MODEL VIEW

BATH & SLEEPING ENTRY MODEL VIEW

KITCHEN & LAUNDRY MODEL VIEW

OFFICE & PATH ENTRY MODEL VIEW

COMMON AREA LOOKING SW - MODEL VIEW

SITE ENTRY MODEL VIEW

COMMON AREA LOOKING SOUTH - MODEL VIEW

base

REGISTERED ARCHITECT
KEGAN C. FLANDERKA
PORTLAND, OREGON
11773
STATE OF OREGON

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Permit Set
1/1/2024

Revision	
Date:	Issue:

Clackamas Emergency Shelter Village
16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title:
MODEL VIEWS

Sheet Number:
A002

OUTLINE SPECIFICATIONS

DIVISION 1 GENERAL REQUIREMENTS

01 0000 GENERAL CONDITIONS

1. The Contract (Owner-Contractor Agreement) and associated General Conditions of the Contract are a separate, but equal, part of these Contract Documents.

2. The Owner will pay for all necessary plan check fees, building permits and other fees as required by the public authority.

01 1100 SUMMARY OF WORK

1. Construction of Emergency Housing Community consisting of two office modules, one kitchen & laundry module, four sleeping modules and 2 bathroom modules. Structures are to be modularly fabricated and place on site built foundations.
2. Site Work includes:
- earthwork, landscaping and stormwater management systems.
- Utilities
- Design Build, Mechanical, Plumbing, Electrical, Access Control and Telecommunications Systems.
- and new construction as shown and described in these documents.

01 3100 PROJECT MANAGEMENT & COORDINATION

1. General Contractor is responsible to review Construction Drawings for possible conflicts prior to construction.
2. General Contractor to Verify Existing Conditions Prior to demolition and construction.
3. Notify architect of any discrepancy prior to commencing work.

O1 3500 DESIGN BUILD / DEFERRED SUBMITTALS AND SUBMITTAL REQUIREMENTS.

1. General:

A. Certain components of the Work under this project are Design Build. It is the Contractor's responsibility to coordinate and assume and or assign to subcontractors the complete responsibility for the design, calculations, submittals, fabrication, transportation, and installation of the Design Build portions or components as required in this section. The Applicant is responsible for submitting to the governing jurisdictions all Design Build documents required for the separate approval of each Design Build item. There will be no exceptions. Design Build components of this work are defined as complete, operational systems, provided for their intended use.

B. The Architect's or Engineer of Record's review of Design Build submittals shall be for design intent and shall not lessen or shift the responsibility from the applicant or the assigned subcontractor to the Owner nor the design professional. It will not be the responsibility of the Owner to pay for delays, additional hours of work or overtime, restocking or rework required due to failure by the Applicant or the Subcontractor, to obtain permits for the Work, to coordinate their work with other trades on the project or to provide the Design Build portion or component in a timely manner to meet the schedule of the project.

C. Design Build components known at this time that may or may not require deferred review by building department or separate permit:

1. Plumbing Systems and Fixtures.
3. Fire and Security Alarm Systems
4. Electrical Systems and Fixtures

D. Deferred Submittals Requiring Jurisdictional Review:

1. Reference Structural General Notes for Additional Items Required for Deferred Submittal

2. Submittals:

1. Design Build submittals are required to show complete criteria, design assumptions, details, calculations, submittals, instructions for fabrication, assembly, installation and interface with other trades, unless noted otherwise in the specific Specification Section.

2. Submittals without required calculations, without the Design Build Engineer's seal, and which have not been reviewed by the Contractor, as shown by a Contractor's Review Stamp, will not be reviewed by the Architect or Engineer of Record.

3. Submittals will be reviewed and returned within 15 days or 21 days depending on required consultant reviews.

3. Specific Requirements:

A. Some Design Build components are shown on the Contract Documents for design intent. The General Contractor is responsible for providing, coordinating, and installing the Design Build components.

B. Design Build components attached to the structural frame or supplemental to the structural frame shall be designed for the anticipated loads as outlined in the Contract documents. The Design Build components shall be coordinated with the appropriate subcontractor.

C. Load reactions at the interface between the Design Build components and the structural frame shall be clearly defined to allow for a review by the Architect or Engineer of Record.

D. Reference Structural General Notes for Additional Design Build / Deferred Submittal Requirements.

01 4100 REGULATORY REQUIREMENTS

1. All work shall be in strict compliance with latest editions of the following codes:
A. 2022 Oregon Structural Specialty Code (OSSC)/2021 International Building Code
B. Clackamas County Building Department, verify with Local Building Official
C. 2022 Oregon Fire Code
D. 2019 Oregon Energy Efficiency Specialty Code
E. 2017 ICC/ANSI A117.A Accessible and Useable Buildings and Facilities
F. State & International Mechanical, Plumbing and Electrical Codes
G. American National Standards Institute (ANSI) Standards

01 4246. DEFINITIONS:

1. Applicant: Person applying for building permit and person coordinating Design Build system with basic building and with other. Includes coordination of required submittals.

2. Architect/ Engineer of Record (A/E) : Oregon registered Architect or Engineer of Record hired by the Owner To provide plans and computations, and establish design criteria for Design Build components and specifications required by the Building Official for principle Project system. Includes staff, consultants, and consultant's staff.

3. Contractor: Entity hired by the Owner to construct the Project. Includes employees, subcontractors, suppliers, and their employees.

4. Design Build Engineer (SSER): Oregon registered professional Engineer, hired by the Contractor to provide plans, computations, and specifications required by the Building Official for a designated builder-designed specialty system, in accordance with criteria set forth in A/E plans and specifications.

01 4246 DEFINITIONS, CONT'D

5. Seal: Certification that plans, computations, and specifications were designed and prepared under the direct supervision of the Architect or Engineer whose name appears there on.

6. Review Stamp: Certification that the A/E has reviewed plans, computations, and specifications bearing the seal of the Design Build Engineer, verifying conformance of design intent with information given and design concept set forth in A/E's plan and specifications.

7. Approval Stamp: Certification that the Building Official has reviewed a submittal and finds it acceptable with respect to applicable code compliance.

8. Design Build Components: Components of the project that are subject to lateral and/ or vertical loads and are not designed by the Architect or Engineer of Record. These components will have to be designed by the Design Build Engineer who is retained by the subcontractor for that component of the Project.

01 7000 PROJECT CLOSE-OUT

1. Refer to General Conditions in the construction contract for complete project close-out procedures.

2. The Contractor is to provide an operations and maintenance manual to the Owner which includes cut sheets, warranties, installation instructions and maintenance instructions for all products and equipment.

A. Specific Requirements for materials to be provided by the mechanical contractor:
a. Equipment capacity (input and output) and required maintenance actions.
b. Equipment operation and maintenance manuals.
c. HVAC system control maintenance and calibration information, including wiring diagrams, schematics, and control sequence descriptions. Desired or field-determined setpoints shall be permanently recorded on control drawings, at control devices or, for digital control systems, in programming comments.
d. A complete written narrative of how each system is intended to operate.

01 7300 SELECTIVE DEMOLITION

1. Furnish all labor, material, equipment and services required for demolition necessary & preparatory to construction.

2. Refer to Drawings for location of existing materials required to be removed. Verify existing conditions at the site and include all work evident by site inspection whether or not shown on the drawings.

A. Reference Division 31 for Additional information.

3. Existing conditions shown on these drawings are to be used as a guide only. The Contractor(s) shall field check all existing conditions prior to bidding and shall include in his bid the removal of existing materials as indicated on the Drawings or as required to coordinate and adapt new and existing materials.

4. Contractor to locate all sub-grade and overhead utilities prior to commencing demolition and sitework.

5. All material and debris resulting from demolition and removal of work, unless specifically designated for reuse or to be turned over to the Owner, shall become property of the Contractor and removed from the site at his expense.

6. Identify the areas to be demolished and obtain the approval of the Architect prior to starting the demolition operation.

8. Materials shall not be thrown or dropped outside boundaries of Owners property.

9. Debris and rubbish shall be covered and contained to ensure that rainwater does not become contaminated and contaminated water does not leave the site. Sprinkle and dampen debris and with water to lay dust. Remove debris from the site as demolition progresses and do not allow to accumulate on the Property.

10. Coordinate demolition work with affected utilities and other trades. Save and protect existing utilities shown to remain. Remove all existing utility services and appurtenances which are not a part of new work or designated to remain. Notify Architect at once if unknown utilities are found in the work.

11. Use care to minimize damage to existing work which is to remain. Contractor shall be responsible for the replacement of any damaged work scheduled to remain at no cost to the Owner, premises. Replace damaged work with new materials to match original.

12. Include a system of shoring or temporary support for structures as required to take gravity and lateral loads until all new work is Completed

13. Comply with all applicable laws and ordinances to ensure that Sediment laden water does not leave the site. Reference Civil Sheets for Erosion Control methods and additional information.

14. Comply with all applicable laws and ordinances governing the disposal of materials, debris, rubbish, and trash on or off the Project Area.

15. HAZARDOUS MATERIALS, ASBESTOS & LEAD PAINT EXPOSED DURING DEMOLITION: If the Contractor encounters or exposes asbestos material during demolition, then the Contractor is to notify the Owner and the Architect of this changed condition and not to proceed with any work until approval is obtained from the Owner.

DIVISION 3 CONCRETE

03 3000 CAST-IN-PLACE CONCRETE

1 General

1.1. Furnish all labor, concrete materials, equipment and services required for installation of cast-in-place concrete. Include tests, reports, required records of i nspection, finishing, curing, and sealing of concrete.

1.2. Average concrete strength: Re: Struct notes & Requirements.

1.3. Codes & Standards: All Concrete work to be in strict compliance with the Codes listed in Section 01 4100 and the following standards:
- American Concrete Institute (ACI)
- ASTM International
- Reference Structural General Notes for Specific Standards and Additional Information.

2. Products Reference Civil for Exterior flatwork Specific Standards and Additional Information.

2.1. Concrete Mix: per Structural
2.2. Rebar: Per Structural
2.3. Formwork Facing Materials:
A. At exposed locations: Resin Faced Plywood, Class 1 or Better, mill release agent and edges sealed
B. At covered locations: Plywood, lumber, metal or other approved material. Provide lumber dressed on at least two edges and one side for a tight fit.
2.4. Vapor Retarder: ASTM E 1745, Class B, membrane and tape 15 mil thick polyolefin; Stego Industries, Stego Wrap or EQUIV.
2.5. Expansion Joints: 1/2" thick, Type ASTM D-1751 interior; Type ASTM D2838, D-1751, or Kold-Seal Zip-Per Strip.
2.6. Control Joints: Burke "Zip-Strip or equal.
2.7. Edge Expansion Fabric: Asphalt-saturated celluloid fiber joint Filler Strips, ASTM D 1751.

3. Execution

3.1. Place and cure all concrete per ACI codes and standards.
3.2. Sleeves, pipes or conduits of aluminum shall not be embedded in structural concrete unless effectively coated or galvanized.

3.3. All exposed formed concrete faces shall be finished straight, plumb, and true; with variation of no more than 1/4" in 10' measured in any direction.

3.4. Patch and Match existing Concrete Floor, infill slab as indicated in Drawings.

3.4 Finishing Floors & Slabs
A. General: Comply with recommendations in ACI 302.1R for screeding, restraightening, 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 area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

C. Trowel Finish: After applying float finish, apply first trowel finish and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or indicated as "Finish Floor,(FF)"

2. Finish surfaces to the following tolerances, measured within 24 hours according to ASTM E 1155/E 1155M for a randomly trafficked floor surface:

a. Specified overall values of flatness, F(F) 35; and levelness, F(L) 25; with minimum local values of flatness, F(F) 24; and levelness, F(L) 17; for slabs-on-grade.

b. Floors for 03360 Special Finish: Specified overall values of flatness, F(F) 40; and levelness, F(L) 30; with minimum local values of flatness, F(F) 27; and levelness, F(L) 22.

c. Low Moderately Flat: Specified overall values of flatness, F(F) 30; and levelness, F(L) 20; with minimum local values of flatness, F(F) 24; and levelness, F(L) 15; for suspended slabs.

D. Broom Finish: Apply a broom finish to exterior concrete slabs and ramps or as indicated in Drawings or Schedules.

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.

03 3000 CONCRETE CURING

1. Furnish materials and labor to install concrete and gypcrete sealers.
2. All Sealers to be applied per Manufacturer's Installation Recommendations, Details and Instructions.
3. Sealers used on interior surfaces to be low VOC
4. Clear Sealer: Clear Waterborne, Sealer, AFM SafeSeal or Equivalent.

DIVISION 4 MASONRY (NOT USED)

DIVISION 5 METALS

05 0500 METAL MATERIALS & FABRICATIONS

1.1 SUMMARY

A. STEEL FRAMING AND SUPPORTS FOR MECHANICAL AND ELECTRICAL EQUIPMENT.

B. STEEL FRAMING AND SUPPORTS FOR APPLICATIONS WHERE FRAMING AND SUPPORTS ARE NOT SPECIFIED IN OTHER SECTIONS.

C. INTERIOR SHELVING & BRACKETS
INTERIOR MATERIAL LEGEND TAG: SH-1

D. STAINLESS STEEL COUNTERS
INTERIOR MATERIAL LEGEND TAG: C-2

E. HANDRAILS AND GUARDRAILS SHALL BE DESIGNED TO RESIST A LOAD OF 50LBS PER LINEAL FOOT APPLIED IN ANY DIRECTION AT THE TOP AND TO TRANSFER THIS LOAD THROUGH THE SUPPORTS TO STRUCTURE AND ADDITIONALLY BUT NOT CONCURRENTLY ALSO BE ABLE TO RESIST A SINGLE CONCENTRATED LOAD OF 200LBS APPLIED IN ANY DIRECTION AT ANY POINT ALONG THE TOP AND TO TRANSFER THIS LOAD THROUGH SUPPORTS TO THE STRUCTURE.

EXTERIOR MATERIAL LEGEND TAG: HR-1

1.2 SUBMITTALS

A. PRODUCT DATA: FOR THE FOLLOWING:
1. PAINT PRODUCTS.
2. GROUT.
3. ALL PREFABRICATED PRODUCTS.

B. SHOP DRAWINGS: SHOW FABRICATION AND INSTALLATION DETAILS FOR METAL FABRICATIONS.

1. INCLUDE PLANS, ELEVATIONS, SECTIONS, AND DETAILS OF METAL FABRICATIONS AND THEIR CONNECTIONS. SHOW ANCHORAGE AND ACCESSORY ITEMS.

2. PROVIDE TEMPLATES FOR ANCHORS AND BOLTS SPECIFIED FOR INSTALLATION UNDER OTHER SECTIONS.

C. WELDING CERTIFICATES.

1.3 PRODUCTS

A. MATERIALS: STEEL PLATES, SHAPES, AND BARS, STEEL PIPE, SLOTTED CHANNEL FRAMING.

1. LOW-EMITTING PRIMER: METAL PRIMER SHALL HAVE A VOC CONTENT OF 200 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).

B. MISCELLANEOUS FRAMING AND SUPPORTS:

1. STEEL FRAMING AND SUPPORTS FOR MECHANICAL AND ELECTRICAL EQUIPMENT APPLICATIONS WHERE FRAMING AND SUPPORTS ARE NOT SPECIFIED IN OTHER SECTIONS.

2. GALVANIZE WHERE INDICATED.

3. PRIME WITH ZINC-RICH PRIMER WHERE INDICATED.
a. ZINC-RICH PRIMER SHALL HAVE A VOC CONTENT OF 340 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).

C. DOUBLE SLOTTED BRACKETS WITH WIRE SHELVING. MANUFACTURE RUBBER MAID, CLOSETMAID OR SUBMIT ALTERNATE FOR APPROVAL

D. SHELF ANGLES, GALVANIZED.

E. STEEL WELD PLATES AND ANGLES NOT SPECIFIED IN OTHER SECTIONS, FOR CASTING INTO CONCRETE.

DIVISION 6 WOODS & PLASTICS

SECTION 064400 - PLASTIC PANELING

1.1 SUMMARY
A. SECTION INCLUDES THE FOLLOWING:
TAG IN INTERIOR MATERILA SCHEUDLE: FRP-1

1. GLASS-FIBER REINFORCED PLASTIC (FRP) WALL PANELING.
2. MOLDING, ADHESIVES, AND JOINT SEALANTS.

1.2 PLASTIC SHEET PANELING
A. GLASS-FIBER-REINFORCED PLASTIC PANELING: GELCOAT-FINISHED, GLASS-FIBER REINFORCED PLASTIC PANELS COMPLYING WITH ASTM D 5319.
1. LOW-EMITTING MATERIALS: PANELING SHALL COMPLY WITH THE TESTING AND PRODUCT REQUIREMENTS OF THE CALIFORNIA DEPARTMENT OF HEALTH SERVICES' "STANDARD PRACTICE FOR THE TESTING OF VOLATILE ORGANIC EMISSIONS FROM VARIOUS SOURCES USING SMALL-SCALE ENVIRONMENTAL CHAMBERS."

2. NOMINAL THICKNESS: NOT LESS THAN 0.09 INCHES.

3. COLOR: WHITE.

4. MOLDING COLOR: WHITE.

5. SURFACE FINISH: MOLDED PEBBLE TEXTURE.
B. UNREINFORCED POLYPROPYLENE PANELING: SOLID POLYPROPYLENE PANELS MADE FROM NO LESS THAN 80 PERCENT RECYCLED MATERIAL.
1. LOW-EMITTING MATERIALS: PANELING SHALL COMPLY WITH THE TESTING AND PRODUCT REQUIREMENTS OF THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S (FORMERLY, THE CALIFORNIA DEPARTMENT OF HEALTH SERVICES') "STANDARD METHOD FOR THE TESTING AND EVALUATION OF VOLATILE ORGANIC CHEMICAL EMISSIONS FROM INDOOR SOURCES USING ENVIRONMENTAL CHAMBERS."
2. NOMINAL THICKNESS: NOT LESS THAN 0.09 INCHES.
3. COLOR: WHITE.
4. MOLDING COLOR: WHITE.
5. SURFACE FINISH: MOLDED PEBBLE TEXTURE.

1.3 ADHESIVES
A. AS RECOMMENDED BY PLASTIC PANELING MANUFACTURER.
1. VOC LIMIT: 50 G/L

1.4 ACCESSORIES
A. TRIM ACCESSORIES: MANUFACTURER'S STANDARD ONE-PIECE VINYL EXTRUSIONS DESIGNED TO RETAIN AND COVER EDGES OF PANELS. PROVIDE DIVISION BARS, INSIDE CORNERS, OUTSIDE CORNERS, AND CAPS AS NEEDED TO CONCEAL EDGES.

1. COLOR: WHITE

06 1000 ROUGH CARPENTRY

1 General

1.1. Furnish all labor, materials, equipment and services required for procurement, fabrication and installation of wood structural framing, rough framing, furring, sheathing, blocking, and nailers.

1.2. Reference Structural General Notes for Wood Materials, Carpentry, Fasteners and Framing Specifications and Additional Information.

1.3 Codes and Standards. All Metals work to be in strict compliance with the Codes listed in Section 01 4100 and the following standards:
-American Lumber Standards Committee Board of Review
-Western Wood Products Association (WWPA)
- West Coast Lumber Inspection Bureau (WCLIB)
- American Forest and Paper AssocoationAF&PA
- Engineered Wood Association (APA)
- American Wood Protection Association (AWPA)
- ASTM International

2 Materials
2.1. Reference Structural General Notes for Dimensional Lumber, Plywood Sheathing and Wood Fasteners specifications and additional requirements.

2.2. Wood Preservative Treated Materials (PT): Preservative treated by pressure lumber by AWPA C2 process, kiln dried, and bearing a treatment quality mark of the inspection agency approved by the American Lumber Standards Committee Board of Review.

A. Tapered PT Boards Per Drawings
B. All fasteners into PT to be Stainless Steel. Sizes per Structural.

2.3 Plywood Sheathing: Plywood sheathing to be APA, Exposure 1 C-D Plugged and per Structural General Notes for plywood Specifications.
A. OSB is not approved for use in exterior walls.

2.4 Fasteners: All fastener sizes and types per Structural unless noted otherwise. Reference Drawings for locations and additional information.
A. Use countersunk fasteners at exposed wood paneling and flooring.

3 Execution

3.,1 Provide wood blocking behind all built-in casework, wall mounted fixtures, grab bars, equipment and furnishings and as noted on the Drawings.
3.2. Provide wood nailers at the top of all roof framing members.

SECTION 061600 - SHEATHING

1.1 MATERIALS
A. Wood Products, General:
1. Wood panel products located within the building weatherproofing system shall contain no added urea formaldehyde.
B. Preservative-Treated Plywood:
1. Preservative Treatment: AWPA U1; Use Category UC2, but Use Category UC3b for exterior construction and Use Category UC4a for items in contact with the ground.

2. Preservative Chemicals: Containing no arsenic or chromium.

3. Application: Treat plywood in contact with masonry or concrete or used with roofing, flashing, vapor barriers, and waterproofing.

C. Fire-Retardant-Treated Plywood:
1. Exterior type for exterior locations and where indicated.
2. Interior Type A, High Temperature (HT) for roof sheathing and where indicated.
3. Interior Type A, unless otherwise indicated.
4. Application: Treat the following:
a. Roof sheathing at fire and party walls.
b. Wall sheathing at fire and party walls.
c. Roof sheathing.

D. Fasteners: Hot-dip galvanized steel where exposed to weather, in ground contact, in contact with treated wood, or in area of high relative humidity.

E. Miscellaneous Materials:
1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59,
Subpart D (EPA Method 24).

1.2 INSTALLATION
A. Wood Structural Panel:
1. Sheathing:
a. Nail to wood framing.
b. Screw to cold-formed metal framing.
B. Gypsum Sheathing:
1. [Nail] [or] [screw] to wood framing.
2. Screw to cold-formed metal framing.
C. Fiberboard Sheathing:
1. Nail to wood framing.

SECTION 064000 - INTERIOR ARCHITECTURAL WOODWORK

1.1 SUMMARY
A. INTERIOR STANDING AND RUNNING TRIM.
1 x 3 Heavy Density Fiberboard (HDF), Pre-Primed
INTERIOR MATERIAL LEGEND TAG - TR-1

B. FLUSH WOOD PANELING AND WAINSCOTS.

C. MELAMINE CABINETS 1. See drawings for casework information.

D. SOLID-SURFACING-MATERIAL COUNTERTOPS.

E. CLOSET AND UTILITY SHELVING.

1.2 SUBMITTALS

A. Submit (2) copies of casework, cabinet and counter top drawings for review and approval by the Architect prior to fabrication.

B. Submit (2) copies of finish samples for review and approval by the Architect prior to fabrication.

1.3 MATERIALS
A. WOOD PRODUCTS: COMPLY WITH THE FOLLOWING:
1. HARDBOARD: AHA A135.4, MADE WITH BINDER CONTAINING NO UREA FORMALDEHYDE.

2. MEDIUM-DENSITY FIBERBOARD: ANSI A208.2, GRADE 130, MADE WITH BINDER CONTAINING NO UREA FORMALDEHYDE.

3. MOISTURE RESISTANT MEDIUM-DENSITY FIBERBOARD: ANSI A208.2, GRADE MD, MR50, MADE WITH BINDER CONTAINING NO UREA FORMALDEHYDE.

4. STRAW-BASED PARTICLEBOARD: ANSI A208.1, GRADE M-2, EXCEPT FOR DENSITY, MADE WITH ADHESIVE CONTAINING NO UREA FORMALDEHYDE.

5. SOFTWOOD PLYWOOD: DOC PS 1

6. VENEER-FACED PANEL PRODUCTS (HARDWOOD PLYWOOD): HPVA HP-1, MADE WITH ADHESIVE CONTAINING NO UREA FORMALDEHYDE.

B. ADHESIVES, GENERAL: DO NOT USE ADHESIVES THAT CONTAIN UREA FORMALDEHYDE.

C. VOC LIMITS FOR INSTALLATION ADHESIVES AND GLUES: USE INSTALLATION ADHESIVES THAT COMPLY WITH THE FOLLOWING LIMITS FOR VOC CONTENT WHEN CALCULATED ACCORDING TO 40 CFR 59,

SUBPART D (EPA METHOD 24):
1. WOOD GLUES: 30 G/L.
2. PANEL ADHESIVE: 50 G/L
3. MULTIPURPOSE CONSTRUCTION ADHESIVE: 70 G/L
4. CONTACT ADHESIVE: 80 G/L.
a. SPECIAL PURPOSE: 250 G/L

D. CLOSET AND UTILITY SHELVING:
1. GRADE: ECONOMY.
2. SHELF MATERIAL: 3/4 INCH (19 MM) THERMOSET DECORATIVE PANEL WITH PVC OR POLYESTER EDGE BANDING.
3. CLEATS: 3/4 INCH (19 MM) PANEL PRODUCT.

E. SHOP FINISHING:
1. GRADE: SAME GRADE AS WOODWORK.
2. EXTENT: ALL WOODWORK SHOP FINISHED.

1.4 INSTALLATION

A. SCRIBE AND CUT MILLWORK TO FIT ADJOINING WORK, REFINISH CUT SURFACES, AND REPAIR DAMAGED FINISH AT CUTS.

B. ANCHOR MILLWORK TO ANCHORS OR BLOCKING BUILT IN OR DIRECTLY ATTACHED TO SUBSTRATES. SECURE WITH COUNTERSUNK, CONCEALED FASTENERS AND BLIND NAILING AS REQUIRED FOR COMPLETE INSTALLATION. USE FINE FINISHING NAILS OR FINISHING SCREWS FOR EXPOSED FASTENING, COUNTERSUNK AND FILLED FLUSH WITH MILLWORK AND MATCHING FINAL FINISH IF TRANSPARENT FINISH IS INDICATED.

C. 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 (3 MM IN 2400 MM) SAG, BOW, OR OTHER VARIATION FROM A STRAIGHT LINE.

D. COUNTERTOPS: ANCHOR SECURELY BY SCREWING THROUGH CORNER BLOCKS OF BASE CABINETS OR OTHER SUPPORTS INTO UNDERSIDE OF COUNTERTOP.

1. ALIGN ADJACENT SOLID-SURFACING-MATERIAL COUNTERTOPS AND FORM SEAMS TO COMPLY WITH MANUFACTURER'S WRITTEN RECOMMENDATIONS USING ADHESIVE IN COLOR TO MATCH COUNTERTOP. CAREFULLY DRESS JOINTS SMOOTH, REMOVE SURFACE SCRATCHES, AND CLEAN ENTIRE SURFACE.

2. INSTALL COUNTERTOPS WITH NO MORE THAN 1/8 INCH IN 96 INCH (3 MM IN 2400 MM) SAG, BOW, OR OTHER VARIATION FROM A STRAIGHT LINE.

3. SECURE COVED BACKSPLASHES TO TOPS PER MANUFACTURES FABRICATION MANUAL AND TO WALLS WITH ADHESIVE.

4. CALK SPACE BETWEEN BACKSPLASH AND WALL WITH SEALANT

base
REGISTERED ARCHITECT
KEGAN C. FLANDERKA
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STATE OF OREGON

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Permit Set
1/1/2024

Revision	
Date:	Issue:

Clackamas Emergency Shelter Village
16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title:
Specifications Divisions 1-6

Sheet Number:
A003

OUTLINE SPECIFICATIONS, CONT'd

DIVISION 7 THERMAL AND MOISTURE PROTECTION,

07 2100 THERMAL INSULATION

1 - General

1.1. Furnish all labor, materials, equipment and services required for the installation of thermal insulation in walls and ceiling areas called for on the drawings. Include all perimeter insulation where indicated.
1.2 Labeling; Insulating products, packages and containers are to be labeled by an approving agency with the manufacturer's name, product, product listing and information sufficient to determine that the end use will comply with the code r equirements and be readily visible upon inspection.
1.2 Codes and Standards:
- ASTM International
_ Underwriters Laboratories (UL)
- U.S. FTC R Value Rule

2 - Products

2.1 Thermal Batt Insulation. Glass Fiber type Insulation
A. Performance Requirements:
1. Flame Spread Index: 25 Max and Smoke Developed Index: 50 Max per ASTM E 84
2.2 R-21 @ 5.5"
B. Product Requirements:
1. 5.5", R21 min Insulation Required at exterior wall Assemblies Reference Drawings for thickness.
2. Unfaced
3. Friction Fit
4. Width per stud spacing; 16" or 24".
5. Utilize manufacturer's standard available widths and length that minimize product waste.

2.2. Rigid Insulation : Extruded Polystyrene (XPS) board insulation complying with ASTM C 578. by Roofing Manufacturer, Johns Mansville, Dow Chemical or Premier Industries.
A. Performance Requirements & Labeling.
1. Foam plastic insulating products packages and containers are to be labeled by an approving agency with the manufacturer's name, product, product listing and information sufficient to determine that the end use will comply with the code requirements as follows:
2. Flame Spread Index: 75 Max per ASTM E 84 or UL 723
3. Smoke Developed Index: 450 Max per ASTM E 84 or UL 723
4. Type IV, 1.6 lbs/cubic foot minimum density and 25 psi compressive strength.
5. Product must be covered by a Class A roof covering.
B. Product Requirements:
1. R-20 Continuous Insulation Required Above Roof Sheathing
2. Tapered where required to meet slopes. to NRCSS standards or as noted in drawings
3 - Execution
3.1. Installation of insulation to meet minimum standards set by Bonneville Power Administration for the Northwest energy Code, and the "Super Good Cents" program.
3.2. Rigid insulation not installed in roof assemblies must be covered by gypsum board or other approved material.

07 2700 MOISTURE BARRIERS

1.1. Furnish all labor, materials, equipment and services required for procurement, fabrication and installation of Moisture Barriers

1.2 Moisture Barrier components and accessories must be obtained as a single-source from the membrane manufacturer to ensure total system compatibility and integrity.

1.3. Building Wrap to comply with all manufacturer's Standards and References including but not Limited to: ASTM International Standards, AATCC & TAPPI Standards that apply to this product according to the manufacturer.

1.4 References
A. The following standards are applicable to this section:
1. ASTM E 2357: Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.
2. ASTM E2178: Standard Test Method for Air Permeance of Building Materials.
3. ASTM E283: Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
4. ASTM E1677 Specification for Air Retarder (AR) Material or System for Low-Rise Framed Building Walls
5. ASTM E330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
6. ASTM E331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
7. ASTM E96: Water Vapor Transmission of Materials
8. CGSB 37-GP-56M: Membrane, Modified, Bituminous, Prefabricated, and Reinforced
9. AMMA 2400: Standard Practice for Installation of Windows with a Mounting Flange in Stud Frame Construction.
10. ASTM E 2112: Standard Practice for Installation of Exterior Windows, Doors and Skylights.

1.5 Performance requirements

A. General
1. Supply labor, materials and equipment to complete the Work as shown on the Drawings and as specified herein to bridge and seal the following air leakage pathways and gaps:
a. Connections of the walls to the roof air barrier.
b. Connections of the walls to the foundations.
c. Seismic and expansion joints.
d. Openings and penetrations of window and door frames, store front, curtain wall
e. Piping, conduit, duct and similar penetrations.
f. Ties, screws, bolts and similar penetrations.
g. All other air leakage pathways in the building envelope.

B. Materials and installation methods of the primary air/vapor barrier membrane system and accessories.

1.6 Submittals

A. Product Data: Submit manufacturer current technical literature for each component for each type of product indicated.

B. Shop Drawings: Show layouts of flashing, including plans and elevations. Distinguish between shop- and field-assembled works. Include the following:

1. Identify material, thickness, weight, and finish for each item and location in Project.
2. Details for fastening, joining, supporting, and anchoring flashing, including fasteners, clips, cleats, and attachments to adjoining work.

C. Samples: Two 12-by-12 inch samples of flashing, minimum 8½" x 11 inches of WRB-1

2.1 Materials

A. Weather Resistant Barrier components and accessories must be obtained as a single-source from the membrane manufacturer to ensure total system compatibility and integrity.
1. Acceptable Manufacturers:
SIGA Cover Inc., 1229 N. North Branch Street, Suite 310
Chicago, Illinois 60642 1 855-733-7442 www.siga.swiss

Henry Company, 909 N Sepulveda Blvd, Suite 650, El Segundo CA 90245
1-800-598-7663 www.Henry.com

2.2 Moisture Barrier

A. WRB-1 Basis of Design: Majvest

1. Vapor permeable water resistive air barrier membrane consisting of an engineered film. Installation per manufacturer's recommendation.

2.3 Flexible Flashings
Apply flexible flashing at all exterior heads, jambs, sill and where indicated on the drawings to comply with manufacturers written instructions.

A. SAM-1 Basis of Design: SIGA Fentrim IS 2
1.Self-Adhered composite membrane consisting of rubberized asphalt and dual-layers of high strength polyethylene with surface layer of metallic aluminum film. Excellent adhesions to properly primed surfaces. Installation per manufacturer's recommendation.

B. SAM-2 Basis of Design: SIGA Fentrim F
1.Primary sheet of air/vapor barrier membrane shall be an SBS modified bitumen, self-adhering sheet membrane complete with a cross-laminated polyethylene film for High Temperature applications.

C. Performance characteristics SAM-1:
1.Water vapor transmission, ASTM E-96 B
a.Permeance: 0.014 perms
2.Tensile Strength, ASTM D-882 Method A: 5000 psi

D. Performance characteristics SAM-2:
1.Water vapor transmission, ASTM E-96 B 24 hours:
a.Permeance: 0.05 perms or less
2.Tensile Strength, ASTM D-412 Method A: 600 psi min

2.4 Building paper

E. For installation under interior concrete topping slabs only.
F. ASTM-D779 ASTM-D828 ASTM-E96
G. Black Asphalt
H. 15lb

2.5 Accessories
A. Products recommended by manufacturer for complete, water-tight installation.
1. Fasteners: Large, flat headed type, corrosion prevention coated
2. SIGA Wigluv Tape
B. Joint Sealant, Exposed: Comply with Section 07900.
2.6 PRIMERS

A. Primer for self-adhering membranes (WRB-1 & SAM-2) at all temperatures shall be HE 571 Blueskin Adhesive manufactured by Henry, a synthetic rubber based adhesive, quick setting, having the following physical properties:
a. Color: Blue
b. Weight: 6 lbs/gal,
c. Solids by weight: 35%,
d. Drying time (initial set): 30 minutes

D. Penetration & termination sealant.
1. Primer for (SAM-1) and Penetration and Termination Sealant shall be HE925 BES Sealant manufactured by Henry; a moisture cure, medium modulus polymer modified sealing compound having the following physical properties:
2. Compatible with sheet air barrier, roofing and waterproofing membranes and substrate,
3. Complies with Fed. Spec. TT-S-00230C, Type II, Class A
4. Complies with ASTM C 920, Type S, Grade NS, Class 25
5. Elongation: 450 - 550%
6. Elongation: 450 - 550%
7. Seals construction joints up to 1 inch wide

E. Insulation adhesive
1. Insulation adhesive shall be Air-Bloc 21 Insulation Adhesive manufactured by Henry; a synthetic, trowel applied, rubber based adhesive, having the following physical properties:
a. Compatibility: With air barrier membrane, substrate and insulation
b. Air leakage: 0.0026 CFM/ft2 @ 2.1 lbs/ft2 to ASTM E283
c. Water vapor permeance: 0.03 perms to ASTM E96
d. Long term flexibility: CGSB 71-GP-24M

07 4600 SIDING

1. General
1.1.Furnish all labor, material, equipment and services necessary to furnish and install exterior siding per type as follows:

1.2. Submittals:

A. Product Data of each type of product indicated
B. Product Data for Fasteners to be Used

2. Products

A. 6" Lap Cementatious Hardi Siding
B. Colors as identified on Building Elevations

07 5000 MEMBRANE ROOFING

1 General

1. Provide a single-ply thermoplastic (TPO) membrane roofing system over an approved plywood roof deck, complete with related insulation, cover-board, separator sheet, flashings, and accessories and performing such incidental or other work as may be necessitated by these operations.

2. Codes & Standards: All Roofing work to be in strict compliance with the Codes listed in Section 01 4100 and the following standards:
- Reference Structural General Notes for Wind Speed and Exposure Category.
- ASTM International
- ASTM D6878
- Underwriters Laboratories
- UL 580 or UL 1897
- ANSI
- FM 4474

3. Submittals

A. Pre-Job Survery and/or Pre-Installation Meeting per Manufacturer's Warranty Requirements.

B. Shop Drawings including the following:
a. Dimensions of the roof system being submitted for warranty coverage
b. the location of all curbs
c. The type and thickness of insulation used in each area
d. types and locations of roof penetrations
e. Product Data, MSDS sheets and applicable testing
f. Sample Warranties
g. Provide shop drawings to the Manufacturer per Manufacturer's Warranty Requirements.
h. Request a final inspection by the Manufacturer per Manufacturer's Warranty Requirements.

2. Products
1. Membrane Roofing: Single Ply TPO Membrane
2. Basis of Design: Fully adhered, reinforced,fleece backed TPO single ply membrane. Firestone UltraPly TPO XR 115 or equiv.
3. Alternate Manufacturers: Johns Manville

3. Execution
1. Installation to be by a contractor licensed by the roof membrane Manufacturer..
2. The installation must be inspected by the roof manufacturer's representative as required to be eligible for a roofing system warranty.
3. Install roofing materials, substrates, accessories, fasteners & flashings per Manufacturer's Roofing Systems Technical Specifications & Requirements.

4. Preparatory Work:
A. The dead load capacity of the deck and structure must be sufficient to support the load of the stored roofing materials an installed roofing system.
B. The deck must be designed and constructed to provide removal of all water within forty-eight (48) hours after a rainfall.
C. Substrate must be smooth, level and clean.
D. Loose gravel on existing roofs must be removed.
E. Roof Slope to be 1/4 inches vertical to 12 inches horizontal (2% slope) min.

5. Insulation Installation: Insulation securement must be to the current Roofing Systems Manufacturer's Technical Specifications.

6. Attach the membrane at roof perimeter, curb flashing and roof penetration using the Manufacturer's standard details for the specified and approved roof assembly.

07 9000 JOINT PROTECTION

1.1. Furnish all building sealants for weatherproofing, including but not limited to, perimeter joints or jambs, sills and trim; perimeter of door and window frames; penetrations of mechanical, electrical, and roof drainage equipment and parts through exterior wall, soffit and trim; expansion joints.

1.2 Submittals
Product Data: From manufacturers for each joint sealer product required, including instructions for joint preparation and joint sealer application.
A. Samples for Initial Selection: Manufacturer's standard bead samples
consisting of strips of actual products showing full range of colors available for each product exposed to view.

1. Obtain color chips from Architect for custom color mixes
2. Submit (3) 6"x6" Cement Board Samples for Review
B. Certification: Manufacturer's certification that their products comply with specification and are suitable for the use indicated.

21 General sealant requirements
A. Furnish all building sealants for weatherproofing, including but not limited to, perimeter joints or jambs, sills and trim; perimeter of door and window frames; penetrations of mechanical, electrical, and roof drainage equipment and parts through exterior wall, soffit and trim; expansion joints.
B. All interior sealants & Adhesives to meet VOC limits set forth in Section 01352 LEED CS 2009 requirements.
2.2 Exterior elastomeric joint sealants. Sealant-1
A. General: Comply with ASTM C920.
B. Exterior Building Joint Sealant: One-part non-sag silicone building sealant complying with the following minimum requirements:
1. Acceptable Products/Manufacturers:
a. Dow Corning 790 or 795 Silicone Building Sealant
2. Use: for panel joints, perimeter joints, joints between dissimilar materials, flashing joints, other exterior building joints, other locations indicated in Drawings.
3. Joint Movement Capability at 14 days: ASTM D 1149, at least +/- 50%
4. Durometer Hardness: ASTM D 2240, Shore A, 25 to 30 points
5. Tensile Stress at 150% Elongation: ASTM D 412, 80 psi.
6. Ultimate Tensile Strength: ASTM D 412, at least 170 psi.
7. Peel Strength, milled aluminum, glass and concrete: MIL-S-8802: 32 lb/in.
8. Staining: ASTM C 510, none.
9. Colors: Selected by Architect from manufacturer's standard full range.
10. Warranty in Part 1.

2.3 interior JOINT SEALANTS . Sealant-2
A. Interior Joints in Concrete where occurs:
1. Product: Sonneborn, Epolith-P
2. Type: Two-part flexible epoxy joint sealer/filler
3. Elongation: 75% per ASTM D 638
4. Shore Hardness: A 85
5. Color: To Match Concrete as approved by Architect.
B. Interior Wet Area Joints in/around Ceramic Tile and Plumbing Fixture Perimeters:
1. Product: "GE Sanitary 1700 Silicone Sealant" or Dow Corning, 786
2. Sealant Type: Acetoxy curing, sanitary silicone
3. Standards: FS TT-S-001543A, type II. class A
C. Interior Joints (not floor, not wet area):
1. Type: One-part, nonsag, mildew-resistant, sealant complying with ASTM C834, formulated to be paintable.
2. Acceptable Products: Provide one of the following
a. Tremco Vulkem 921 (polyeurethane)
b. "Tremco Acrylic Latex 834," Tremco Inc.

c. "Chem-Calk 600," Bostik Construction Products Division
d. "AC-20," Pecora Corporation
e. "Sonolac," Sonneborn Building Products
D. Acoustical Sealant for Concealed Joints:
1. Type: Nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic rubber sealant formulated for sealing interior concealed joints to reduce transmission of airborne sound, complying with ASTM C919.
2. Quality Standard: Protective Treatments, Inc. "PTI 808 Acoustical Sealant,"
3. Acceptable Manufacturers: Protective Treatments, Henry, Tremco, Pecora
2.4 Fire Caulking
A. Manufacturer: Dow Corning, GE, Metalines, 3M or approved.
B. Material: Caulk, Wrap, Strip, Sheet, or Putty as required by conditions of used.
C. Type: Rated for use as Through-Penetrations Firestop in accordance with ASTM E-814 or UL 1479.
2.5 JOINT SEALANT BACKING. Backer Rod
A. Provide sealant backings of material and type which are nonstaining; 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. Plastic Foam Joint Fillers: Preformed, compressible, resilient, nonwaxing, nonextruding strips of flexible, nongassing plastic foam of closed-cell extruded polyethylene foam; nonabsorbent to water and gas; and of size, shape, and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
C. Bond-Backer Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.
D. Elastomeric Tubing Joint Fillers
1. Quality Standard Product: "SOF ROD" closed-cell backed rod by Applied Extrusion Technologies, Inc.
2. General: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D1056, nonabsorbent to water and gas, capable of remaining resilient at temperatures down to -26 degrees F. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and otherwise contribute to optimum sealant performance.
1.6 MISCELLANEOUS MATERIALS
A. Primer: Provide type recommended by joint sealer manufacturer where required for adhesion of sealant to joint substrates indicated as determined form preconstruction joint sealer-substrate tests and field tests.
B. Cleaners for Nonporous Surfaces: Provide nonstaining, chemical cleaners of type which are acceptable to manufacturers of sealants and sealant backing materials, which are not harmful to substrates and adjacent nonporous materials, and which do not leave oily residues or otherwise have a detrimental effect on sealant adhesion or in-service performance.
C. Masking Tape: Provide nonstaining, nonabsorbent type compatible with joint sealants and to surfaces adjacent to joints.

07 2600 VAPOR BARRIER

1. Furnish all labor, materials, equipment and services required for procurement, fabrication and installation of one perm vapor retarder on the warm side of all (in winter) exterior walls, ceilings and floors
2 - Products
2.1 Vapor Barrier Paint. Benjamin Moore Latex Vapor Barrier Primer Sealer 260.
A. Performance Requirements:
1. Water Vapor Permeance: 0.5 perms ASTM E 96
2. VOC Compliant: QUALIFY FOR LEED CREDIT (Primer)
3. Volume Solids: 27%

B. Product Requirements:
1. Install Per MFR Requirements.
2. Installed on warm side of exterior Wall Assemblies as indicated in drawings

07 6200 FLASHING AND SHEET METAL

1. General

1.1. Furnish all labor, material, equipment and services necessary to furnish and install flashings, copings, fascias, scuppers, downspouts, edge flashing, jambs, sills and all other sheet metal items as shown on the Drawings as required to weatherproof the building.

1.2 Submittals:
A. Product Data for Each type of product indicated.
B. Product data for fasteners to be used!!!
C. Shop Drawings showing the following:

1. Plan and elevation layouts of of sheet metal flashing & trim locations..
2. Details to show size, thickness, profiles, seams, shapes and dimensions. Details to show and distinguish adjacent work.
3. Details for fastening, joining, supporting and anchoring sheet metal flashing and trim, including fasteners, clips, cleats and attachments to adjoining work.

D. Samples: Two 12x12 inch samples of each type of prefinished sheet metal.

2. Products

2.1 Galvalume Steel Sheet, AZ50, conforming to A792 for painted panels. Metal Sales or Equiv.

A. Finish: Manufacturer's standard Kynar 500 (PVDF) fluoropolymer coating with min 70% PVDF Resin. Texture: Smooth.

B. Color: To be selected by architect from manufacturer's standard color palette.
C. Gauge: 22 Gauge Standard, heavier gauges where indicated on drawings.

2.3 Downspouts: see drawings

3. Execution

3.1 Fabricate all sheet metal items accurately to the sizes shown, installing same securely fastening them to the other parts of the work. Reinforce seams and folds as required to prevent binding or tearing.
3.2 Provide expansion joints to allow for longitudinal movement in continuous rows of flashing and sheet metal work. Space at not over 20-feet on center for galvanized steel.
3.3 Fabricate metal copings and gravel stops as detailed on drawings and set over strip of flashing membrane. Verify that membrane covers joint between top of wall and nailer outside face. Nail or screw coping at 18-inches on center, on the inside of the curb through the skirt. Nail heads soldered to the coping or nails have neoprene washers. Nail gravel stops at 4-inches on centers. Lap metal ends 3-inches minimum with plastic cement between the layers.
3.4 Coordinate with roofing subcontractor for installation of all related weatherproofing items and provision of roofing guarantee responsibility.
3.5 REFERENCE CURRENT SMACNA MANUAL FOR TYPICAL DETAILING

DIVISION 8 DOORS AND WINDOWS

08 1400 EXTERIOR DOORS AND FRAMES

1. General
1. Furnish all labor, material, equipment and services necessary to furnish all wood flush face and stile/rail doors in number, type and size as scheduled on Drawings.

2. Submittals:
A. Product Data: For each type of door indicated. Include details of core and edge construction, louvers, trim for openings, and WDMA I.S.1-A or AWS classifications. Include factory finishing specifications.

B. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the wood door supplier in order to prepare the doors and frames to receive the finish hardware items.

C. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.
1. Indicate dimensions and locations of mortises and holes for hardware.
2. Indicate dimensions and locations of cutouts.
3. Indicate requirements for veneer matching.
4. Indicate doors to be factory finished and finish requirements.
5. Indicate fire protection ratings for fire rated doors.

D. Warranty: Sample of special warranties.

2. Products:

2.1 ThermaTru Fiberglass door, | Craftsman Lite 2 Panel Shaker Flush-Glazed | Glass

A. Construction:
Smooth Star® 1/16-inch minimum thickness, proprietary fiberglass-reinforced thermoset composite, surface lightly textured. Door edges are machinable kiln-dried pine, primed, lock edge reinforced with engineered lumber core, lockset area reinforced with solid blocking for hardware backup. Door bottom edge is moisture- and decay-resistant composite. Core is foamed-in-place polyurethane, density 1.9 pcf minimum.

B. 1. Milled from 5/4 kiln-dried material with profiled ½" stop and 6 degree sill gain prep. 2. Jamb Width [6 9/16"]

C. Sills 1. Inswing: [Composite Adjustable]
3. Other:[Public Access Sill]
4. Finish: [Mill]

Door Core Construction. Grade LD-2, Wood Fiber Based Particle Board Core materials complying with ANSI A208.1. Graham PC, PCS or Architect Approved Equivalent.
A. Fully bonded construction using polyurethane glue
B. Provide 5" top-rail blocking for doors indicated to have closers (not through bolted).
C. Provide 5" mid-rail blocking for doors indicated to have exit devices (not through bolted).

2.2 Interior solid core wood doors. Graham, Marchfeild, or VT Industries.

A. Grade: Custom.
B. Faces: Sound closed grain hardwood of mill option, Hardboard or MDF. Face veneer minimum 1/50-inch (0.5mm) thickness at moisture content of 12% or less.
1. Hardboard Faces: AHA A135.4, Class 1 (tempered) or Class 2 (standard).
2. MDF Faces: ANSI A208.2, Grade 150 minimum.
C. Vertical Edges: Any closed grain hardwood. Wood or composite material, one piece, laminated, or veneered. Minimum requirements per WDMA section P-1, Performance Standards for Architectural Wood Flush Doors.
D. Horizontal Edges: Solid wood or structural composite material meeting the minimum requirements per WDMA section P-1, Performance Standards for Architectural Wood Flush Doors
E. Construction: Five plies. Stiles and rails are bonded to core, then entire unit sanded before applying face veneers.

2.3 Interior Wood Door Frames: Fire-Rated Composite Wood. Maiman or Warm Springs.
A. Double Rabbet
B. 20 minute Fire Rated or Per Door Schedule
C. Paint Grade

3. Execution
3.1. Install doors plumb and true in strict compliance with manufacturer's instructions.
3.2. Install per AAMA 2400-02

08 5313 VINYL WINDOWS

1. Furnish all labor, material, equipment and services necessary to furnish and install thermally broken aluminum casement windows.
2. Performance Requirements:
A. Air, Water and Structural Performance
1. Windows shall meet Rating specifications in accordance with ANSI/AAMA/NWWDA101/I.S..2-97, AAMA/WDMA/CSA 01/I.S.2/A440-05, and AAMA/WDMA/CSA101/I.S.2/A440-08
2. Window Air Leakage, ASTM E 283: Window air leakage when tested at 1.57 psf (25mph) shall be 0.02 cfm/ft2 of frame.
3. Window Water Penetration, ASTM E 547: No water penetration through window when tested under static pressure of 7.52 psf after 4 cycles of 5 minutes each, with water being applied at a rate of 5 gallons per hour per square foot.
4. Forced entry resistance not to exceed limits defined by the standard AAMA/WDMA/CSA 101/I.S.2/A440-05. [Grade 10]
5. Field testing to verify compliance shall be performed on units of comparable size to gateway test sizes for designated Performance Classes as listed in Table 1 of Section 4.3 of AAMA/WDMA/CSA 101/I.S.2/A440-05
B. Thermal Performance
1. Windows shall meet whole-unit U-Value and SHGC Performance determined in accordance with NFRC 100. See below:
Picture Window: U-Value= 0.27, SHGC=.22
Casement Window: U-Value=0.26, SHGC=0.18

3. Tubular Plastic Windows: Extruded, Hollow, Vinyl Frame Casement and Picture Windows.
Basis of Design: VPI Windows Endurance Series or Milguard V300 Trinsic Series

A. Frame and Sash: Extruded, hollow, tubular, ultra-violet resistant polyvinyl chloride (PVC) with integral color; factory fabricated.

B. Hardware: Hardware having component parts which are exposed shall be of brass, aluminum, stainless steel or other non corrosive material(s) compatible with fiberglass and of sufficient strength to perform the functions for which they are used. Cadmium or zinc-plated steel, where used, shall be in accordance with ASTM A 165 or B 633. Nickel chrome-plated steel, where used, shall be in accordance with ASTM B 456.

C. Weather-strip: Weather-strip conforming to AAMA 701or 702. Weather-strip shall meet the requirements of the specifications as detailed in the appropriate test report. All weather-strip shall be installed in specially-extruded ports and secured to prevent movement, shrinkage, or loss when removing sash either for cleaning or repair. Adhered weather-stripping shall not be allowed.

D. Screens: Full screens supplied separately or delivered applied to windows as requested.

E. Sealant Materials: Perimeter Sealant and Backing Materials: Dual Seal; Hot Melt PIB Backed with Silicone.

4. Glass and Glazing Materials:
A.Glass in Exterior Lights; 3mm Minimum Thickness Cardinal LoE 366 Dual Pane, Clear.

5. Installation per Manufacturer's Current Technical Specifications.

08 8000 Glazing

1. Furnish all labor, materials, and equipment to provide and install glazing of glass doors, windows and relites of types specified and scheduled on the Drawings. Include all glazing hardware. Install products in accordance with current applicable building codes and and the U.S. Consumer Product Safety Commission.

2. Materials

A. Insulated Glazing Unit (IGU-1): PPG SolarBan 60. 1 inch thick, clear, thermal insulated glass.
i. 3⁄4 inch Overall Unit thickness, (2) 1/8" lites, 1/2" airspace and Solarband 60 2nd Surface; hermetically sealed, low-e coating, light bronze spacer bar.
ii. Five (5) year guarantee.
B. Clear Tempered Insulating Glass (IGU-2): Same as above except with 1/8" thick tempered glass both faces.
C. Glazing Tape and Sealants: 3M" E/C/ 1202, Black Tape. Black silicone sealants.

D. Elastic Glazing Compound: As approved.
E. Reference Window Sections 08 5110 and 08 5300 for additional Glazing Types & Information.
3. Do not glaze when temperature is below 40-degrees F. Do not do any exterior glazing in wet weather except under cover.
4. Protect all glazing from breakage. Reglaze wherever work or material are defective. Replace all glazing damaged prior to final acceptance of the work.

08 7000 DOOR HARDWARE

1 General
1.1. Furnish and install all hardware items required for the completion of the project. All hardware items from a factory authorized distributor.
1.2 Codes & Standards: All work to be in strict compliance with the Codes listed in Section 01 4100 and the following standards:
1.ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2.ICC/IBC - International Building Code.
3.NFPA 80 - Fire Doors and Windows.
4.NFPA 101 - Life Safety Code.
5.NFPA 105 - Installation of Smoke Door Assemblies.
6.State Building Codes, Local Amendments.
7.ANSI/BHMA Certified Product Standards - A156 Series
8.UL10C - Positive Pressure Fire Tests of Door Assemblies
1.3 Submittals: Product Data, Schedules & Sample Warranties

2. Products

2.1 Hanging Devices:
A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles as specified in the Door Hardware Sets. Hager Companies (HA) or McKinney Products (MK).
B. Floor Closers: ANSI/BHMA A156.4 certified floor closers provided either center hung or 3/4" offset hung type complete with top and intermediate pivots (offset closers only) in quantity according to manufacturer's recommendation. Dorma Products (DO) or Rixson Door Controls (RF).
C. Pivots: ANSI/BHMA A156.4, Grade 1, certified pivots provided either center hung or 3/4" offset type complete with top, bottom, and intermediate pivots (offset pivots only) in quantity according to manufacturer's recommendations. Rixson Door Controls (RF).
D. Interior Sliding Door Hardware: Sliding door hardware is to be of type and design as specified and should comply with ANSI/BHMA A156.14. Pemko Manufacturing (PE) or Richards-Wilcox, Inc. (RW).

2.2 Power Transfer Devices / Electrified Quick Connect Transfer Hinges: Hager Companies (HA) - ETW-QC or McKinney Products (MK)

2.3 Door Operating Trim
A. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified below or in the Hardware Sets. Rockwood Manufacturing (RO) or Trimco (TC).
2.4 Cylinders and Keying
A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy. Corbin Russwin Hardware (RU) or Sargent Manufacturing (SA) or Yale Locks and Hardware (YA)
B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.

A. C. Cylinders: Original manufacturer cylinders complying with the following:
1.Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.
2.Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3.Bored-Lock Type: Cylinders with tailpieces to suit locks.
4.Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
D. Keying System: Each type of lock and cylinders to be factory keyed. Conduct specified "Keying Conference" to define and document keying system instructions and requirements. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner. Incorporate decisions made in keying conference.
2.5 Mechnaical Locks and Lathcing Devices
A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified mortise locksets. Corbin Russwin Hardware (RU) - ML2000 Series or Sargent Manufacturing (SA) - 8200 Series or Yale Locks and Hardware (YA) - 8800FL Series
B. Cylindrical Locksets, Grade 1 (Heavy Duty) & Grade 2 (Standard Duty): ANSI/BHMA A156.2, Series 4000, Grade 1 certified cylindrical (bored) locksets furnished in the functions as specified in the Hardware Sets. . Corbin Russwin Hardware (RU) or Sargent Manufacturing (SA) or Yale Locks and Hardware (YA)
C. All operators to be lever style.
2.6 Locks and Latches strikes. BHMA A156.13, BHMA A156.2, BHMA A156.5, BHMA A156.16.
2.7 Conventional Push Rail Exit Devices (Heavy Duty) Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series or Sargent Manufacturing (SA) - 80 Series or Yale Locks and Hardware (YA) - 7000 Series.
2.8 Electrified Conventional Push Rail Exit Devices (Heavy Duty). Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series or Sargent Manufacturing (SA) - 80 Series
2.9 Door Closers. Closers to comply with UL-10C and UBC 7-2 for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors. Accessible Doors to be in compliance with ANSI ICC/A117.1. Corbin Russwin Hardware (RU) - DC6000 Series or Norton Door Controls (NO) - 8500 Series or Sargent Manufacturing (SA) - 1431 Series or Yale Locks and Hardware (YA) - 3500 Series.
2.10 Architectural Trim. Door Protective Trim, Metal Protection Plates, Fasteners and Metal Door Edging, Rockwood Manufacturing (RO) or Trimco (TC).
2.11 Door Stops and Holders. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers Rockwood Manufacturing (RO) or Trimco (TC).
B. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Rixson Door Controls (RF) or Rockwood Manufacturing (RO) or Sargent Manufacturing (SA).
2.12 Architectural Seals. Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Pemko Manufacturing (PE) or Reese Enterprises, Inc. (RS).
A. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
1.Provide smoke labeled perimeter gasketing at all smoke labeled openings.
B. Fire Labeled Gasketing: .Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
1.Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and UBC 7-2, Fire Tests of Door Assemblies.
C. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated, based on testing according to ASTM E 1408.
D. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

13. Hardware Groups: Re: Door Schedule
NOTE: Doors shall be readily openable from the egress side without the use of a key or special knowledge or effort per OSSC 1008.1.9

Group 1: Bathroom Occupancy Latched Doors
Hinge: PBB, BB81 4.5" x 4.5"
Lever Lock: Dorma, C840 D LR C
Lock: Dorma, D800 Series D871 w/ Occupancy Indicator Dome Stop: Don-Jo, 1440
Door Silencer: Rockwood, 600 Series
Closer

Group 2: Privacy Set
Hinge: PBB, BB81 4.5" x 4.5"
Lock: Dorma, C840 D LR C
Dome Stop: Don-Jo, 1440
Closer

Group 3: Commercial Entry/Egress Door
Hinge: PBB, BB81 4.5" x 4.5"
Lock: Adams Rite 4511W-46-102-628 Deadlatch Lock Exit Device: Kawneer Paneline Concealed Rod Exit Device Door Silencer: Rockwood, 600 Series
Dome Stop: Don-Jo, 1440

Group 4: Storage with Closer
Hinge: PBB, BB81 4.5" x 4.5"
Office Lock: Dorma, C870 D LR C
Door Silencer: Rockwood, 600 Series
Closer

base
KEGAN C. FLANDERKA
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Permit Set
1/1/2024

Revision	
Date:	Issue:

Clackamas Emergency Shelter Village

16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title:
Specifications Divisions 7-8

Sheet Number:
A004

OUTLINE SPECIFICATIONS, CONT'd

DIVISION 9 Finishes

09 2900 GYPSUM BOARD

1. Furnish all labor, materials, and equipment to provide and install Gypsum wall board as shown and detailed on the drawings.
2. Obtain all components and materials of the drywall system from a single manufacturer, or from producers, unless otherwise indicated.

PART 1 - PRODUCTS

1.1 MANUFACTURERS
A. Acceptable Manufacturer: Subject to compliance with requirements provide products of one of the following:
1.Steel Framing and Furring: Angeles, Bostwick Steel Framing Co., Dale Industries, nc., Gold Bond Building Products Div., National Gypsum Co., Incor, Inc., Marino Industries Corp., United States Gypsum Co.
2.Gypsum Boards and Related Products: Centex American Gypsum Co., Domtar Gypsum Co., Georgia-Pacific Corp., Gold Bond Building Products Div., National Gypsum Co., United States Gypsum Co.

Steel Resilient Furring Channels: Manufacturer's standard product designed to reduce sound transmission, complying with ASTM C 645 for material, finish and widths of face and fastening flange, fabricated to form 1/2 inch deep channel of the following configuration:

1. Single-Leg Configuration: Asymmetric-shaped channel with face connected to a single flange by a single slotted leg (web).

1.3 Exterior GYPSUM SHEATHING - Exterior GWB

A. Glass-Mat Gypsum Sheathing Board: ASTM C 1177/C 1177M.

1. Non-rated, 1/2 inch thick.
a. Type X fire rated and labeled at fire rated assemblies (if any) indicated in Drawings

2. Size: 48 inches wide by longest length to minimized joints

3. Product: Subject to compliance with requirements, provide "Dens-Glass Gold" by Georgia-Pacific Corp.

1.4 GYPSUM BOARD - GWB

A. General: Provide gypsum board of types indicated in maximum lengths available; minimize end-to-end joints.

1. Thickness: 5/8 inch unless indicated otherwise.
2. Refer to wall types for type of gypsum
B. Gypsum Wallboard: ASTM C 36, and as follows:
1. Type: Type X throughout.
2. Edges: Tapered.
3. Special thickness: 3/8-inch and ¼-inch for laminating finish surface at curves
C. Moisture Resistant GWB : ASTM C 630, and as follows:
1. Type: Type X throughout.
2. Edges: Tapered

1.5 TRIM ACCESSORIES

A. Cornerbead and Edge Trim for Interior Installation: Provide corner beads, edge trim and control joints which comply with ASTM C 1047 and requirements indicated below:
1. Material: Formed metal complying with the following requirement:
a. Sheet steel coated with zinc by hot-dip or electrolytic processes, or with aluminum.
2. Edge trim shapes indicated below by reference to designations of Fig. 1 in ASTM C 1047:
a. "LC Bead", unless otherwise indicated.
b. "L" Bead / Corner Bead where indicated.
c. "U" Bead where indicated.
d. Reglets where indicated.
3. One-Piece Control Joints: Formed with vee-shaped slot per Fig. 1 in ASTM C 1047, with slot opening covered with removable strip.
4. Curved Trims: Cornerbead and edge trims specially fabricated trims with notched legs that will form continuous curves at radii indicated in Drawings.
B. Round Penetrations: Plastic or metal grommets at penetrations smaller than 6" diameter.
C. Special Trims: Fry Reglet Corp. extruded aluminum, types matching profiles indicated in Drawings including curved, match column radius.
D. Drywall Suspension System:
1. USG Suspension System for Flat Ceilings Wall-To-Wall System Straight T's sized by installer.
2. Provide accessories as required to finish assembly per details and rating requirements.

1.7 GYPSUM BOARD JOINT TREATMENT MATERIALS

A. General: Provide materials complying with ASTM C 475, ASTM C 840, and recommendations of manufacturer of both gypsum board and joint treatment materials for the application indicated.
B. Joint Tape: Paper reinforcing tape, unless otherwise indicated.
1. Use pressure sensitive or staple-attached open-weave glass fiber reinforcing tape with compatible joint compound where recommended by manufacturer of gypsum board and joint treatment materials for application indicated.
C. Setting-Type Joint Compounds: Factory-prepackaged, job-mixed, chemical-hardening powder products formulated for uses indicated.
1. Where setting-type joint compounds are indicated for use as taping and topping compounds, use formulation for each which develops greatest bond strength and crack resistance and is compatible with other joint compounds applied over it.
2. For prefilling gypsum board joints, use formulation recommended by gypsum board manufacturer for this purpose.
3. For filling joints and treating fasteners of water-resistant gypsum backing board behind base for ceramic tile, use formulation recommended by gypsum board manufacturer for this purpose.
D. Drying-Type Joint Compounds: Factory-prepackaged vinyl-based products complying with the following requirements for formulation and intended use.
1. Ready-Mix Formulation: Factory-premixed product.
2. Job-Mixed Formulation: Powder product for mixing with water at Project site.
3. Taping compound formulated for embedding tape and for first coat over fasteners and flanges of corner beads and edge trim.
4. Topping compound formulated for fill (second) and finish (third) coats.

09 3013 CERAMIC TILING

A. Products:
1. Tile-1: United Tile, 6"x12" at Backsplash, Matte and Semi-Gloss, White.

09 6500 RESILIENT FLOORING
1. Furnish all labor, material, equipment and services necessary to furnish and install resilient flooring.
2. Rubber Base:
1. ASTM F1861 Type TS, Group 1, Thermoset Vulcanized SBR Rubber, Continuous Roll, 1/8 Inch Gauge, 4 Inch Top Set Straight Base.
2. Manufacturer: Johnsonite, Flexco, Burke/Mercer, and Nora.
3. RB-1,Color: TBD.
3. Resilient Flooring:
A. Products:
1. Armstrong Parallel 12, 6"x48", Color: TBD.

09 9000 PAINTING

1. Furnish all labor, material and equipment required to provide execution of painted work.

2. Materials: Interior Paint must be Green Seal Labeled; Rodda Paint Co., (Horizon) or architect approved equivalent
3. Provide samples of mixed paint applied to surfaces on job site approximating final conditions. Architect to direct area for tests. 24"x24" minimum size of test areas. Obtain Architect's approval prior to proceeding.
4. Preparation of Surfaces:
A. Wood: Prime all sides immediately upon receipt at job. One coat primer for painted work, or one coat sealer for transparent finish work. Properly fill holes, checks and blemishes; and sand wood surfaces prior to applying finish.
B. Metal: All metal installation shall be made complete and ready for painting. Division 5 and Section 07600 metals to come shop primed to site.
C. Drywall: Seal new drywall surfaces after surface texture is thoroughly dry and cured.
5. Apply at temperatures of not less than 50-degrees F. Apply with strict compliance to manufacturer's instructions.
6. Exterior Paint:
A. Walls. one coat Elastomeric over primer. Factory primed surfaces to be re-primed after they are installed.
B. Misc. Metals: Three coats alkyd enamel semi-gloss over shop primer
C. Soffits: Three coats latex flat over primer. Factory primed surfaces to be re-primed after they are installed.
6. Interior:
A. Gypsum Wall Surfaces. Latex paint over primer. Flat Sheen at ceilings.
A. Wood Trim & Base: Two coats latex enamel semi-gloss
B. Doors: Manufacture Finish see door specification

7. Concrete: Where noted, Elastomeric, Three coats
8. Reveals: To Match Adjacent Color; Paint Type per Reveal Material

9. Paint Colors:
A. Verify all paint color selections with architect
B. Paint Color Samples to be Provided to and Approved by Architect per Submittal Requirements prior to Installation.
C. Paint Schedule:
Interior:
P-1: Miller Evolution, Color TBD, Satin Finish
P-2: Miller Evolution, Color TBD, Satin Finish

Exterior: (Architect to Select Colors)
P-3: Color Match Ext. Corrugated Siding.
Reference Section 07 4600 SIDING for Material Manufacturer and Color.

DIVISION 10 SPECIALTIES

10 1400 SIGNAGE
1. Reserved

10 2800 TOILET & BATH ROOM SPECIALTIES
1. Reserved

10 4400 FIRE EXTINGUISHERS
1. Reserved

10 5500 POSTAL SPECIALTIES
1. Florence Mailboxes Versatile Surface Mount STD-4C14D-14. White (WH) Finish.

DIVISION 11 EQUIPMENT

KITCHEN UNIT APPLIANCES:
1. Range: THOR Kitchen 36 Inch A-Series Electric Range. Model #HRE3601
Meets ADA Compliance. Installation per Manufacturer.
2. Refrigerator: Whirlpool 36" Side Freezer & Side Refrigerator, Model: WRF555SDFZ, Stainless steel. Meets ADA Compliance. Installation per Manufacturer.
3. Range Hood: Thor 36" Vented Range. Model: HRH3607. Stainless Steel Finish.

COMMERCIAL APPLIANCES:
1. Washer: Whirlpool High Efficiency Washer, Model #WTW4816FW
2. Dryer: Whirlpool 7-cu ft. Electric Dryer, Model #WED4815EW

DIVISION 12 FURNISHINGS

12 9310 BIKE RACKS
1. Furnish all labor, materials, and equipment to provide and install bike racks.
2. Wall Mounted Bike Rack 1: 1" Ø Steel Tube U-shape Bike Rack with rubber sleeved tab style carrying points; Dero Ultra Space Saver Single or Architect Approved Equivalent. Black Finish
A. Spacing: 13" O.C. for single bike Mounting.
Wall Mounted Bike Rack 2: Dero Duplex. Black Finish.
Floor Mounted Bike Rack: Heavy Duty Schedule 40 pipe, floor mounted, single loop rack; Columbia Cascade Original CycLoops 2170-3-E-C or Architect Approved Equivalent.
A. Powder Coated or Galvanized. Architect to Select Color
B. Embedment Type Mounting.

DIVISION 21 FIRE SUPPRESSION & ALARMS

21 10000 Fire Suppression Sprinkler Systems
1. Design Build System. Furnish all labor, material, equipment and services required to design and install a water based fire suppression sprinkler system. Provide for and obtain all necessary permits and inspections required from the Fire Marshall's Office and other regulatory agencies. Coordinate work with other contractors, particularly the General Contractor, Plumbing Contractor, Mechanical Contractor and Electrical Contractor.
2. The Contractor shall provide a DESIGN package for the work outlined and shown on the drawings and described in the specifications in order to obtain required permits.
A. The Design package shall be submitted to the Architect for review and approval prior to obtaining permits.
B. The Design package shall include calculations and information as required to verify conformance with applcaible building, fire, energy, mechanical and plumbing codes.
C. The Design package shall include product data
3. All work to meet or exceed requirements of the current edition of the 2014 Oregon Structural Specialty Code, Oregon Fire Code & Fire Marshall's requirements. All products to be new and be U.L. Listed and/or meet local inspecting authorities requirements.
4. Fire Suppression Sprinkler System to be Type: NFPA 13
A. Provide Standpipes at Each Egress Stair.
B. Provide back flow device.

DIVISION 22 PLUMBING

22 0500 BASIC PLUMBING MATERIALS AND METHODS

1. Design Build System - Furnish all labor, materials, equipment, and services required to perform plumbing work. Provide for and obtain all necessary permits and inspections required from regulatory agencies.
2. The Contractor shall provide a DESIGN package for the work outlined and shown on the drawings and described in the specifications in order to obtain required permits.
A. The Design package shall be submitted to the Architect for review and approval prior to obtaining permits.
B. The Design package shall include calculations and information as required to verify conformance with applicable building, energy, mechanical and plumbing codes.
C. The Design package shall include product data
3. The Contractor shall conform to mechanical & plumbing codes and all governing laws and regulations of mechanical work. The highest workmanship is to be assumed and bid as required.

4. The materials to be used shall be new and of the highest quality. If repairing an existing item, replacement parts by the item manufacturer are to be used.

5. Provide supply, waste and vent hook-ups as required to all fixtures and appliances.

22 1000 PLUMBING PIPES AND PUMPS

1. Provide Pumps for Domestic hot water as required
2. Pipe insulation to be factory molded fiberglass insulation for mechanical piping and fiberglass blanket insulation for equipment other than piping. Reference Section 23 0500.4.O. for Piping Insulation Requirements
3. Piping: Provide service weight cast iron waste, vent and sanitary sewer systems. Type L copper domestic cold and hot water supply systems; and all related equipment accessories.

22 3000 Domestic Hot Water Heaters

1. Furnish all labor, materials, and equipment to provide and install central electric hot water heaters as located on the Drawings.
2. Hot water size and capacity per Bidder Design/Plumber
3. Hot Water Heater Performance Requirements:

C. Temperature controls. Service water-heating equipment shall be provided with controls to allow a setpoint of 110°F (43°C) for equipment serving dwelling units and 90°F (32°C) for equipment serving other occupancies. The outlet temperature of lavatories in public facility rest rooms shall be limited to 110°F (43 ° C).

D. Heat traps. Water-heating equipment not supplied with integral heat traps and serving non-circulating systems shall be provided with heat traps on the supply and discharge piping associated with the equipment.

E. Pipe Insulation. For automatic-circulating hot water and externally heated (such as heat trace or impedance heating) systems, piping shall be insulated with 1 inch (25 mm) of insulation (R-4) having a conductivity not exceeding 0.27 Btu per inch/h ft2 x °F (1.53 W per 25 mm/m2 x K). The first 8 feet (2438 mm) of piping in noncirculating systems served by equipment without integral heat traps shall be insulated with 0.5 inch (12.7 mm) of material having a conductivity not exceeding 0.27 Btu per inch/h x ft2 x °F (1.53 W per 25 mm/m2x K).

F. Hot Water System Controls. Systems designed to maintain usage temperatures in hot water pipes such as hot water recirculating systems or heat trace, shall be turned off automatically when the hot water system is not in operational and shall have demand sensing controls (flow switch in cold water make-up pipe, return water aquastat temperature sensor) that turn off the system when there is no demand when the system is operational. A check valve or similar device shall be located between the circulator pump and the water heating equipment to prevent water from flowing backwards though the recirculation loop.

22 4000 PLUMBING FIXTURES

1. Provide Low-Flow type plumbing fixtures and related trim, fittings and valves meeting all current code requirements.
2. Use fixtures and fittings in accordance with NPS guidelines and LEED For Homes as follows:
Water Closets: Tank type, 1.10 gallons per flush max
Showerheads: 1.5 gpm, max at 80psi
Kitchen Faucet:1.5 gpm, max at 60psi
Lavatory Faucet: 1.5 gpm, max at 60psi

3. Plumbing Fixture Specification to Be Provided by Contractor. Architect to Approve.

Basis of Design:
Water Closets: Toto Entrada CST244EF with SoftClose Seat
Showerheads: Delta Ashlyn Valve with H2Okinetic Showerhead
Kitchen Faucet: Delta Trinsic Single Handle 1159LF
Lavatory Faucet: Delta Trinsic Single Handle 559LF-GPM-MPU

DIVISION 23 HVAC

23 0500 BASIC HVAC MATERIALS AND METHOD
1. Design Build System - Furnish all labor, materials, equipment, and services required to perform HVAC work as described in the drawings and specifications. Provide for and obtain all necessary permits and inspections required from regulatory agencies.
2. The Contractor shall provide a DESIGN package for the work outlined and shown on the drawings and described in the specifications in order to obtain required permits.
A. The Design package shall be submitted to the Architect for review and approval prior to obtaining permits.
B. The Design package shall include calculations and information as required to verify compliance with applicable building, energy, mechanical and plumbing codes.
C. The Design package shall include product data.
3. The Contractor shall conform to energy, mechanical & plumbing codes and all governing laws and regulations of mechanical work. The highest workmanship is to be assumed and bid as required.
4. Performance Requirements:
A. The specified heating and/or cooling equipment must meet the following minimum efficiency: Split System: 13 EER
B. Energy Recovery: Individual fan systems that have both a design supply air capacity of 5,000 cfm (2.36m3/s) or greater and a minimum outside air supply of 70 percent or greater of the design supply air quantity shall have an energy recovery system that provides a change in the enthalpy of the outdoor air supply of 50 percent or more of the difference between the outdoor air and return air at design conditions. Provision shall be made to bypass or control the energy recovery system to permit cooling with outdoor air where cooling with outdoor air is required. Where a single room or space is supplied by multiple units, the aggregate supply (cfm) of those units shall be used in applying this requirement.
C. Hot Gas Bypass Limitation. Cooling systems must not use hot gas bypass or other evaporator pressure control unless the equipment is designed with multiple steps (or continuous) capacity modulation.
D. Supply air economizers shall be provided on each cooling system and shall be capable of providing 100-percent outdoor air, even if additional mechanical cooling is required to meet the cooling load of the building, except for Cooling equipment less than 54,000 Btu/hr. (15,827 W) total cooling capacity. Systems shall provide a means to relieve excess outdoor air during economizer operation to prevent overpressurizing the building. The relief air outlet shall be located to avoid recirculation into the building. Where a single room or space is supplied by multiple air systems, the aggregate capacity of those systems shall be used in applying this requirement.
E. Hydronic system controls. Hydronic systems of at least 300,000 Btu/h (87,930W) design output capacity supplying heated and chilled water to comfort conditioning systems shall include controls that meet the requirements of the 2010 Oregon Energy Efficiency Specialty Code (OEESC).
F. Calculation of heating and cooling loads. Design loads shall be determined in accordance with the procedures described in the ASHRAE/ACCA Standard 183. Heating and cooling loads shall be adjusted to account for load reductions that are achieved when energy recovery systems are utilized in the HVAC system in accordance with the ASHRAE HVAC Systems and Equipment Handbook. Alternatively, design loads shall be determined by an approved equivalent computation procedure.
G. HVAC Equipment Performance Requirements. Reported efficiencies must be tested and rated in accordance with the applicable test procedure. The efficiency shall be verified through certification under an approved certification program or, if no certification program exists, the equipment efficiency ratings shall be supported by data furnished by the manufacturer. Where multiple rating conditions or performance requirements are provided, the equipment shall satisfy all stated requirements. Where components, such as indoor or outdoor coils, from different manufacturers are used, calculations and supporting data shall be furnished by the designer that demonstrates that the combined efficiency of the specified components meets the requirements herein.
H. Thermostatic Controls (Thermostats). The supply of heating and cooling energy to each zone shall be controlled by individual programable thermostatic controls that respond to temperature within the zone.
a. Programmable controls shall be capable of starting and stopping the system for seven different daily schedules per week and retaining their programming and time setting during a loss of power for at least 10 hours. Additionally, the controls shall have a manual override that allows temporary operation of the system for up to 2 hours; a manually operated timer capable of being adjusted to operate the system for up to 2 hours; or an occupancy sensor.
I. Heat pump supplementary heat. Heat pumps having supplementary electric resistance heat shall have controls that, except during defrost, prevent supplementary heat operation when the heat pump can meet the heating load.
J. Optimum Start Controls. Each HVAC system shall have controls that vary the start-up time of the system to just meet the temperature set point at time of occupancy.
K. Zone Isolation Controls. A system serving multiple occupancies or floors in the same building shall be independently zonedand equipped with isolation devices capable of automatically shutting off the supply of conditioned air and outside air to and from each isolated area. Each isolated area shall be controlled independently and satisfy temperature setback and optimum start control requirements of the 2010 OEESC. The central fan system air volume shall be reduced through fan speed reduction.
L. Ventilation. Ventilation, either natural or mechanical, shall be provided in accordance with Chapter 4 of the International Mechanical Code. Where mechanical ventilation is provided, the system shall provide the capability to reduce the outdoor air supply to the minimum required by Chapter 4 of the International Mechanical Code.
M. Duct and plenum insulation and sealing. All supply and return air ducts and plenums shall be insulated with a minimum of R-5 insulation when located in unconditioned spaces and a minimum of R-8 insulation when located outside the building. When located within a building envelope assembly, the duct or plenum shall be separated from the building exterior or unconditioned or exempt spaces by a minimum of R-8 insulation. All ducts, air handlers and filter boxes shall be sealed. Joints and seams shall comply with Section 603.9 of the International Mechanical Code.
N. Low-pressure duct systems. All longitudinal and transverse joints, seams and connections of supply and return ducts operating at a static pressure less than or equal to 2 inches w.g. (500 Pa) shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems or tapes installed in accordance with the manufacturer's installation instructions. Pressure classifications specific to the duct system shall be clearly indicated on the Mechanical Design Package construction documents in accordance with the International Mechanical Code. Documentation shall be furnished by the designer demonstrating that representative sections totaling at least 25 percent of the duct area have been tested and that all tested sections meet the requirements of this section.
O. Piping Insulation. All pipes serving space-conditioning systems including, Hot water piping for heating systems, Chilled water, refrigerant, and brine piping systems, must be insulated per the 2010 OEESC and Mechanical Code requirements. Pipe insulation is not required for piping that conveys fluids having a design operating temperature range between 60°F and 105°F. Pipe insulation is not required for runout piping not exceeding 4 ft in length and 1 in. in diameter between the control valve and HVAC coil.
P. Air system balancing. Each supply air outlet and zone terminal device shall be equipped with means for air balancing in accordance with the requirements of Chapter 6 of the International Mechanical Code (IMC 603.17). Discharge dampers intended to modulate airflow are prohibited on constant volume fans and variable volume fans with motors 10 horsepower (hp) (7.5 kW) and larger.
Q. Hydronic system balancing. Individual hydronic heating and cooling coils shall be equipped with means for balancing and pressure test connections.
R. Allowable fan floor horsepower. Each HVAC system at fan system design conditions shall not exceed the allowable fan system motor nameplate hp (Option 1) or fan system bhp (Option 2) as shown per the 2012 OEESC.

DIVISION 26 ELECTRICAL

26 0500 BASIC ELECTRICAL MATERIALS AND METHODS
1. Design Build System. Furnish all labor, material, equipment and services required to design and perform electrical work, security, access control, telecommunications and fire alarms. Provide for and obtain all necessary permits and inspections required from regulatory agencies. Coordinate work with other contractors, particularly the General Contractor, Plumbing Contractor and Mechanical Contractor. Provide all required Energy Code forms and compliance.
2. The Contractor shall provide a DESIGN package for the work outlined and shown on the drawings and described in the specifications in order to obtain required permits.
A. The Design package shall be submitted to the Architect for review and approval prior to obtaining permits.
B. The Design package shall include calculations and information as required to verify conformance with applicable building, energy, electrical and mechanical codes.
C. The Design package shall include product data.
3. All work to meet or exceed requirements of the current edition of the National Electrical Code. All products to be new and be U.L. Listed, ICC rated in all recessed conditions and/or meet local inspecting authorities requirements.
4. Existing services are to be relocated per the drawings and must meet local utility requirements.
5. Provide smoke detectors as indicated on drawings and as required to meet local codes.
6. Cover plates to be smooth finish white. Switches and outlets to be white.

26 5000 LIGHTING.
1. All lighting and associated materials to be provided as part of electrical design build submittal. Reference 26 0500.
2. Reference Reflected Ceiling Plans for Light Fixture locations and additional information.

3. Recessed exterior lights to be gasketed or sealed between the housing and wall or ceiling.. Luminaries are to be IC rated and labeled as meeting ASTM E 283 when tested at 1.57 psf pressure differential with no more than 2.0 cfm of air movement from the conditioned space to the ceiling cavity.

4. Emergency Lighting Requirements:
A. Meet Standard: NFPA 101 Life Safety Code-2009 Article 7.9.2 including:
a. maintained average of not less than 1.0 footcandle along egress path
b. not less than 0.1 footcandle at any point along egress path
c. not to exceed a maximum to minimum uniformity ratio of 40 to 1
d. operation at levels listed above for a minimum of 90 minutes.

5. Exterior Lighting Requirements:
A. Exterior Lighting to be controlled by astronomical time switch or photo sensor with time switch.
B. Astronomical Time Switch Controller to be located in Building Electrical Room.
C. Time Switches to retina programming and time setting during loss of power for a period of at least 10 hours.

6. Interior Lighting Requirements:
A. At least one local shut off lighting control per room.
B. At retail areas at least two manual switches in main area to reduce lighting levels by 50%.
C. Occupancy Sensors shall be installed in storage, mechanical and utility rooms.
D. Occupancy Sensors shall be equipped with a manual override.

DIVISION 31 EARTHWORK

31 0500 REMOVAL OF PAVEMENTS AND STRUCTURES
1. General removing of signs, fencing, and utility poles as required to accommodate new construction.
2. Demolish and remove from the site designated equipment and miscellaneous debris that are not designated for reuse.

31 1100 CLEARING, GRUBBING, SELECTIVE THINNING AND TREE REMOVAL
1. Thin undergrowth and remove trees as directed. Dispose of debris in accordance with local governing laws and authorities.

31 2100 SITE AND ROADWAY EXCAVATION AND GRADING
1. Strip, stockpile and place topsoil. Excavate roadway, backfill, embankment, backfill, compact backfill and place imported borrow in accordance with Civil documents.
2. Compact subgrade, gravel and do finish grading in accordance with Civil Documents.

31 2500 STRUCTURE EXCAVATION AND BACKFILL
1. General Site Preparation - Proofroll entire site after clearing, grubbing and stripping. Excavate for foundation and concrete slab-on-grade.
2. After placement of foundation, back fill and compact excavated area utilizing original soil. Density testing will be the responsibility of the contractor.
3. All Work to be performed in accordance with Civil Engineer's Documents.

31 2700 EROSION CONTROL
1. Furnish and Implement an Erosion Control Plan per the City of Portland's specifications for Erosion and Sedimentation control and per the Civil Engineer's Drawings and Specifications.

31 3200 UTILITY TRENCHING AND BACKFILL
1. Provide Trenching and backfilling for utilities as per Documents.

31 5100 CONCRETE WALKS, CURBS AND TURF PAVERS
1. Furnish Concrete walks and curbs in selected color.
2. Furnish Concrete Turf Pavers at all areas and where designated in the drawings

31 8100 IRRIGATION SYSTEM
1. Install a drip irrigation system in landscaped areas.

31 9500 SHRUB AND TREE PLANTING
1. Install shrubs and trees in planted areas with prepared soils amendments as Specified on the Drawings.
2. Provide lined trenches to all areas designated for bamboo and bamboo species plantings.

3. Reference Landscape Legend on Proposed Site Plan, Sheet g0.04 for Specific Plant Types and Species.

DIVISION 33 SITE UTILITIES

33 6650 WATER SYSTEM
1. Provide a water system including all accessories and piping from the City Water Meter to each Residence.
2. Provide Sub-Metering
33 7110UNDERDRAINS
1. Install underdrains, pipe, granular filler material, and synthetic fabric as per per Civil Engineers Drawings and Specifications
33 7220 CONCRETE DROP INLETS AND CATCH BASINS
1. Construct Concrete Drop Inlets and Catch Basins with Metal Grates per Civil Engineers Drawings and Specifications
33 7220 STORM DRAINS & FLOW THROUGH FACILITIES
1. Install new storm drains and end sections.
2. Excavate, grade, and provide stormwater facilities per Civil Engineer's Drawings & Specifications
33 7300 SEWAGE SYSTEM
1. Provide a gravity fed sewage piping to main.

END SPECIFICATIONS

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Permit Set
1/1/2024

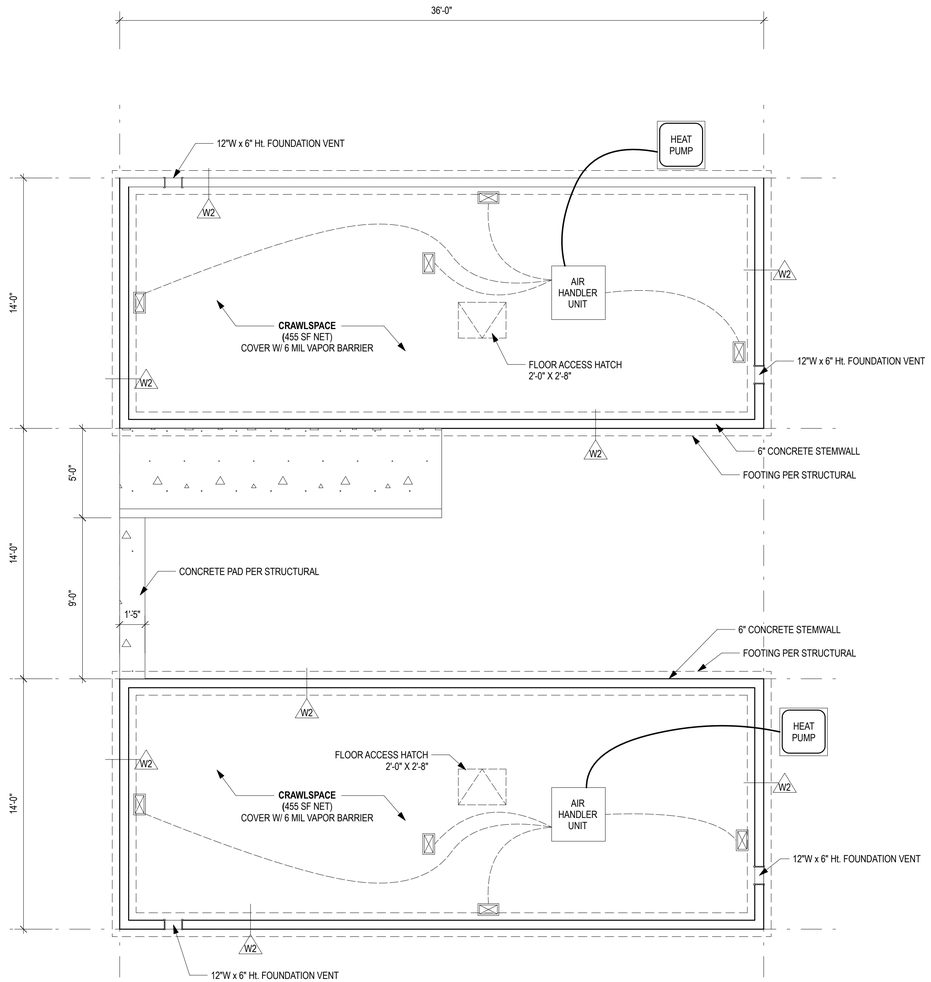
Revision	
Date:	Issue:

Clackamas Emergency Shelter Village

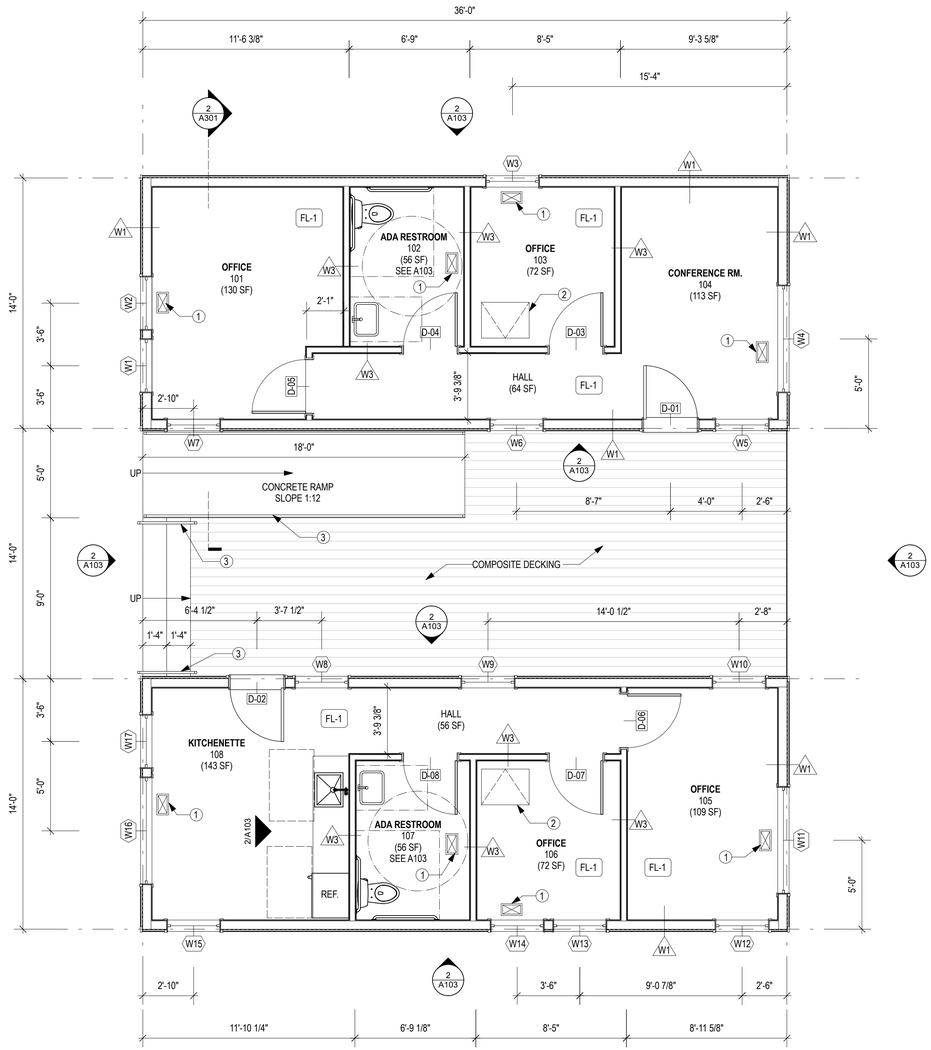
16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title:
Specifications Divisions 7-8

Sheet Number:
A005



2 Foundation Plan
Scale: 1/4" = 1'-0"



1 Floor Plan - Office Units
Scale: 1/4" = 1'-0"

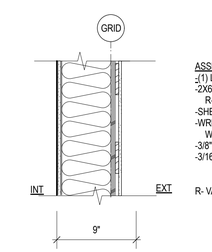
GENERAL NOTES

1. ALL DIMENSIONS ARE TO FRAMING UNLESS NOTED ON PLANS
2. MECHANICAL LAYOUT ARE FOR REFECNCE ONLY. SYSTEM TO BE VERIFIED WITH MECH. CONTRACTOR
3. VINYL PLANK FLOORING THROUGHOUT

KEYNOTES

1. SUPPLY FLOOR REGISTER
2. FLOOR ACCESS HATCH 2'-0" X 2'-8"
3. 2" DIAM. METAL RAILING

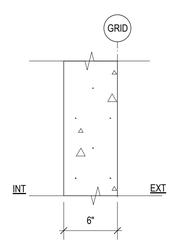
WALL ASSEMBLIES



ASSEMBLY:
-(1) LAYER 5/8" GWB
-2X6 WOOD STUDS
R-23 FACED FIBERGLASS BATT INSULATION
-SHEATHING PER STRUCTURAL
-WRB-1: AIR/VAPOR PERMEABLE
WATER RESISTIVE MEMBRANE
-3/8" VERTICAL PT. RAINSCREEN 16" OC.
-3/16" FIBER CEMENT LAP SIDING 5" PROFILE

R- VALUE: R-23

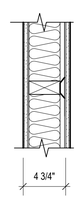
W1 2X6 EXTERIOR WALL ASSEMBLY



ASSEMBLY: FOUNDATION WALL

6" CONCRETE FOUNDATION WALL PER STRUCTURAL

W2 CONCRETE FOUNDATION WALL



ASSEMBLY:
(1) LAYER 5/8" GWB EACH SIDE TYPE 'X'
2X4 WOOD STUDS @ 16" OC
1/2" RESILANT FURRING CHANNEL @ 16" OC
ACOUSTIC BATTS

LOCATION:	INTERIOR
R VALUE:	N/A
FIRE RATING:	1 HOUR
STC RATING:	50-54 STC
ACOUSTIC TEST:	NRCC TL-93-098
ASSEMBLY:	GA WP 3242
NOTES:	PLAN DIMENSIONS ARE TO FACE OF STUD, UNLESS NOTED OTHERWISE

W3 2X4 INTERIOR PARTITION WALL ASSEMBLY - 1 HOUR

base

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Permit Set
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Revision	
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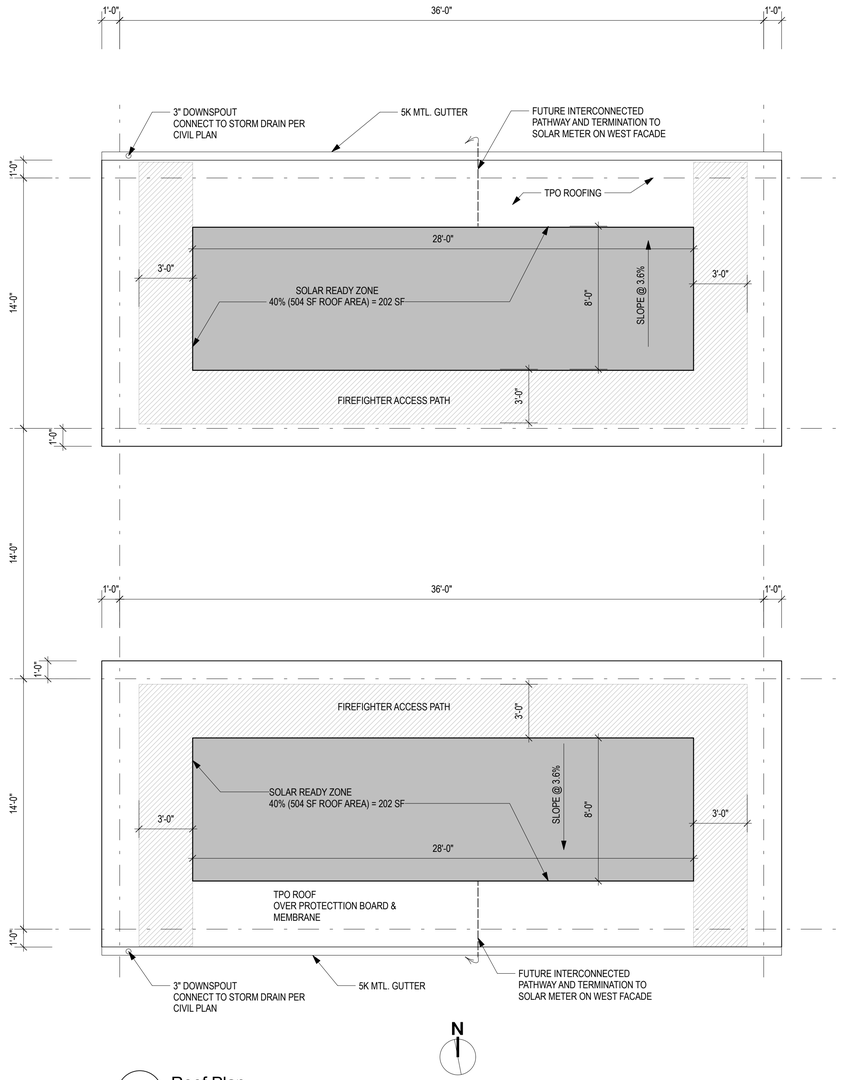
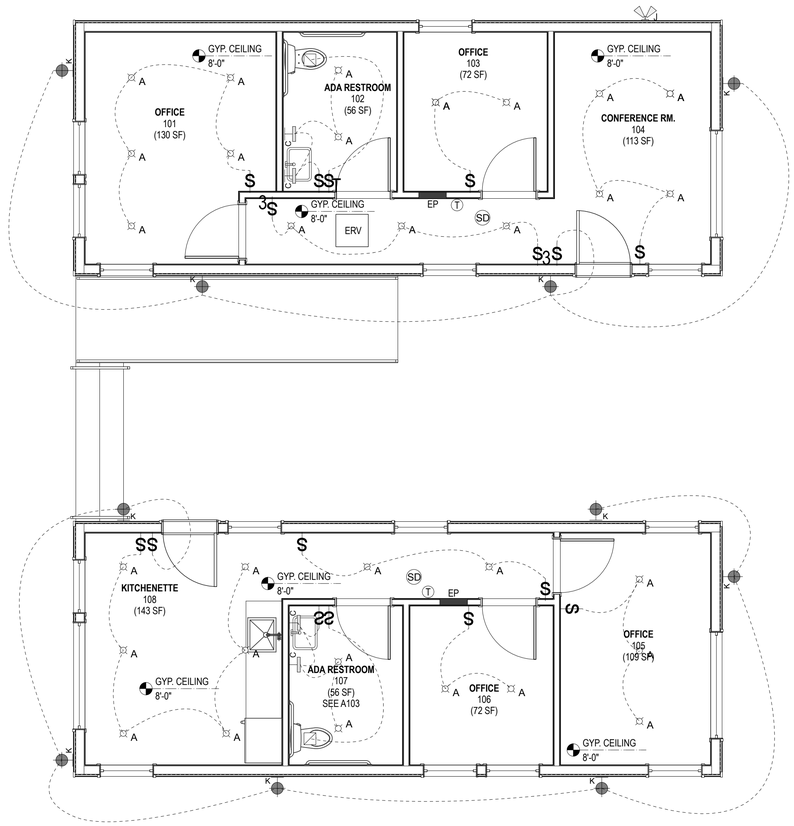
Clackamas Emergency Shelter Village
16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title:
OFFICE - Floor Plan & Foundation Plan

Sheet Number:
A101



7 Roof Plan
Scale: 1/4" = 1'-0"



1 Reflected Ceiling Plan
Scale: 1/4" = 1'-0"

N

GENERAL NOTES:

1. OUTLET DISTRIBUTION TO BE PROVIDED THROUGHOUT PER NFC
2. All permanently installed light fixtures shall contain high efficacy lamps.
3. Kitchen range hood shall be 150 cfm minimum and directly to outdoors.
4. Clothes dryer exhaust shall be no less than 3 feet from any opening. ORSC M1502.3
5. Restroom exhaust fans shall be 80 cfm and controlled by timer in accordance with ORSC N1505.6
6. Restroom exhaust fans shall be 3-Sones max. ORCS M1505.5.1.2
7. Provide Solar Interconnection Pathway to panel per Section:
8. 50% of the of all 125 volt 15- and 20-Amp receptacles are controlled by an automatic control device

KEYNOTES

AIR BARRIER INSTALLATION AND AIR SEALING REQUIREMENTS

COMPONENT	AIR BARRIER CRITERIA
General requirements	A continuous air barrier shall be installed in alignment with the building thermal envelope.
	Breaks or joints in the air barrier shall be sealed.
Ceiling/attic	The air barrier in any dropped ceiling or soffit shall be aligned with the insulation and any gaps in the air barrier shall be sealed.
	Access openings, drop-down stairs, or knee wall doors to unconditioned attic spaces shall be gasketed and sealed.
Walls	The junction of the foundation and sill plate shall be sealed.
	Between wall cavities and windows or door frames.
	The junction of the top plate and the top of walls shall be sealed in accordance with Section N1104.8.2.1.
	All penetrations or utility services through the top and bottom plates shall be sealed.
	Knee walls shall be sealed.
Windows, skylights and doors	The space between framing and skylights, and the jambs of windows and doors shall be sealed.
Rim/band joists	Rim/band joists shall be a part of the thermal envelope and have a continuous air barrier.
Floors Including cantilevered floors and floors above garages	The air barrier shall be installed at any exposed edge of insulation.
Crawl space walls	Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.
Shafts, penetrations	Duct shafts, utility penetrations and flue shafts opening to exterior or unconditioned space shall be sealed.
Garage separation	Air sealing shall be provided between the garage and conditioned spaces.
Recessed lighting	Recessed light fixtures installed in the building thermal envelope shall be sealed to the finished surface.
Shower/tub on exterior walls	The air barrier installed at exterior walls adjacent to showers and tubs shall separate the wall from the shower or tub.
Electrical/phone box on exterior walls	The air barrier shall be installed behind electrical and communication boxes. Alternatively, air-sealed boxes shall be installed.
HVAC register boots	HVAC supply and return register boots that penetrate building thermal envelope shall be sealed to the subfloor, wall covering or ceiling penetrated by the boot.

ELECTRICAL / MECH. LEGEND

- S — SINGLE POLE SWITCH (MOUNT AT +48" A.F.F.)
- STANDARD DUPLEX RECEPTACLE (MOUNT AT +18" A.F.F.)
- A — 4" LED CAN LIGHT - 2700K
- B — SURFACE MOUNTED LIGHT FIXTURE
- C — SCONCE
- J — EXT. SURFACE MOUNT SCONCE FLOOD LIGHT MOTION SENSOR
- K — EXT. SURFACE MOUNT SCONCE LIGHT 6' A.F.F.
- T — WALL MOUNTED THERMOSTAT TO ELECTRIC HEATER (MOUNT AT +48" A.F.F.)
- SD — CEILING MOUNTED SMOKE, FIRE, CARBON MONOXIDE ALARM (HARD WIRED W/ BATTERY BACKUP)
- EP — ELECTRICAL PANEL
- ERV — ENERGY RECOVERY SYSTEM
- HEAT — COVE WALL HUNG HEATER CONNECTED TO THERMOSTAT 7'-0" FFF.
- BATH FAN W/ 6" RIGID DUCT TO EXT.
- HP CASS. — WALL HUNG HEAT PUMP CASSETTE CONNECTED TO THERMOSTAT 7'-0" FFF.

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Revision	
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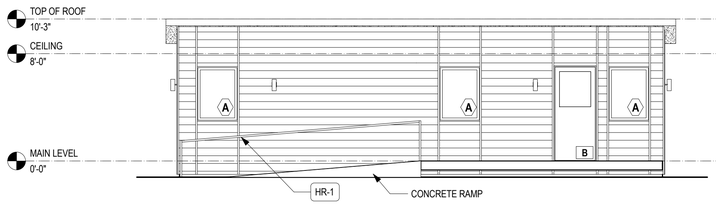
Clackamas Emergency Shelter Village
16590 SE 114th Ave
Clackamas, Oregon 97015

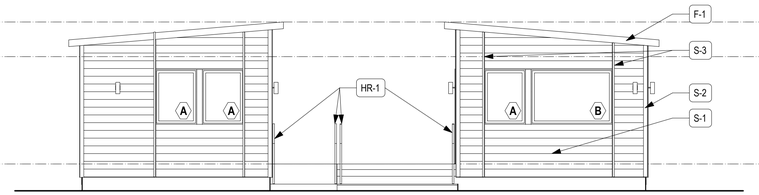
Sheet Title:
OFFICE - RCP & Roof Plans

Sheet Number:
A102

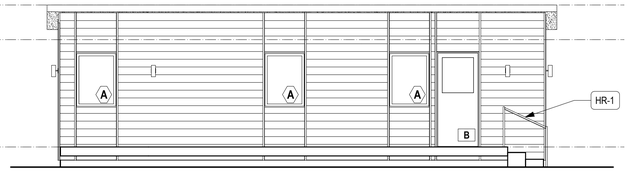
EXTERIOR MATERIAL LEGEND						
ID TAG	ITEM	MATERIAL	DESCRIPTION / MANU.	SIZE	FINISH	SPEC SECTIONS
S-1	SIDING	FIBER CEMENT LAP SIDING	HARDI BOARD OR SIM.	6" PROFILE	PRIMED & PAINTED AS NOTED ON ELEV.	SECTION: 074600
S-2	TRIM @ CORNERS	4 X 5/4 PRE PRIMED CEDAR		ACTUAL 1" X 3.5"	AS NOTED ON ELEVATIONS	
S-3	TRIM @ WINDOWS	2 X 2 PRE PRIMED CEDAR		ACTUAL 1.5" X 1.5"	AS NOTED ON ELEVATIONS	
S-4	SOFFIT	3/4" ROUGH SAWN EXT. PLY	EXT. GRADE PLYWOOD	3/4" THICK CUT TO SIZE	PRIMED AND PAINTED	
F-1	FASCIA	5/4 PRE PRIMED CEDAR	PRE PRIMED CEDAR	5/4 X 6	AS NOTED ON ELEVATIONS	
R-1	ROOFING	TPO MEMBRANE ROOF	WHITE MEMBRANE	PER MANU.	WHITE	SECTION: 075000
GT-1	GUTTERS	5K ALUMINUM - PREFINISHED	5" PROFILE FASCIA GUTTER	CONTINUOUS	TO MATCH FASCIA COLOR	SECTION: 076200
HR-1	HAND & GUARD RAILS	A36 STEEL	2" DIAMETER STEEL TUBING	CONTINUOUS	2" DIAMETER	SECTION: 050500



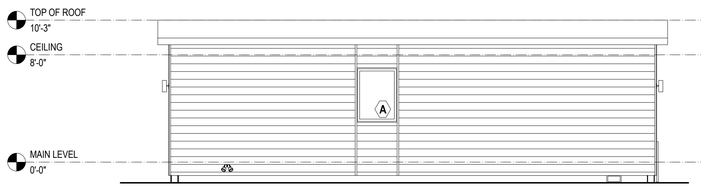
3 N. OFFICE - SOUTH ELEVATION
Scale: 3/16" = 1'-0"



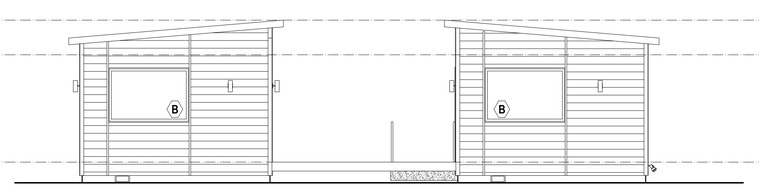
7 N & S OFFICES - WEST ELEVATION
Scale: 3/16" = 1'-0"



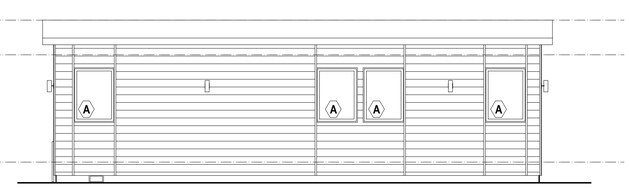
4 S. OFFICE - NORTH ELEVATION
Scale: 3/16" = 1'-0"



6 N. OFFICE - NORTH ELEVATION
Scale: 3/16" = 1'-0"



5 N & S OFFICES - EAST ELEVATION
Scale: 3/16" = 1'-0"

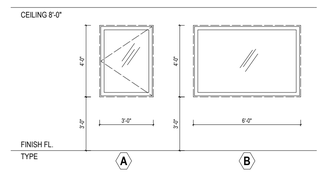


10 S. OFFICE - NORTH ELEVATION
Scale: 3/16" = 1'-0"

Window Schedule

Location			Frame			Size		Head Ht.	Performance				Notes
ID#	Type	Description	Material	Ext. Finish	Int. Finish	Width	Height		SHGC	U-Factor	Egress	Tempered	
W1	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		
W2	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		
W3	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		
W4	B	Milguard Trinsic	Vinyl	White	White	6'-0"	4'-0"	7'-0"	.27	.24	No		
W5	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		
W6	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		
W7	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		
W8	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		
W9	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		
W10	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		
W11	B	Milguard Trinsic	Vinyl	White	White	6'-0"	4'-0"	7'-0"	.27	.24	No		
W12	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		
W13	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		
W14	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		
W15	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		
W16	B	Milguard Trinsic	Vinyl	White	White	6'-0"	4'-0"	7'-0"	.27	.24	No		
W17	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		

WINDOW LEGEND

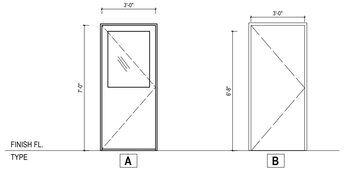


Door Schedule

Location			Door				Glass Type	Frame		Fire Rating	Hardware Group	Manufacture Notes
ID#	Int/Ext	Room Name	Type	Width	Height	Thickness		Material	Finish			
Exterior Doors												
D-01	Ext.	North Entry	A	3'0"	7'0"	1 3/4"		FIBER	FF			THERMA TRU - FCM4810XN
D-02	Ext.	South Entry	A	3'0"	7'0"	1 3/4"		FIBER	FF			THERMA TRU - FCM4810XN
Interior Doors												
D-03	Int.	Office	B	3'0"	7'0"	1 3/4"		WD	PTD			
D-04	Int.	Office	B	3'0"	7'0"	1 3/4"		WD	PTD			
D-05	Int.	Office	B	3'0"	7'0"	1 3/4"		WD	PTD			
D-06	Int.	Office	B	3'0"	7'0"	1 3/4"		WD	PTD			
D-07	Int.	Office	B	3'0"	7'0"	1 3/4"		WD	PTD			
D-08	Int.	Office	B	3'0"	7'0"	1 3/4"		WD	PTD			
D-09	Int.	Office	B	3'0"	7'0"	1 3/4"		WD	PTD			

Door Schedule Abbreviation Legend	
ALUM	ALUMINUM
HTML	HOLLOW METAL STEEL DOOR
CTG	CLEAR TEMERED GLAZING
WD	SOLID CORE WOOD DOOR
PTD	PAINTED
FF	FACTORY FINISH
VIYNL	VINYL
FIBER	FIBERGLASS INSULATED DOOR

DOOR LEGEND



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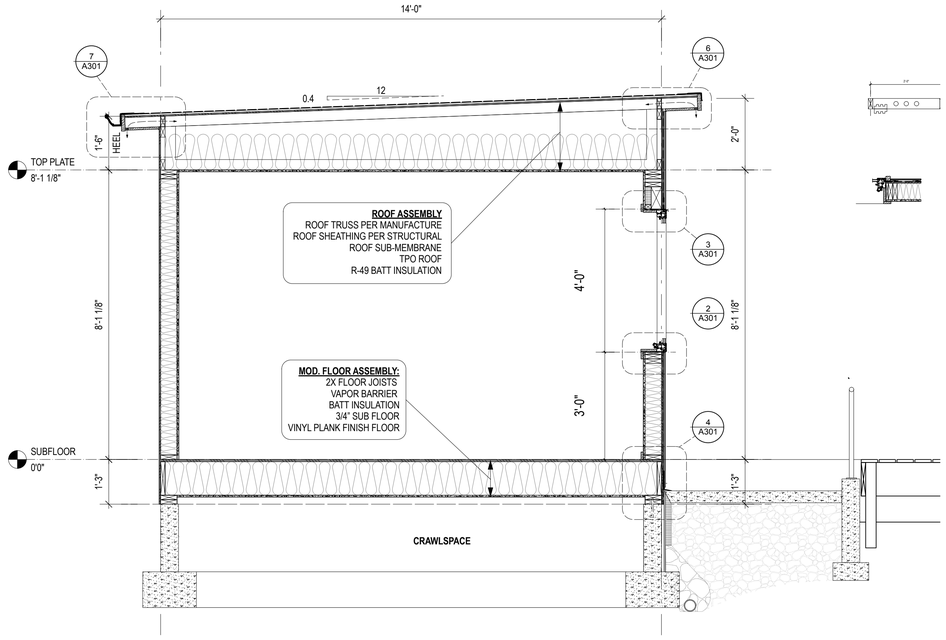
Permit Set
1/1/2024

Revision	
Date:	Issue:

Clackamas Emergency Shelter Village
16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title:
OFFICE - Elevations

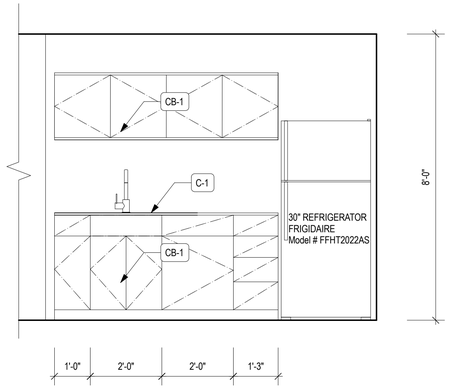
Sheet Number:
A103



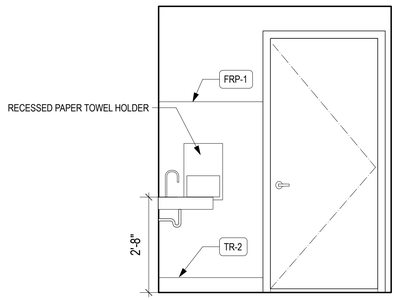
1 BUILDING SECTION
Scale: 1/2" = 1'-0"

INTERIOR MATERIAL LEGEND

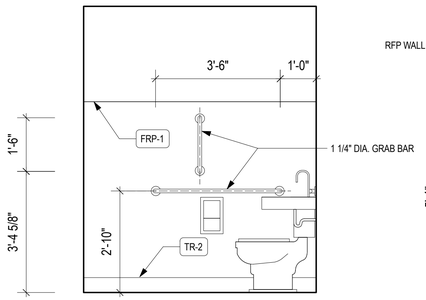
ID TAG	ITEM	MATERIAL	DESCRIPTION	SIZE	MANU. / SERIES	NOTES	SPECIFICATION SECTION
C-1	COUNTER TOP	COMPOSITE	KITCHENETTE @ OFFICE	2 CM			SECTION xxx
C-2	COUNTER TOP	STAINLESS STEEL	KITCHEN MODULE	DETERMINED BY FABRICATOR			SECTION: 050500
P-1	PAINT	PAINT	SEMI GLOSS WHITE CABINET				SECTION: 9
P-2	PAINT	PAINT	PTD. FLAT GREY				SECTION: 9
FL-1	FLOORING	FLOORING	LUXURY VINYL FLOORING	5" PLANKS	MOHAWK / SOLID TECH PLUS / COLOR BANGOR (222)		SECTION: 6
FRP-1	WALL COVERING	FIBER REINFORCED PNL.	FRP	SEE INT. ELEVATIONS			SECTION: 064400
WC-1	WALL COVERING	FORBO MARMOLEUM	SHEET MARMOLUM	SEE INT. ELEVATIONS	FORBO MARMOLEUM - 3828 BLUE HEAVEN		SECTION: 064400
SH-1	METAL SHEVLING	METAL SHEVLING	SLOTTED STEEL BRACKETS & WIRE SHELVING	SEE INTERIOR ELEV.	RUBBER MAID		SECTION: 050500
CB-1	CABINETRY	MELAMINE	LAMINATE CABINETS	SEE INTERIOR ELEV.			SECTION: 064000
TR-1	BASE & DOOR TRIM	PRIMED MDF	PAINTED TRIM	1X3			SECTION: 064000
TR-2	BASE TRIM	RUBBER BASE	6" HT. BASE TRIM - DARK BROWN	6" HT.	DURACOVE		SECTION: 064000



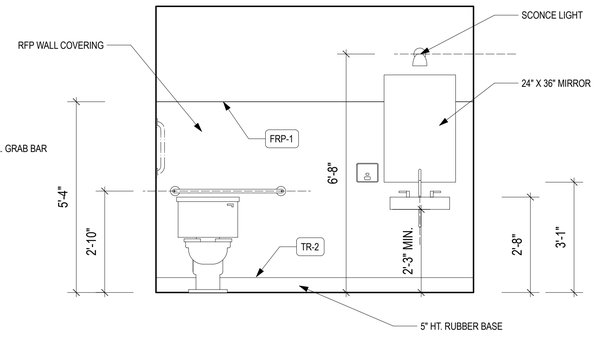
2 KITCHENETTE ELEVATION
Scale: 1/2" = 1'-0"



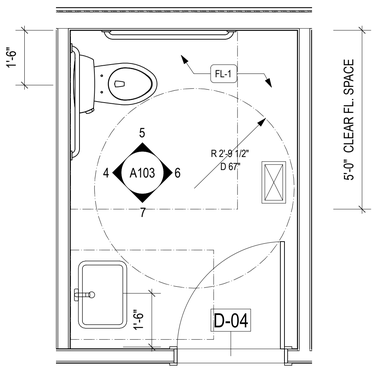
5 ADA R.R. ELEVATION
Scale: 1/2" = 1'-0"



3 ADA R.R. ELEVATION
Scale: 1/2" = 1'-0"



4 ADA R.R. ELEVATION
Scale: 1/2" = 1'-0"



6 ADA RESTROOM
Scale: 1/2" = 1'-0"

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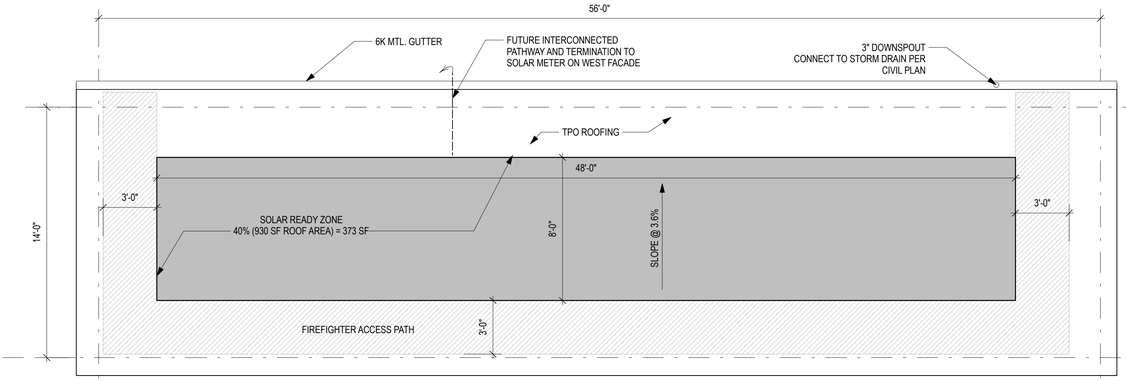
Permit Set
1/1/2024

Revision	
Date:	Issue:

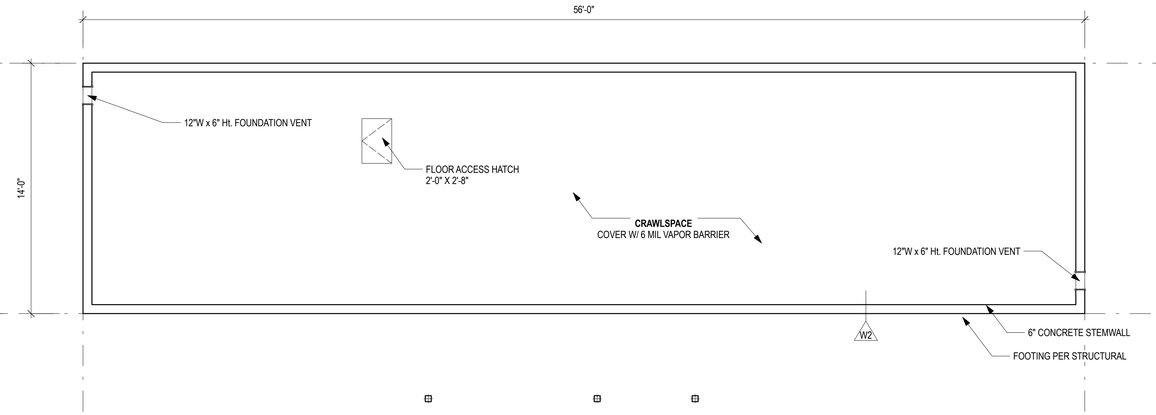
Clackamas Emergency Shelter Village
16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title:
OFFICE UNIT SECTION & DETAILS

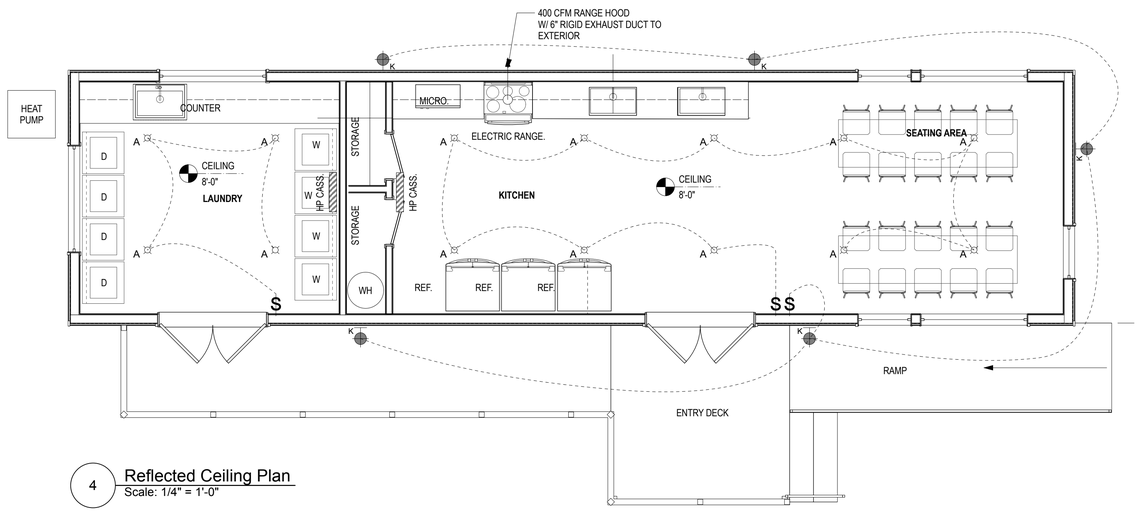
Sheet Number:
A104



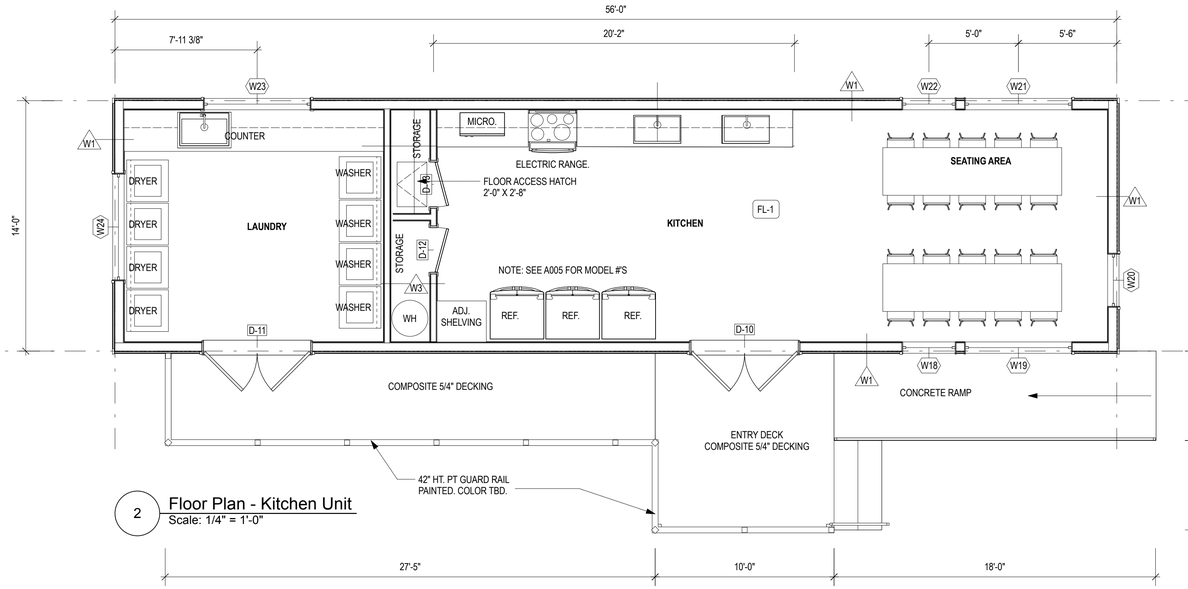
3 Roof Plan
Scale: 1/4" = 1'-0"



1 Foundation Plan
Scale: 1/4" = 1'-0"



4 Reflected Ceiling Plan
Scale: 1/4" = 1'-0"

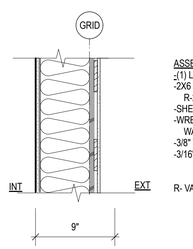


2 Floor Plan - Kitchen Unit
Scale: 1/4" = 1'-0"

ELECTRICAL / MECH. LEGEND

- S — SINGLE POLE SWITCH (MOUNT AT +48" A.F.F.)
- STANDARD DUPLEX RECEPTACLE (MOUNT AT +18" A.F.F.)
- A — 4" LED CAN LIGHT - 2700K
- B — SURFACE MOUNTED LIGHT FIXTURE
- C — SCONCE
- J — EXT. SURFACE MOUNT SCONCE FLOOD LIGHT MOTION SENSOR
- K — EXT. SURFACE MOUNT SCONCE LIGHT 6' A.F.F.
- T — WALL MOUNTED THERMOSTAT TO ELECTRIC HEATER (MOUNT AT +48" A.F.F.)
- SD — CEILING MOUNTED SMOKE, FIRE, CARBON MONOXIDE ALARM (HARD WIRED W/ BATTERY BACKUP)
- EP — ELECTRICAL PANEL
- ERV — ENERGY RECOVERY SYSTEM
- HEAT — COVE WALL HUNG HEATER CONNECTED TO THERMOSTAT 7'-0" FFF.
- BATH FAN W/ 6" RIGID DUCT TO EXT.
- HP CASS. — WALL HUNG HEAT PUMP CASSETTE CONNECTED TO THERMOSTAT 7'-0" FFF.

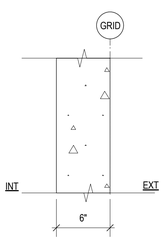
WALL ASSEMBLIES



ASSEMBLY:
-(1) LAYER 5/8" GWB
-2X6 WOOD STUDS
R-23 FACED FIBERGLASS BATT INSULATION
-SHEATHING PER STRUCTURAL
-WRB-1: AIR/VAPOR PERMEABLE WATER RESISTIVE MEMBRANE
-3/8" VERTICAL PT. RAINSCREEN 16" OC.
-3/16" FIBER CEMENT LAP SIDING 5" PROFILE

R- VALUE: R-23

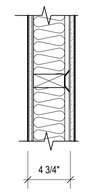
W1 2X6 EXTERIOR WALL ASSEMBLY



ASSEMBLY: FOUNDATION WALL

6" CONCRETE FOUNDATION WALL PER STRUCTURAL

W2 CONCRETE FOUNDATION WALL



ASSEMBLY:
(1) LAYER 5/8" GWB EACH SIDE TYPE 'X'
2X4 WOOD STUDS @ 16" OC
1/2" RESILANT FURRING CHANNEL @ 16" OC
ACOUSTIC BATTS

LOCATION:	INTERIOR
R VALUE:	N/A
FIRE RATING:	1 HOUR
STC RATING:	50-54 STC
ACOUSTIC TEST:	NRCC TL-93-098
ASSEMBLY:	GA WP 3242
NOTES:	PLAN DIMENSIONS ARE TO FACE OF STUD, UNLESS NOTED OTHERWISE

W3 2X4 INTERIOR PARTITION WALL ASSEMBLY - 1 HOUR

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Permit Set
1/1/2024

Revision	
Date:	Issue:

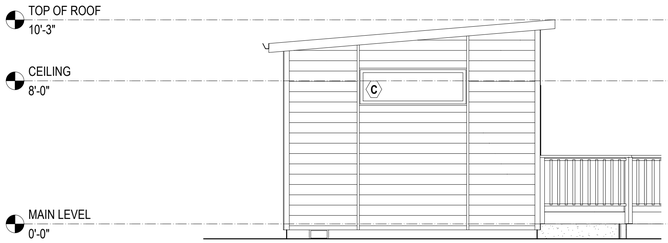
Clackamas Emergency Shelter Village

16590 SE 114th Ave
Clackamas, Oregon 97015

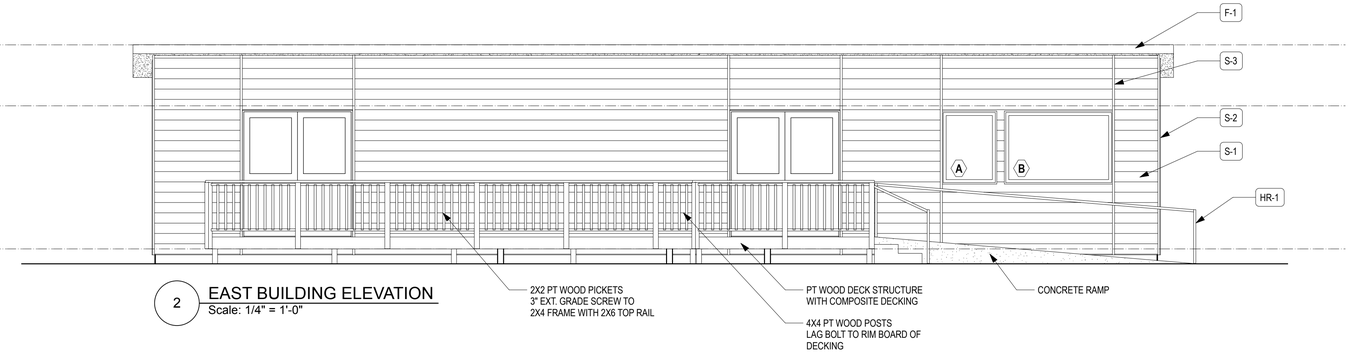
Sheet Title:
Kitchen Plans & Wall Types

Sheet Number:
A111

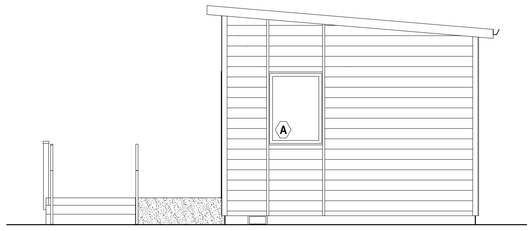
EXTERIOR MATERIAL LEGEND						
ID TAG	ITEM	MATERIAL	DESCRIPTION / MANU.	SIZE	FINISH	SPEC SECTIONS
S-1	SIDING	FIBER CEMENT LAP SIDING	HARDI BOARD OR SIM.	6" PROFILE	PRIMED & PAINTED AS NOTED ON ELEV.	SECTION: 074600
S-2	TRIM @ CORNERS	4 X 5/4 PRE PRIMED CEDAR		ACTUAL 1" X 3.5"	AS NOTED ON ELEVATIONS	
S-3	TRIM @ WINDOWS	2 X 2 PRE PRIMED CEDAR		ACTUAL 1.5" X 1.5"	AS NOTED ON ELEVATIONS	
S-4	SOFFIT	3/4" ROUGH SAWN EXT. PLY	EXT. GRADE PLYWOOD	3/4" THICK CUT TO SIZE	PRIMED AND PAINTED	
F-1	FASCIA	5/4 PRE PRIMED CEDAR	PRE PRIMED CEDAR	5/4 X 6	AS NOTED ON ELEVATIONS	
R-1	ROOFING	TPO MEMBRANE ROOF	WHITE MEMBRANE	PER MANU.	WHITE	SECTION: 075000
GT-1	GUTTERS	5K ALUMINUM - PREFINISHED	5" PROFILE FASCIA GUTTER	CONTINUOUS	TO MATCH FASCIA COLOR	SECTION: 076200
HR-1	HAND & GUARD RAILS	A36 STEEL	2" DIAMETER STEEL TUBING	CONTINUOUS	2" DIAMETER	SECTION: 050500



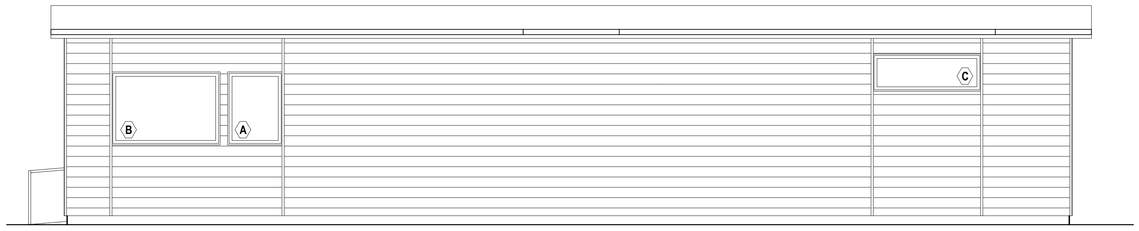
3 BUILDING ELEVATION - LEFT
Scale: 1/4" = 1'-0"



2 EAST BUILDING ELEVATION
Scale: 1/4" = 1'-0"



8 NORTH BUILDING ELEVATION
Scale: 1/4" = 1'-0"



7 WEST BUILDING ELEVATION
Scale: 1/4" = 1'-0"

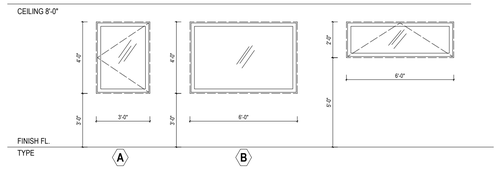
Window Schedule

Location			Frame			Size		Head Ht.	Performance				Notes
ID#	Type	Description	Material	Ext. Finish	Int. Finish	Width	Height		SHGC	U-Factor	Egress	Tempered	
W18	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		
W19	B	Milguard Trinsic	Vinyl	White	White	6'-0"	4'-0"	7'-0"	.27	.24	No		
W20	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		
W21	B	Milguard Trinsic	Vinyl	White	White	6'-0"	4'-0"	7'-0"	.27	.24	No		
W22	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		
W23	C	Milguard Trinsic	Vinyl	White	White	6'-0"	2'-0"	7'-0"	.27	.24	No		
W24	C	Milguard Trinsic	Vinyl	White	White	6'-0"	2'-0"	7'-0"	.27	.24	No		

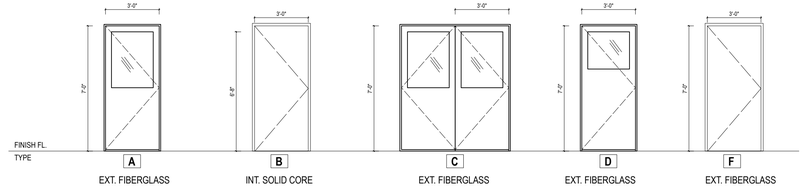
Door Schedule

Location			Door				Glass Type	Frame		Fire Rating	Hardware Group	Manufacture Notes
ID#	Int/Ext	Room Name	Type	Width	Height	Thickness		Material	Finish			
Exterior Doors												
D-10	Ext.	Kitchen	C	3'0"	7'0"	1 3/4"		FIBER	FF			THERMA TRU - FCM4810XN
D-11	Ext.	Laundry	C	3'0"	7'0"	1 3/4"		FIBER	FF			THERMA TRU - FCM4810XN
Interior Doors												
D-12	Int.	Kitchen Closet	B	3'0"	7'0"	1 3/4"		WD	PTD			
D-13	Int.	Kitchen Closet	B	3'0"	7'0"	1 3/4"		WD	PTD			

WINDOW LEGEND



DOOR LEGEND



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Permit Set
1/1/2024

Revision	
Date:	Issue:

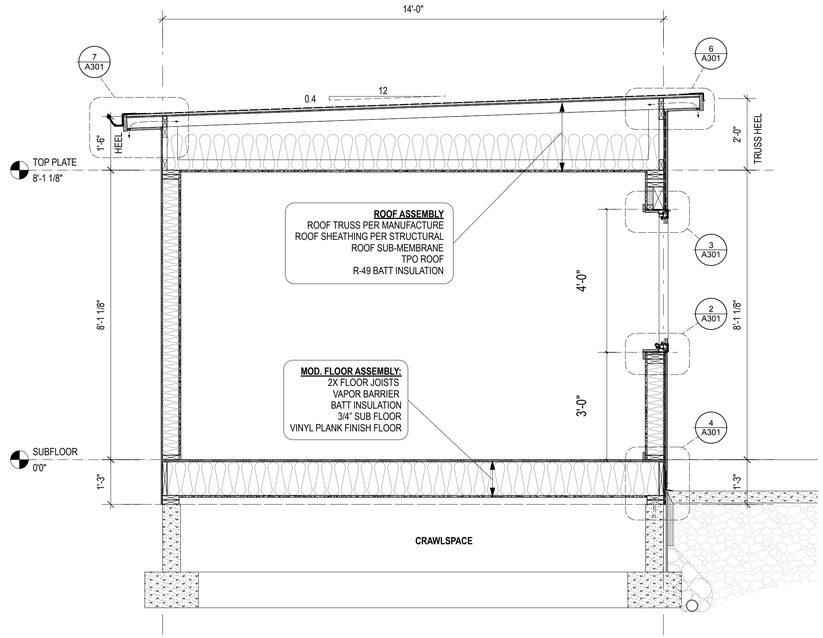
Clackamas Emergency Shelter Village
16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title:
Kitchen Elevations & Schedules

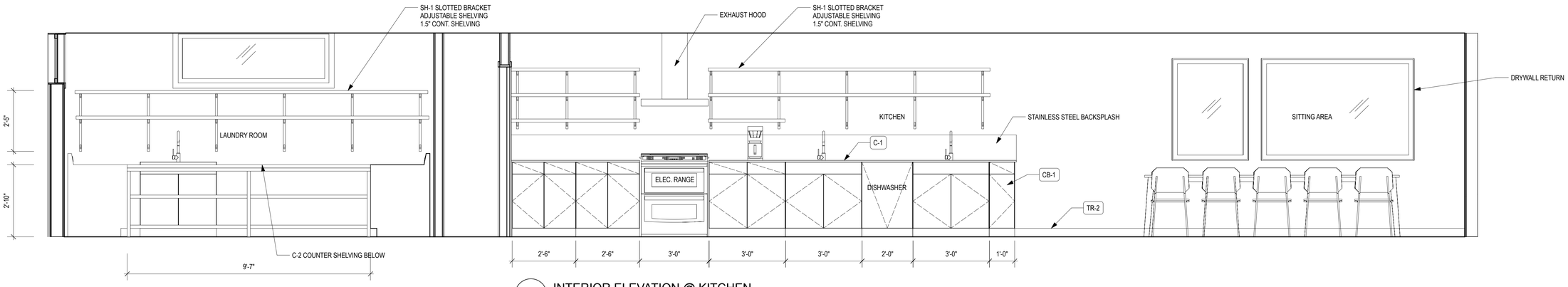
Sheet Number:
A112

INTERIOR MATERIAL LEGEND

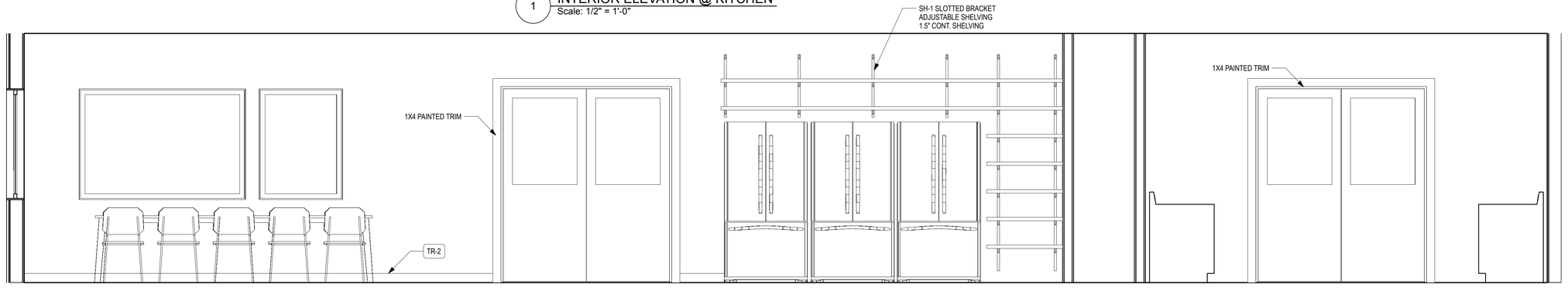
ID TAG	ITEM	MATERIAL	DESCRIPTION	SIZE	MANU. / SERIES	NOTES	SPECIFICATION SECTION
C-1	COUNTER TOP	COMPOSITE	KITCHENETTE @ OFFICE	2 CM			SECTION xxx
C-2	COUNTER TOP	STAINLESS STEEL	KITCHEN MODULE	DETERMINED BY FABRICATOR			SECTION: 050500
P-1	PAINT	PAINT	SEMI GLOSS WHITE CABINET				SECTION: 9
P-2	PAINT	PAINT	PTD. FLAT GREY				SECTION: 9
FL-1	FLOORING	FLOORING	LUXURY VINYL FLOORING	5" PLANKS	MOHAWK / SOLID TECH PLUS / COLOR BANGOR (222)		SECTION: 6
FRP-1	WALL COVERING	FIBER REINFORCED PNL.	FRP	SEE INT. ELEVATIONS			SECTION: 064400
WC-1	WALL COVERING	FORBO MARMOLEUM	SHEET MARMOLUM	SEE INT. ELEVATIONS	FORBO MARMOLEUM - 3828 BLUE HEAVEN		SECTION: 064400
SH-1	METAL SHEVLING	METAL SHEVLING	SLOTTED STEEL BRACKETS & WIRE SHELVING	SEE INTERIOR ELEV.	RUBBER MAID		SECTION: 050500
CB-1	CABINETRY	MELAMINE	LAMINATE CABINETS	SEE INTERIOR ELEV.			SECTION: 064000
TR-1	BASE & DOOR TRIM	PRIMED MDF	PAINTED TRIM	1X3			SECTION: 064000
TR-2	BASE TRIM	RUBBER BASE	6" HT. BASE TRIM - DARK BROWN	6" HT.	DURACOVE		SECTION: 064000



2 BUILDING SECTION
Scale: 1/2" = 1'-0"



1 INTERIOR ELEVATION @ KITCHEN
Scale: 1/2" = 1'-0"



3 INTERIOR ELEVATION @ KITCHEN FACING EAST
Scale: 1/2" = 1'-0"

base
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Permit Set
1/1/2024

Revision	
Date:	Issue:

Clackamas Emergency Shelter Village
16590 SE 114th Ave
Clackamas, Oregon 97015

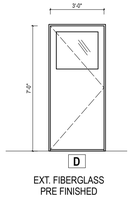
Sheet Title:
Kitchen Section & Int. Elevations

Sheet Number:
A113

Door Schedule

Location			Door				Glass Type	Frame		Fire Rating	Hardware Group	Manufacture Notes
ID#	Int/Ext	Room Name	Type	Width	Height	Thickness		Material	Finish			
Exterior Doors												
D-14	Ext.	Sleeping Unit	D	3'0"	7'0"	1 3/4"		FIBER	FF			
D-15	Ext.	Sleeping Unit	D	3'0"	7'0"	1 3/4"		FIBER	FF			
D-16	Ext.	Sleeping Unit	D	3'0"	7'0"	1 3/4"		FIBER	FF			

DOOR LEGEND



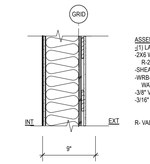
EXT. FIBERGLASS
PRE FINISHED

Window Schedule

Location			Frame			Size		Head Ht.	Performance				Notes
ID#	Type	Description	Material	Ext. Finish	Int. Finish	Width	Height		SHGC	U-Factor	Egress	Tempered	
W24	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		
W25	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		
W26	A	Milguard Trinsic	Vinyl	White	White	3'-0"	4'-0"	7'-0"	.27	.24	No		

WINDOW LEGEND

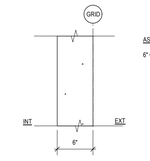
WALL ASSEMBLIES



ASSEMBLY:
-1(1) LAYER 5/8" GWB
-2X6 WOOD STUDS
R-23 FACED FIBERGLASS BATT INSULATION
-SHEATHING PER STRUCTURAL
-WRB-1: AIR/VAPOR PERMEABLE
WATER RESISTIVE MEMBRANE
-3/8" VERTICAL PT. RAINSCREEN 16" OC.
-3/16" FIBER CEMENT LAP SIDING 5" PROFILE

R- VALUE: R-23

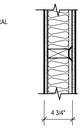
W1 2X6 EXTERIOR WALL ASSEMBLY



ASSEMBLY: FOUNDATION WALL

6" CONCRETE FOUNDATION WALL PER STRUCTURAL

W2 CONCRETE FOUNDATION WALL



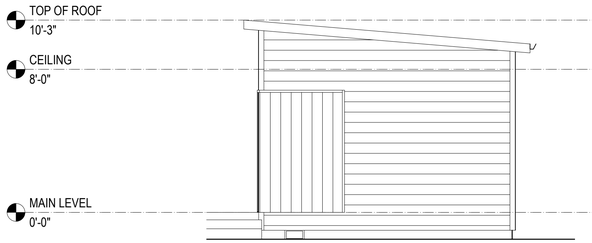
ASSEMBLY:
(1) LAYER 5/8" GWB EACH SIDE TYPE 'X'
2X4 WOOD STUDS @ 16" OC
1/2" RESILIANT FURRING CHANNEL @ 16" OC
ACOUSTIC BATTS

LOCATION:	INTERIOR
R VALUE:	N/A
FIRE RATING:	1 HOUR
STC RATING:	50-54 STC
ACOUSTIC TEST:	NRCC TL-93-098
ASSEMBLY:	GA WP 3242
NOTES:	PLAN DIMENSIONS ARE TO FACE OF STUD, UNLESS NOTED OTHERWISE

W3 2X4 INTERIOR PARTITION WALL ASSEMBLY - 1 HOUR

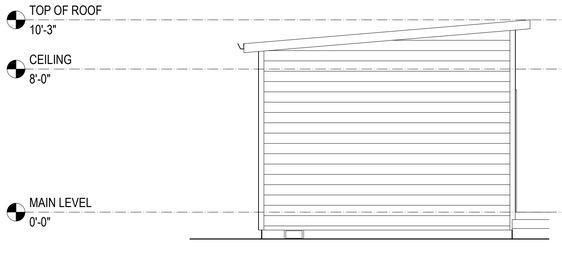
ELECTRICAL / MECH. LEGEND

- S — SINGLE POLE SWITCH (MOUNT AT +48" A.F.F.)
- STANDARD DUPLEX RECEPTACLE (MOUNT AT +18" A.F.F.)
- A — 4" LED CAN LIGHT - 2700K
- B — SURFACE MOUNTED LIGHT FIXTURE
- C — SCONCE
- J — EXT. SURFACE MOUNT SCONCE FLOOD LIGHT MOTION SENSOR
- K — EXT. SURFACE MOUNT SCONCE LIGHT 6' A.F.F.
- T — WALL MOUNTED THERMOSTAT TO ELECTRIC HEATER (MOUNT AT +48" A.F.F.)
- SD — CEILING MOUNTED SMOKE, FIRE, CARBON MONOXIDE ALARM (HARD WIRED W/ BATTERY BACKUP)
- EP — ELECTRICAL PANEL
- ERV — ENERGY RECOVERY SYSTEM
- HEAT — COVE WALL HUNG HEATER CONNECTED TO THERMOSTAT 7'-0" FFF.
- BATH FAN W/ 6" RIGID DUCT TO EXT.
- HP CASS. — WALL HUNG HEAT PUMP CASSETTE CONNECTED TO THERMOSTAT 7'-0" FFF.

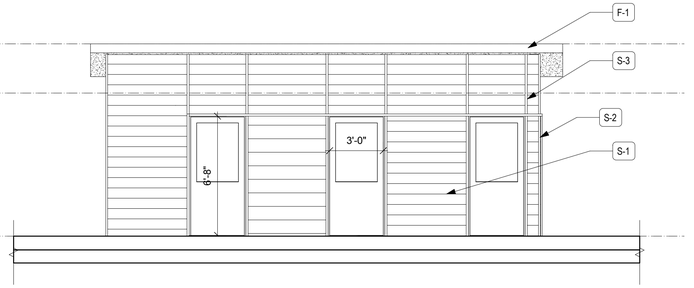


10 BUILDING SECTION - RIGHT
Scale: 1/4" = 1'-0"

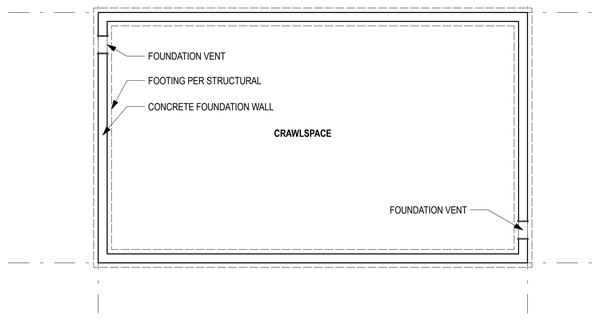
8 BUILDING ELEVATION - BACK
Scale: 1/4" = 1'-0"



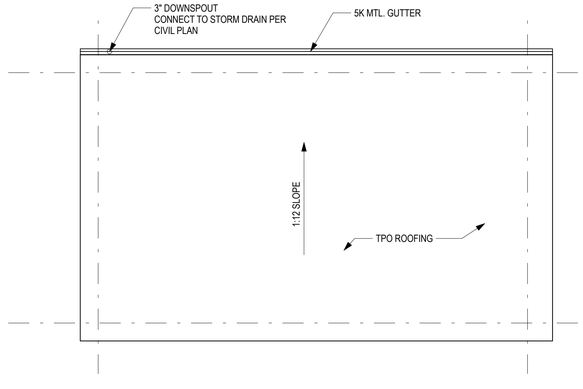
9 BUILDING ELEVATION - LEFT
Scale: 1/4" = 1'-0"



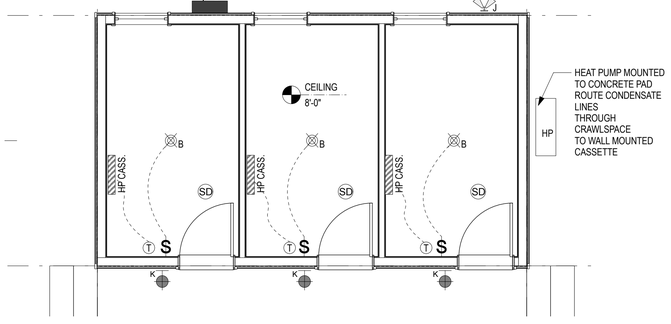
7 BUILDING ELEVATION - FRONT
Scale: 1/4" = 1'-0"



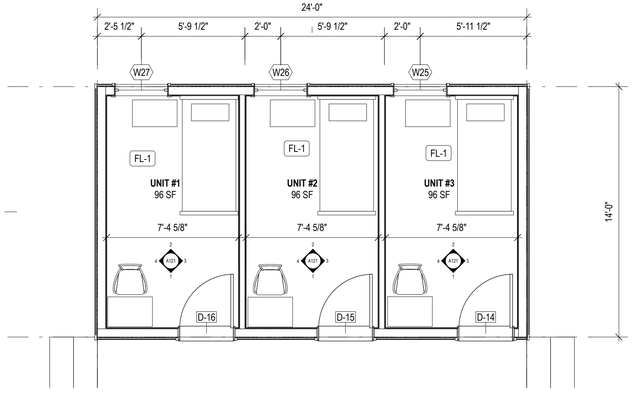
3 Foundation Plan
Scale: 1/4" = 1'-0"



4 Roof Plan
Scale: 1/4" = 1'-0"



2 MEP Plan
Scale: 1/4" = 1'-0"



1 Floor Plan - 3 Unit
Scale: 1/4" = 1'-0"

base

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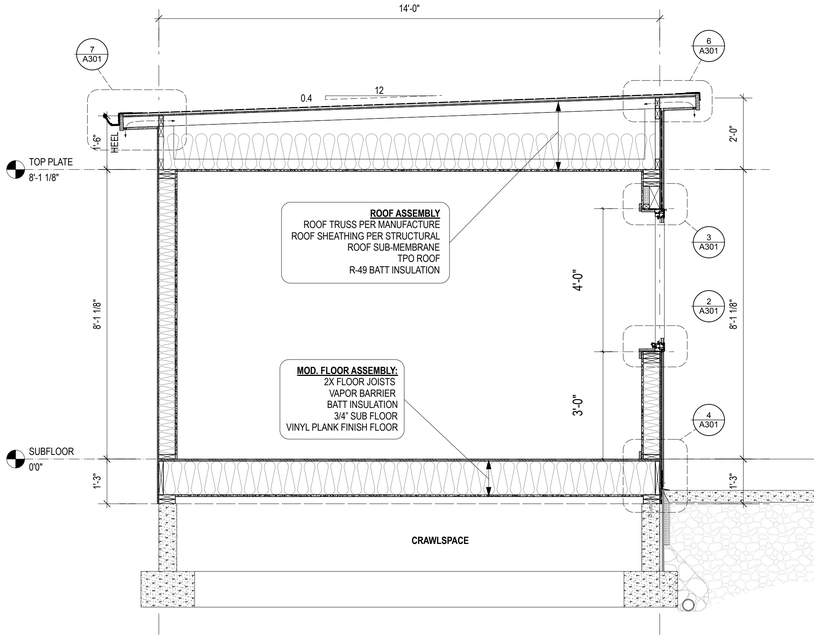
Permit Set
1/1/2024

Revision	
Date:	Issue:

Clackamas Emergency Shelter Village
16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title:
3 UNIT SLEEPING MODULE PLANS

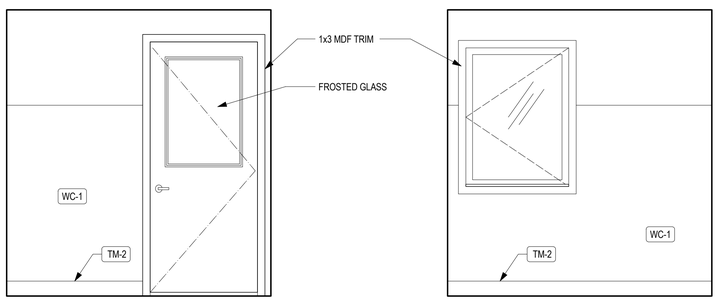
Sheet Number:
A120



5 BUILDING SECTION
Scale: 1/2" = 1'-0"

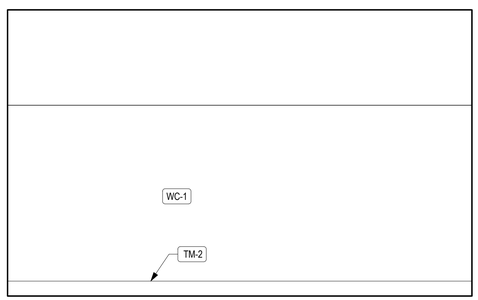
INTERIOR MATERIAL LEGEND

ID TAG	ITEM	MATERIAL	DESCRIPTION	SIZE	MANU. / SERIES	NOTES	SPECIFICATION SECTION
C-1	COUNTER TOP	COMPOSITE	KITCHENETTE @ OFFICE	2 CM			SECTION xxx
C-2	COUNTER TOP	STAINLESS STEEL	KITCHEN MODULE	DETERMINED BY FABRICATOR			SECTION: 050500
P-1	PAINT	PAINT	SEMI GLOSS WHITE CABINET				SECTION: 9
P-2	PAINT	PAINT	PTD. FLAT GREY				SECTION: 9
FL-1	FLOORING	FLOORING	LUXURY VINYL FLOORING	5" PLANKS	MOHAWK / SOLID TECH PLUS / COLOR BANGOR (222)		SECTION: 6
FRP-1	WALL COVERING	FIBER REINFORCED PNL.	FRP	SEE INT. ELEVATIONS			SECTION: 064400
WC-1	WALL COVERING	FORBO MARMOLEUM	SHEET MARMOLUM	SEE INT. ELEVATIONS	FORBO MARMOLEUM - 3828 BLUE HEAVEN		SECTION: 064400
SH-1	METAL SHEVLING	METAL SHEVLING	SLOTTED STEEL BRACKETS & WIRE SHELVING	SEE INTERIOR ELEV.	RUBBER MAID		SECTION: 050500
CB-1	CABINETRY	MELAMINE	LAMINATE CABINETS	SEE INTERIOR ELEV.			SECTION: 064000
TR-1	BASE & DOOR TRIM	PRIMED MDF	PAINTED TRIM	1X3			SECTION: 064000
TR-2	BASE TRIM	RUBBER BASE	6" HT. BASE TRIM - DARK BROWN	6" HT.	DURACOVE		SECTION: 064000

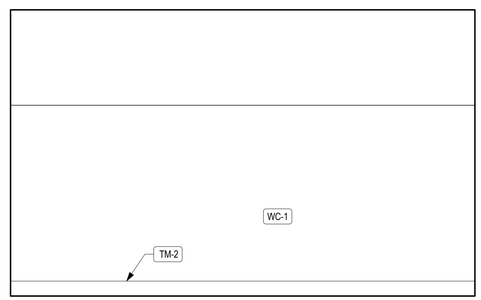


1 Sleeping Unit - Int. Elevation
Scale: 1/2" = 1'-0"

2 Sleeping Unit - Int. Elevation
Scale: 1/2" = 1'-0"



3 Sleeping Unit - Int. Elevation
Scale: 1/2" = 1'-0"



4 Sleeping Unit - Int. Elevation
Scale: 1/2" = 1'-0"

base

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Permit Set
1/1/2024

Revision	
Date:	Issue:

Clackamas Emergency Shelter Village
16590 SE 114th Ave
Clackamas, Oregon 97015

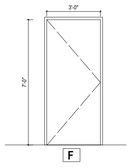
Sheet Title:
3 UNIT SLEEPING MOD. SECTION & DTL.

Sheet Number:
A121

Door Schedule

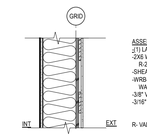
Location			Door				Glass Type	Frame		Fire Rating	Hardware Group	Manufacture Notes
ID#	Int/Ext	Room Name	Type	Width	Height	Thickness		Material	Finish			
Exterior Doors												
D-17	Ext.	Sleeping Unit	D	3'0"	7'0"	1 3/4"		FIBER	FF			
D-18	Ext.	Sleeping Unit	D	3'0"	7'0"	1 3/4"		FIBER	FF			
D-19	Ext.	Sleeping Unit	D	3'0"	7'0"	1 3/4"		FIBER	FF			
D-20	Ext.	Sleeping Unit	D	3'0"	7'0"	1 3/4"		FIBER	FF			

DOOR LEGEND



EXT. FIBERGLASS
PRE FINISHED

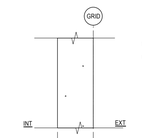
WALL ASSEMBLIES



ASSEMBLY:
-(1) LAYER 5/8" GWB
-2X6 WOOD STUDS
R-23 FACED FIBERGLASS BATT INSULATION
-SHEATHING PER STRUCTURAL
-WRB-1: AIR/VAPOR PERMEABLE
WATER RESISTIVE MEMBRANE
-3/8" VERTICAL PT. RAINSCREEN 16" OC.
-3/16" FIBER CEMENT LAP SIDING 5" PROFILE

R- VALUE: R-23

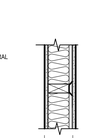
W1 2X6 EXTERIOR WALL ASSEMBLY



ASSEMBLY: FOUNDATION WALL

6" CONCRETE FOUNDATION WALL PER STRUCTURAL

W2 CONCRETE FOUNDATION WALL



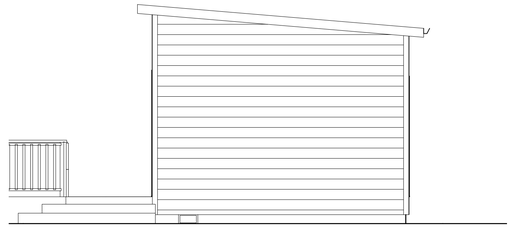
ASSEMBLY:
(1) LAYER 5/8" GWB EACH SIDE TYPE 'X'
2X4 WOOD STUDS @ 16" OC
1/2" RESILANT FURRING CHANNEL @ 16" OC
ACOUSTIC BATTS

LOCATION:	INTERIOR
R VALUE:	N/A
FIRE RATING:	1 HOUR
STC RATING:	50-54 STC
ACOUSTIC TEST:	NRCC TL-93-098
ASSEMBLY:	GA WP 3242
NOTES:	PLAN DIMENSIONS ARE TO FACE OF STUD, UNLESS NOTED OTHERWISE

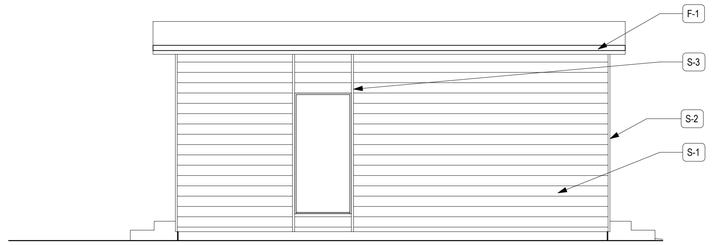
W3 2X4 INTERIOR PARTITION WALL ASSEMBLY - 1 HOUR

ELECTRICAL / MECH. LEGEND

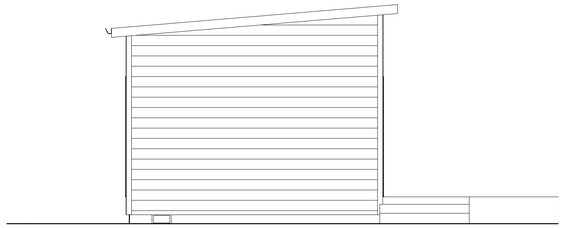
S	SINGLE POLE SWITCH (MOUNT AT +48" A.F.F.)
	STANDARD DUPLEX RECEPTACLE (MOUNT AT +18" A.F.F.)
A	4" LED CAN LIGHT - 2700K
B	SURFACE MOUNTED LIGHT FIXTURE
C	SCONCE
J	EXT. SURFACE MOUNT SCONCE FLOOD LIGHT MOTION SENSOR
K	EXT. SURFACE MOUNT SCONCE LIGHT 6' A.F.F.
T	WALL MOUNTED THERMOSTAT TO ELECTRIC HEATER (MOUNT AT +48" A.F.F.)
SD	CEILING MOUNTED SMOKE, FIRE, CARBON MONOXIDE ALARM (HARD WIRED W/ BATTERY BACKUP)
EP	ELECTRICAL PANEL
ERV	ENERGY RECOVERY SYSTEM
HEAT	COVE WALL HUNG HEATER CONNECTED TO THERMOSTAT 7'-0" FFF.
	BATH FAN W/ 6" RIGID DUCT TO EXT.
HP CASS.	WALL HUNG HEAT PUMP CASSETTE CONNECTED TO THERMOSTAT 7'-0" FFF.



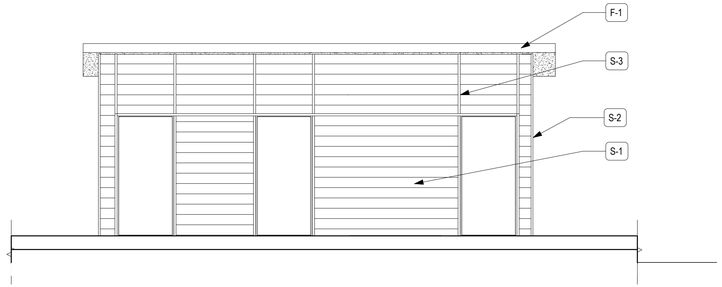
5 BUILDING ELEVATION - RIGHT
Scale: 1/4" = 1'-0"



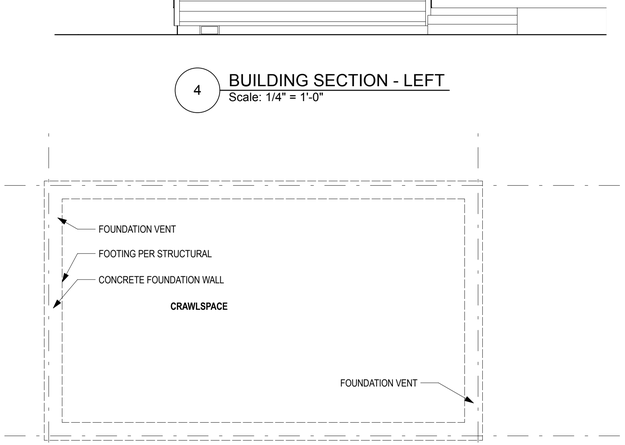
3 BUILDING ELEVATION - REAR
Scale: 1/4" = 1'-0"



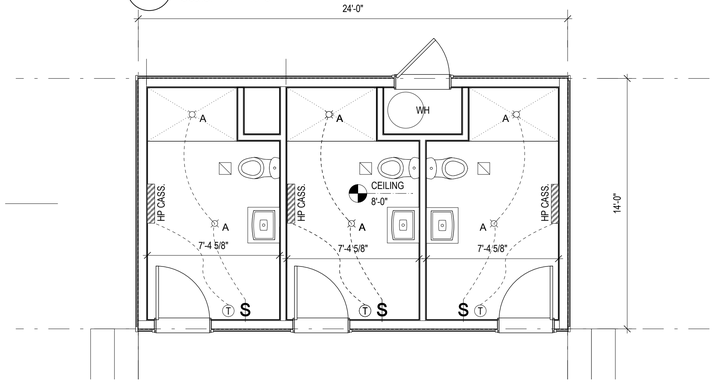
4 BUILDING SECTION - LEFT
Scale: 1/4" = 1'-0"



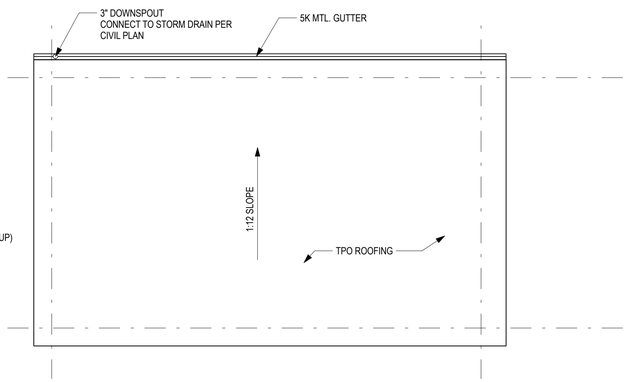
2 BUILDING ELEVATION - FRONT
Scale: 1/4" = 1'-0"



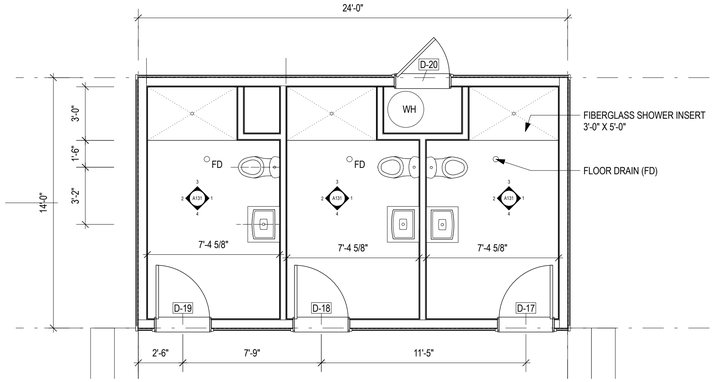
6 Foundation Plan
Scale: 1/4" = 1'-0"



8 Floor Plan - 3 Unit Bath
Scale: 1/4" = 1'-0"



7 Roof Plan
Scale: 1/4" = 1'-0"



9 Floor Plan - 3 Unit Bath
Scale: 1/4" = 1'-0"

base

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STATE OF OREGON

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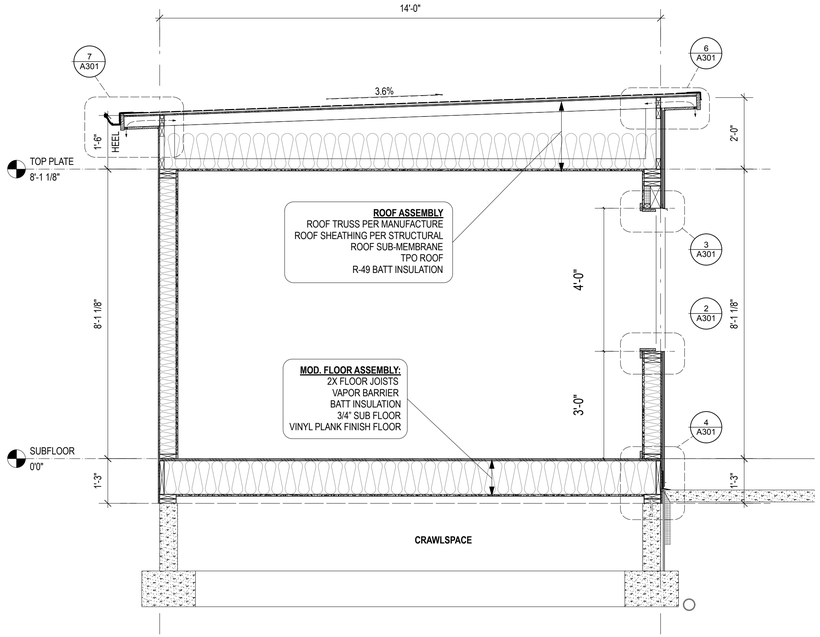
Permit Set
1/1/2024

Revision	
Date:	Issue:

Clackamas Emergency Shelter Village
16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title:
BATHROOM UNIT PLANS

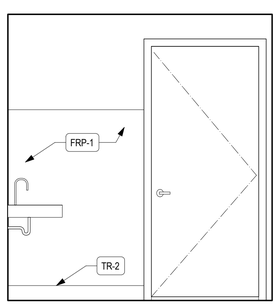
Sheet Number:
A130



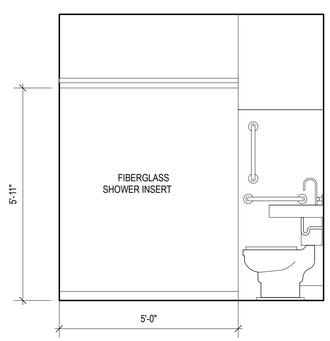
6 BUILDING SECTION
Scale: 1/2" = 1'-0"

INTERIOR MATERIAL LEGEND

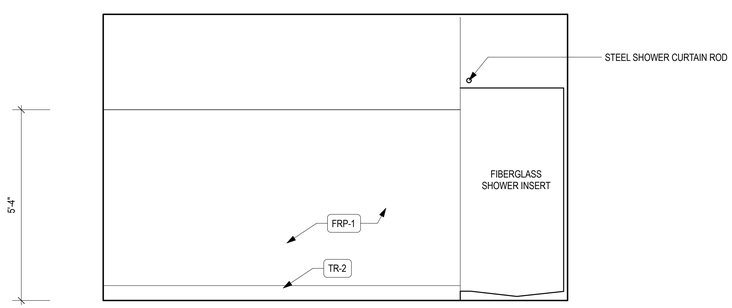
ID TAG	ITEM	MATERIAL	DESCRIPTION	SIZE	MANU. / SERIES	NOTES	SPECIFICATION SECTION
C-1	COUNTER TOP	COMPOSITE	KITCHENETTE @ OFFICE	2 CM			SECTION xxx
C-2	COUNTER TOP	STAINLESS STEEL	KITCHEN MODULE	DETERMINED BY FABRICATOR			SECTION: 050500
P-1	PAINT	PAINT	SEMI GLOSS WHITE CABINET				SECTION: 9
P-2	PAINT	PAINT	PTD. FLAT GREY				SECTION: 9
FL-1	FLOORING	FLOORING	LUXURY VINYL FLOORING	5" PLANKS	MOHAWK / SOLID TECH PLUS / COLOR BANGOR (222)		SECTION: 6
FRP-1	WALL COVERING	FIBER REINFORCED PNL.	FRP	SEE INT. ELEVATIONS			SECTION: 064400
WC-1	WALL COVERING	FORBO MARMOLEUM	SHEET MARMOLUM	SEE INT. ELEVATIONS	FORBO MARMOLEUM - 3828 BLUE HEAVEN		SECTION: 064400
SH-1	METAL SHEVLING	METAL SHEVLING	SLOTTED STEEL BRACKETS & WIRE SHELVING	SEE INTERIOR ELEV.	RUBBER MAID		SECTION: 050500
CB-1	CABINETRY	MELAMINE	LAMINATE CABINETS	SEE INTERIOR ELEV.			SECTION: 064000
TR-1	BASE & DOOR TRIM	PRIMED MDF	PAINTED TRIM	1X3			SECTION: 064000
TR-2	BASE TRIM	RUBBER BASE	6" HT. BASE TRIM - DARK BROWN	6" HT.	DURACOVE		SECTION: 064000



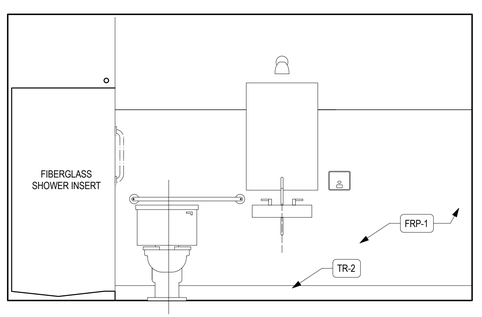
4 BATH INT. ELEVATION
Scale: 1/2" = 1'-0"



3 BATH INT. ELEVATION
Scale: 1/2" = 1'-0"



2 BATH - INT. ELEVATION
Scale: 1/2" = 1'-0"



1 BATH - INT. ELEVATION
Scale: 1/2" = 1'-0"

base

1300 SE Stark Street #209
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www.basedesignarchitecture.com

REGISTERED ARCHITECT
KEGAN C. FLANDERKA
PORTLAND, OREGON
11773
STATE OF OREGON

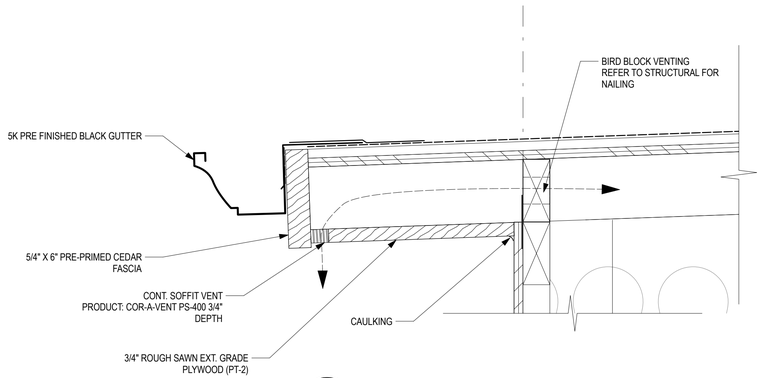
Permit Set
1/1/2024

Revision	
Date:	Issue:

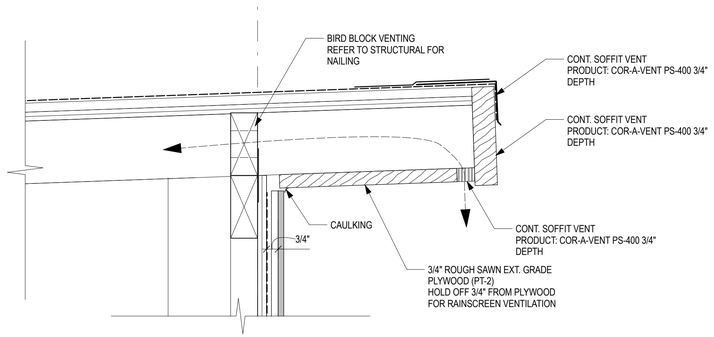
Clackamas Emergency Shelter Village
16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title:
BATHROOM UNIT SECTION & DTL.

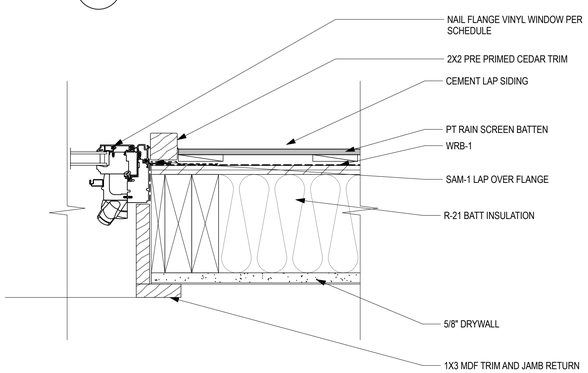
Sheet Number:
A131



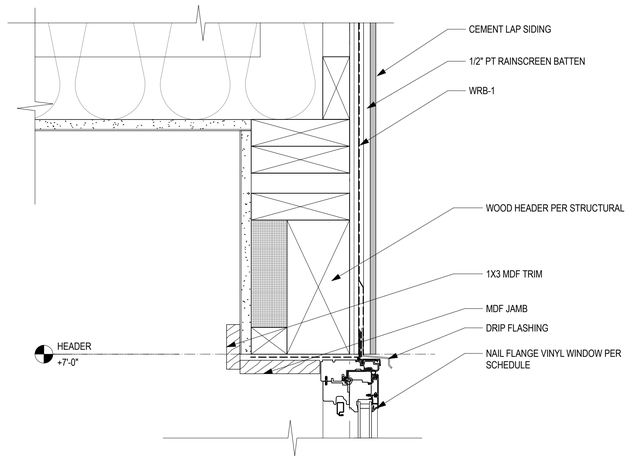
7 SOFFIT DETAIL @ GUTTER
Scale: 3" = 1'-0"



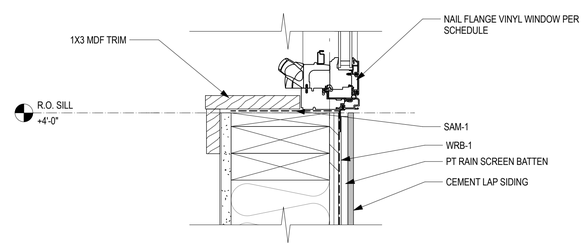
6 SOFFIT DETAIL
Scale: 3" = 1'-0"



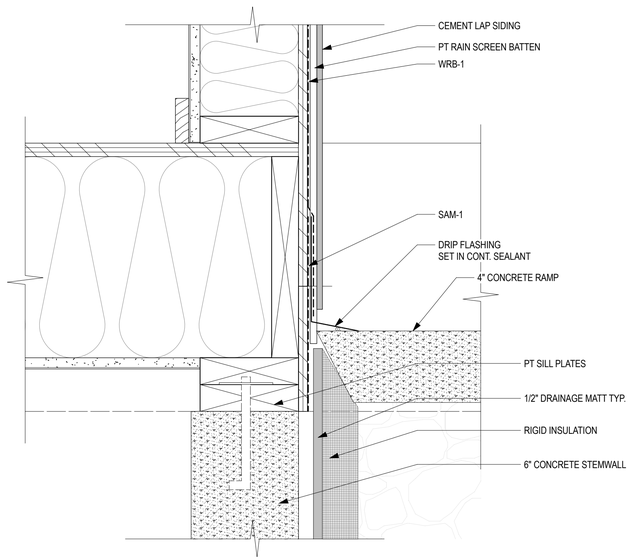
5 WINDOW JAMB DETAIL
Scale: 3" = 1'-0"



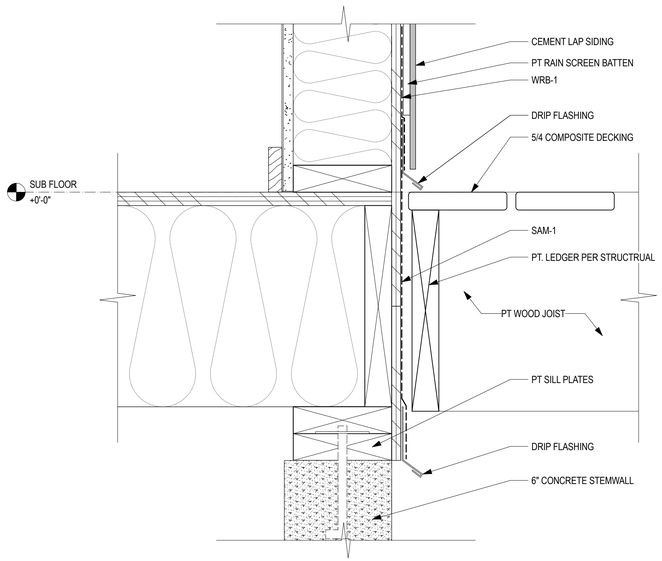
3 WINDOW HEAD DETAIL
Scale: 3" = 1'-0"



2 WINDOW SILL DETAIL
Scale: 3" = 1'-0"



4 DETAIL AT CONCRETE RAMP
Scale: 3" = 1'-0"



1 DETAIL AT WOOD DECK
Scale: 3" = 1'-0"

base

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Permit Set
1/1/2024

Revision	
Date:	Issue:

Clackamas Emergency Shelter Village
16590 SE 114th Ave
Clackamas, Oregon 97015

Sheet Title:
EXTERIOR DETAILS

Sheet Number:
A301

NAIL DIAMETERS

6d	.099" ø
8d	.113" ø
	.131" ø AT SHEAR WALLS
10d	.128" ø
	.148" ø AT FLOOR SHEATHING
16d	.162" ø

NOTES:

1. REFER TO NAIL DIAMETERS FOR NAIL SIZE.
2. NAILS SPACED @ 4" O.C. AT EDGES & @ 10" O.C. AT INTERMEDIATE SUPPORTS, EXCEPT @ 4" O.C. AT ALL SUPPORTS WHERE SPANS ARE 48" OR MORE. FOR NAILING OF PLYWOOD AND PARTICLE BOARD DIAPHRAGMS AND SHEAR WALLS, REFER TO SCHEDULE.

PRESCRIPTIVE NAILING SCHEDULE

NO.	CONNECTION	TYPE	NAILING (NOTE 1)	
1	JOIST TO SILL OR GIRDER	TOE NAIL	(3) 3" x 0.131" NAILS	(3) 8d COMMON
2	BRIDGING TO JOIST	TOE NAIL EACH END	(2) 3" x 0.131" NAILS	(2) 8d COMMON
3	1" X 6" SUBFLR OR LESS TO EA JOIST	FACE NAIL	–	(2) 8d COMMON
4	WIDER THAN 1" X 6" SUBFLR TO EA JOIST	FACE NAIL	–	(3) 8d COMMON
5	2" SUBFLOOR TO JOIST OR GIRDER	BLIND & FACE NAIL	–	(2) 16d
6A	SOLE PLATE TO JOIST OR BLOCKING	TYP. FACE NAIL	3" x 0.131" NAILS @ 8" O.C.	16d @ 16" O.C.
6B		AT BRACED WALL PANELS	(4) 3" x 0.131" NAILS @ 16" O.C.	(3) 16d @ 16" O.C.
7	TOP PLATE TO STUD	END NAIL	(3) 3" x 0.131" NAILS	(2) 16d COMMON
8A	STUD TO SOLE PLATE	TOE NAIL	(4) 3" x 0.131" NAILS	(4) 8d COMMON
8B		END NAIL	(3) 3" x 0.131" NAILS	(2) 16d COMMON
9	DOUBLE STUDS	FACE NAIL	3" x 0.131" NAILS @ 8" O.C.	16d @ 24" O.C.
10A	DOUBLE TOP PLATES	TYP. FACE NAIL	3" x 0.131" NAILS @ 12" O.C.	16d @ 16" O.C.
10B		LAP SPLICE	(12) 3" x 0.131" NAILS	(8) 16d COMMON
11	BLKG BETWEEN JOISTS/RAFTERS TO TOP PL	TOE NAIL	(3) 3" x 0.131" NAILS	(3) 8d COMMON
12	RIM JOIST TO TOP PLATE	TOE NAIL	3" x 0.131" NAILS @ 6" O.C.	8d @ 6" O.C.
13	TOP PLATES, LAPS AND INTERSECTIONS	FACE NAIL	(3) 3" x 0.131" NAILS	(2) 16d COMMON
14	CONTINUOUS HEADER, TWO PIECES	16" O.C. ALONG EDGE	–	16d COMMON
15	CEILING JOISTS TO PLATE	TOE NAIL	(5) 3" x 0.131" NAILS	(3) 8d COMMON
16	CONTINUOUS HEADER TO STUD	TOE NAIL	–	(4) 8d COMMON
17	CEILING JOISTS, LAPS OVER PARTITIONS	FACE NAIL	(4) 3" x 0.131" NAILS	(3) 16d COMMON MIN.
18	CEILING JOISTS TO PARALLEL RAFTERS	FACE NAIL	(4) 3" x 0.131" NAILS	(3) 16d COMMON MIN.
19	RAFTER OR TRUSS TO PLATE	TOE NAIL	(3) 3" x 0.131" NAILS	(3) 8d COMMON
20	1" BRACE TO EACH STUD AND PLATE	FACE NAIL	(2) 3" x 0.131" NAILS	(2) 8d COMMON
21	1" x 8" SHTG OR LESS TO EA BEARING	FACE NAIL	–	(3) 8d COMMON
22	WIDER THAN 1" X 8" SHTG TO EA BEARING	FACE NAIL	–	(3) 8d COMMON
23	BUILT UP CORNER STUDS	–	3" x 0.131" NAILS @ 16" O.C.	16d COMMON @ 24" O.C.
24A	BUILT-UP GIRDER & BEAMS		3" x 0.131" NAILS @ 24" O.C.	20d COMMON @ 32" O.C.
24B			(3) 3" x 0.131" NAILS	(2) 20d COMMON
25	2" PLANKS	AT EACH BEARING	–	16d COMMON
26	COLLAR TIE TO RAFTER	FACE NAIL	(4) 3" x 0.131" NAILS	(3) 10d COMMON
27A	JACK RAFTER TO HIP	TOE NAIL	(4) 3" x 0.131" NAILS	(3) 10d COMMON
27B		FACE NAIL	(3) 3" x 0.131" NAILS	(2) 16d COMMON
28A	ROOF RAFTER TO 2x RIDGE BEAM	TOE NAIL	(3) 3" x 0.131" NAILS	(2) 16d COMMON
28B		FACE NAIL	(3) 3" x 0.131" NAILS	(2) 16d COMMON
29	JOIST TO BAND JOIST	FACE NAIL	(4) 3" x 0.131" NAILS	(3) 16d COMMON
30	LEDGER STRIP	FACE NAIL @ EACH JOIST	(4) 3" x 0.131" NAILS	(3) 16d COMMON
31A	WOOD STRUCTURAL PANELS & PARTICLE BOARD SUB-FLOOR, ROOF & WALL SHEATHING (TO FRAMING)	1/2" AND LESS	2.375" x 0.113" NAILS	6d
		10/32" TO 3/4"	2.375" x 0.113" NAILS	8d OR 6d
		7/8" TO 1"	–	8d
		1 1/8" TO 1 1/4"	–	10d OR 8d
31B	SINGLE FLOOR (SUBFLOOR-UNDERLAYMENT COMBINATION TO FRAMING)	3/4" AND LESS	–	6d
		7/8" TO 1"	–	8d
		1 1/8" TO 1 1/4"	–	10D OR 8d
32	PANEL SIDING (TO FRAMING)	1/2" AND LESS	–	6d
		5/8"	–	8d
33	FIBERBOARD SHEATHING	1/2"	2" x 0.113" NAILS	#11 GAGE ROOFING
		25/32"	2 1/2" x 0.113" NAILS	#11 GAGE ROOFING
34	INTERIOR PANELING	1/4"	–	4d
		3/8"	–	6d

GENERAL STRUCTURAL NOTES

CODE REQUIREMENTS:
CONFORM TO THE REQUIREMENTS OF THE 2022 OREGON STRUCTURAL SPECIALTY CODE (OSSC).

DESIGN CRITERIA:
DESIGN WAS BASED ON THE STRENGTH AND DEFLECTION CRITERIA OF THE OSSC. IN ADDITION TO THE DEAD LOADS, THE FOLLOWING LOADS AND ALLOWABLES WERE USED:

ROOF SNOW LOAD: 20 PSF + 5 PSF RAIN-ON-SNOW

LIVE LOAD: 100 PSF (OFFICE LOBBY AND CORRIDOR)

SEISMIC: Sds = 0.68, SITE CLASS D, R = 6.5, I = 1.0

WIND: 97 MPH (3 SEC GUSTS) MPH EXPOSURE B

SOIL BEARING: 1,500 PSF (ASSUMED)

EXISTING CONDITIONS:

THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES FROM CONDITIONS SHOWN ON THE DRAWINGS PRIOR TO THE START OF THE WORK.

TEMPORARY CONDITIONS:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR STRUCTURAL STABILITY OF THE NEW AND EXISTING STRUCTURES AND WALLS DURING CONSTRUCTION. THE STRUCTURE SHOWN ON THE DRAWINGS HAS BEEN DESIGNED FOR STABILITY UNDER THE FINAL CONFIGURATION ONLY.

SUBMITTALS:

SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER PRIOR TO FABRICATION AND CONSTRUCTION REGARDING ALL STRUCTURAL ITEMS, INCLUDING THE FOLLOWING:

MANUFACTURED WOOD ROOF TRUSSES

IF THE SHOP DRAWINGS DIFFER FROM, OR ADD TO THE DESIGN OF THE STRUCTURAL DRAWINGS, THEY SHALL BE CLEARLY IDENTIFIED. ANY CHANGES TO THE STRUCTURAL DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER AND ARE SUBJECT TO REVIEW AND ACCEPTANCE OF THE ENGINEER.

FARTHWORK:

PROTECT INCOMPLETE WORK FROM FLOODING DURING STORMS OR OTHER CAUSES, THOROUGHLY BRACE OR OTHERWISE PROTECT ALL STRUCTURES NOT STABLE AGAINST UPLIFT DURING CONSTRUCTION. TAKE ALL NECESSARY PRECAUTIONS TO PREVENT DISTURBANCE OF AND TO PROPERLY DRAIN THE AREAS UPON WHICH CONCRETE IS TO BE POURED. DO NOT ALLOW WATER TO ACCUMULATE IN EXCAVATIONS. REMOVE WATER TO PREVENT SOFTENING OF THE BASE FOUNDATIONS. CONVEY WATER REMOVED FROM THE EXCAVATIONS AND RAINWATER TO TEMPORARY DRAINAGE DITCHES OR OTHER STRUCTURES OUTSIDE THE EXCAVATION LIMITS FOR THIS STRUCTURE. ENSURE THAT THE WATERING OPERATIONS WILL NOT ADVERSELY EFFECT FOUNDATIONS. MAINTAIN THE EXCAVATION FREE FROM GROUND WATER FOR THE TIME REQUIRED TO COMPLETE THE WORK IN A PROPER WORKMANLIKE MANNER. REMOVE LOOSE OR DISTURBED SOIL FROM THE BOTTOMS OF EXCAVATION.

CAST-IN-PLACE CONCRETE:
ADMIXTURES: AIR ENTRAINING AGENT IN ACCORDANCE WITH ASTM C260 AND WATER-REDUCING ADMIXTURE CONFORMING TO ASTM 494, USED IN STRICT ACCORDANCE WITH THE MANUFACTURERS' RECOMMENDATIONS, MAY BE INCORPORATED IN CONCRETE DESIGN MIXES. AN AIR-ENTRAINING AGENT CONFORMING TO ASTM C260 SHALL BE USED IN CONCRETE MIXES FOR EXTERIOR HORIZONTAL SURFACES EXPOSED TO WEATHER. THE AMOUNT OF ENTRAINED AIR SHALL BE 5% – 7% BY VOLUME. FLY ASH SHALL BE 15% MIN (25% MAX) OF CEMENT CONTENT BY WEIGHT. MAXIMUM WATER-CEMENT RATIO SHALL BE 0.49.

CONCRETE WORK SHALL CONFORM TO ACI 301. CONCRETE STRENGTHS SHALL BE VERIFIED BY STANDARD 28-DAY CYLINDER TESTS PER ASTM C39, AND SHALL BE AS FOLLOWS:

FOOTINGS AND WALLS: f'c = 3,000 PSI AT 28 DAYS: MAXIMUM SLUMP 3" PLUS OR MINUS 1".

SLEEVES, OPENINGS, CONDUIT, AND OTHER EMBEDDED ITEMS NOT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER BEFORE POURING. CONDUITS EMBEDDED IN SLABS SHALL NOT BE LARGER THAN ONE THIRD OF THE THICKNESS OF THE SLAB AND SHALL NOT BE SPACED CLOSER THAN THREE DIAMETERS ON CENTER. PROVIDE 3/4 CHAMFERS ON ALL EXPOSED CONCRETE EDGES UNLESS NOTED OTHERWISE.

REINFORCING STEEL:

REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60 FOR DEFORMED BARS, UNLESS OTHERWISE NOTED. REINFORCING STEEL TO BE WELDED SHALL CONFORM TO ASTM A706. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A82 AND A185.

REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH ACI 315 – LATEST EDITION ("DETAILS AND DETAILING CONCRETE REINFORCEMENT"). AT SPLICES LAP REINFORCMENT A MINIMUM OF 48 BAR DIAMETERS UNLESS NOTED OTHERWISE. STAGGER SPLICES IN FOOTINGS, BEAMS, COLUMNS AND WALLS A MINIMUM OF 24" UNLESS NOTED OTHERWISE.

REINFORCING STEEL SHALL HAVE PROTECTION AS FOLLOWS:

CONDITION: MINIMUM COVER

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"

CONCRETE EXPOSED TO EARTH AND WEATHER:
NO. 6 THROUGH NO. 18 BARS: 2"
NO. 5 BAR, W31 OR D31 WIRE AND SMALLER: 1 1/2"

CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH EARTH:
SLABS, WALLS, AND JOISTS
NO. 14 AND NO. 18 BARS: 1 1/2"
NO. 11 BARS AND SMALLER: 3/4"

BEAMS AND COLUMNS – PRIMARY REINFORCEMENT, TIES, STIRRUPS AND SPIRALS: 1 1/2"

CONCRETE ACCESSORIES:

ANCHOR BOLTS SHALL BE ASTM F1554-36, ASTM A307 OR A36 ATR UNLESS NOTED OTHERWISE. CONCRETE EXPANSION ANCHORS SHALL BE "SIMPSON STRONG-BOLT II ANCHORS" OR ENGINEER APPROVED EQUIVALENT.

CARPENTRY:

SAWN LUMBER DESIGN IS BASED ON THE NATIONAL DESIGN SPECIFICATION, LATEST EDITION. SAWN LUMBER SHALL CONFORM TO WEST COAST LUMBER INSPECTION BUREAU OR WESTERN WOOD PRODUCTS ASSOCIATION GRADING RULES. WALL STUDS AND PLATES MAY BE D.F. #2 OR BETTER. ALL OTHER LUMBER NOT SPECIFICALLY NOTED IS TO BE D.F. #2 OR BETTER. ALL WOOD IN PERMANENT CONTACT WITH CONCRETE OR CMU SHALL BE PRESSURE TREATED UNLESS AN APPROVED BARRIER IS PROVIDED. EXPOSED TIMBER FRAMING SHALL BE PRESSURE-TREATED OR WESTERN CEDAR WOOD. FRAMING ACCESSORIES AND STRUCTURAL FASTENERS SHALL BE MANUFACTURED BY SIMPSON STRONG-TIE COMPANY (OR ENGINEER APPROVED EQUAL) AND OF THE SIZE AND TYPE SHOWN ON THE DRAWINGS. HANGERS NOT SHOWN SHALL BE SIMPSON HU OF SIZE RECOMMENDED FOR MEMBER. ALL SIMPSON HARDWARE IN CONTACT WITH PRESSURE TREATED LUMBER, CONCRETE OR MASONRY SHALL HAVE "ZMAX" COATING PER MANUFACTURER. ALL FRAMING NAILS SHALL BE COMMON NAILS. NO BOX NAILS ALLOWED. NAILING NOT SPECIFICALLY IDENTIFIED ON THE DRAWINGS SHALL CONFORM TO NAILING SCHEDULE ON PLANS.

CARPENTRY:

SAWN LUMBER DESIGN IS BASED ON THE NATIONAL DESIGN SPECIFICATION, LATEST EDITION. SAWN LUMBER SHALL CONFORM TO WEST COAST LUMBER INSPECTION BUREAU OR WESTERN WOOD PRODUCTS ASSOCIATION GRADING RULES. WALL STUDS AND PLATES MAY BE D.F. #2 OR BETTER. ALL OTHER LUMBER NOT SPECIFICALLY NOTED IS TO BE D.F. #2 OR BETTER. ALL WOOD IN PERMANENT CONTACT WITH CONCRETE OR CMU SHALL BE PRESSURE TREATED UNLESS AN APPROVED BARRIER IS PROVIDED. EXPOSED TIMBER FRAMING SHALL BE PRESSURE-TREATED OR WESTERN CEDAR WOOD. FRAMING ACCESSORIES AND STRUCTURAL FASTENERS SHALL BE MANUFACTURED BY SIMPSON STRONG-TIE COMPANY (OR ENGINEER APPROVED EQUAL) AND OF THE SIZE AND TYPE SHOWN ON THE DRAWINGS. HANGERS NOT SHOWN SHALL BE SIMPSON HU OF SIZE RECOMMENDED FOR MEMBER. ALL SIMPSON HARDWARE IN CONTACT WITH PRESSURE TREATED LUMBER, CONCRETE OR MASONRY SHALL HAVE "ZMAX" COATING PER MANUFACTURER. ALL FRAMING NAILS SHALL BE COMMON NAILS. NO BOX NAILS ALLOWED. NAILING NOT SPECIFICALLY IDENTIFIED ON THE DRAWINGS SHALL CONFORM TO NAILING SCHEDULE ON PLANS.

PLYWOOD PANELS SHALL CONFORM TO THE REQUIREMENTS OF "U.S. PRODUCT STANDARD PS 1 FOR CONSTRUCTION AND INDUSTRIAL PLYWOOD" OR APA PRP-108 PERFORMANCE STANDARDS. UNLESS NOTED, PANELS SHALL BE APA RATED SHEATHING, STRUCTURAL 1, OF THE THICKNESS AND SPAN RATING SHOWN ON THE DRAWINGS. PLYWOOD INSTALLATION SHALL BE IN CONFORMANCE WITH APA RECOMMENDATIONS. ALLOW 1/8" SPACING AT PANELS ENDS AND EDGES, UNLESS OTHERWISE RECOMMENDED BY THE PANEL MANUFACTURER.

ALL ROOF AND FLOOR SHEATHING SHALL BE INSTALLED WITH FACE GRAIN PERPENDICULAR TO SUPPORTS, EXCEPT AS INDICATED ON THE DRAWINGS. FLOOR SHEATHING BE SHALL TONGUE-AND- GROOVE. SHEAR WALL SHEATHING SHALL BE BLOCKED WITH 2X FRAMING AT ALL PANEL EDGES. NAILING NOT SPECIFICALLY IDENTIFIED ON THE DRAWINGS SHALL CONFORM TO IBC TABLE 2304.9.1. OSB MAY BE SUBSTITUTED FOR SPECIFIED PLYWOOD SHEATHING ON FLOORS AND WALLS. OSB MAY NOT BE USED FOR ROOF SHEATHING OR NON-VERTICAL SURFACES THAT MAY BE EXPOSED TO EXTERIOR MOISTURE.

GLUED LAMINATED MEMBERS SHALL BE FABRICATED IN CONFORMANCE WITH U.S. PRODUCT STANDARD PS 56, "STRUCTURAL GLUED LAMINATED TIMBER" AND AMERICAN INSTITUTE OF TIMBER CONSTRUCTION, AITC 117. EACH MEMBER SHALL BEAR AN AITC OR APA-EWS IDENTIFICATION MARK AND BE ACCOMPANIED BY A CERTIFICATE OF CONFORMANCE. ONE COAT OF END SEALER SHALL BE APPLIED IMMEDIATELY AFTER TRIMMING IN EITHER SHOP OR FIELD. GLULAM HANGERS NOT SHOWN SHALL BE SIMPSON EG. BEAMS SHALL BE VISUALLY GRADED WESTERN SPECIES INDUSTRIAL GRADE, AND OF THE STRENGTH INDICATED BELOW:

DEPTH	COMBINATION SYMBOL	SPECIES	USE
ALL	24F – V4	DF/DF	(SIMPLE SPAN)
ALL	24F – V8	DF/DF	(CONTINUOUS OR CANTILEVER)

INSTALL STEEL PLATE WASHERS BETWEEN ALL WOOD AND BOLT NUTS AND HEADS. NO WASHER IS REQUIRED IF BOLT HEAD OR NUT BEARS ON STEEL PLATE.

PREMANUFACTURED WOOD JOISTS SHALL BE OF THE SIZE AND TYPE SHOWN ON THE DRAWINGS, MANUFACTURED BY THE I-LEVEL COMPANY, OR AN ENGINEER APPROVED EQUAL. PROVIDE BRIDGING IN CONFORMANCE WITH THE MANUFACTURERS RECOMMENDATIONS. JOISTS AND BRIDGING SHALL BE CAPABLE OF RESISTING THE WIND UPLIFT NOTED ON THE DRAWINGS. THE JOIST MANUFACTURER SHALL VISIT JOB SITE AS REQUIRED AND VERIFY THE PROPER INSTALLATION OF JOISTS IN WRITING TO THE ARCHITECT/ENGINEER. PREMANUFACTURED WOOD JOIST ALTERNATES WILL BE CONSIDERED, PROVIDED THE ALTERNATE IS COMPATIBLE WITH THE LOAD CAPACITY, STIFFNESS, DIMENSIONAL, AND FIRE RATING REQUIREMENTS OF THE PROJECT, AND IS ICC APPROVED.

FASTENERS INSTALLED IN PRESERVATIVE-TREATED AND FIRE-RETARDANT TREATED WOOD SHALL BE HOT-DIP, ZINC-COATED GALVANIZED WITH A MINIMUM WEIGHT COMPLYING WITH ASTM A 153. FASTENERS OTHER THAN NAIL, WOOD SCREWS, AND LAG SCREWS ARE PERMITTED TO BE MECHANICALLY DEPOSITED ZINC-COATED WITH COATING COMPLYING WITH ASTM B 695, CLASS 55 MIN. PLAIN CARBON STEEL FASTENERS IN WOOD-PRESERVATIVE WITH SBX/DOT OR ZINC BORATE ARE NOT REQUIRED TO BE GALVANIZED.

INSPECTION:

SPECIAL INSPECTIONS: IN ACCORDANCE WITH 1704 OF THE OSSC AND APPLICABLE SECTIONS OF THE PROJECT SPECIFICATIONS. SPECIAL INSPECTIONS ARE TO BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY EMPLOYED BY THE OWNER FOR THE FOLLOWING AREAS OF WORK:

SHEAR WALL CONSTRUCTION FOR WALL PANELS WHERE THE NAILING SPACING FOR SHEAR WALL PANELS IS MORE THAN 4" ON CENTER. THIS INCLUDES INSPECTION OF DIAPHRAGM NAILING, DOUBLE TOP PLATE SPLICING, HOLD DOWN HARDWARE AND ANCHORAGE FOR THOSE WALL WALL PANELS.

STRUCTURAL OBSERVATIONS:

STRUCTURAL OBSERVATIONS BY THE ENGINEER OF RECORD OR AN APPOINTED REPRESENTATIVE SHALL BE REQUIRED AT THE FOLLOWING TIMES DURING CONSTRUCTION:

NONE REQUIRED

DEFERRED STRUCTURAL SUBMITTALS:

1. MANUFACTURED WOOD ROOF TRUSSES

SHEET LIST

SHT#	SHEET TITLE	PERMITTING JURISDICTION
S1.0A	MOD FRAMING GENERAL NOTES & SCHEDULES	STATE REVIEW
S1.0B	SITE FRAMING & ASSEMBLY GENERAL NOTES & SCHEDULES	LOCAL REVIEW
S2.0A	SLEEPING & BATHROOM UNIT FOUNDATION / MOD ATTACHMENT PLAN	LOCAL REVIEW
S2.0B	KITCHEN/DINING UNIT MOD FOUNDATION & ATTACHMENT PLAN	LOCAL REVIEW
S2.0C	OFFICE UNIT MOD FOUNDATION & ATTACHMENT PLAN	LOCAL REVIEW
S3.0	FOUNDATION & MOD ASSEMBLY DETAILS	STATE/LOCAL REVIEW
S4.0	TYPICAL MOD FRAMING DETAILS	STATE REVIEW
S5.0	MOD LATERAL FRAMING DETAILS	STATE REVIEW
S5.1	MOD FRAMING DETAILS	STATE REVIEW
S6.0A	SLEEPING & BATHROOM UNIT MOD FRAMING PLANS	STATE REVIEW
S6.0B	KITCHEN/DINING UNIT MOD FRAMING PLANS	STATE REVIEW
S6.0C	OFFICE UNIT 1 MOD FRAMING PLANS	STATE REVIEW
S6.0D	OFFICE UNIT 2 MOD FRAMING PLANS	STATE REVIEW

ALLSTRUCTURE ENGINEERING
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STRUCTURAL REGISTERED PROFESSIONAL ENGINEER 76768PE OREGON MARCH 10, 2006 RYAN HARDIE

RENEWS: 6.30.2025

CLACKAMAS EMERGENCY SHELTER
16590 SE 114TH AVE
CLACKAMAS, OR

MOD FRAMING GENERAL NOTES & SCHEDULES

ISSUE: FOR STATE & LOCAL PERMIT 01.04.24

DATE: 01.03.24
SHEET SIZE: 24x36
DRAWN BY: WM, RH
CHK'D BY: RH

SHEET
S1.0A

PROJECT #:
23444.00

STATE REVIEW

HOLD-DOWN SCHEDULE [1,2]

	HOLD-DOWN	ANCHOR BOLT	ANCHOR SIZE	EMBED[4] LENGTH	WOOD MEMBER	UNITS	DETAIL(S)	NOTES	ALLOWABLE LOAD (LBS)
HD1	CS16x46	–	–	–	2x STUD	(22) 8d	–	–	1705
HD2	(2) CS16x46	–	–	–	(2) 2x STUDS	(22) 8d PER STRAP	–	–	3410
HD3	MSTC66	–	–	–	(2) 2x STUDS	(64) 16d SINKERS	–	(1) STRAP PER STUD	5460
HD4	STHD14RJ	–	–	14"	(2) 2x STUDS	(28) 0.148 x 3 1/4" NAILS	4/S3.0	–	3500
HD5	HDU8-SDS2.5	SSTB28	7/8"ø	24 7/8"	4x6	(20) SDS 1/4" x 2 1/2" SCREWS	–	–	6970
HD6	CMST12x95	–	–	–	(2) 2x STUDS	(84) 16d	–	–	9125
HD7	HDQ8-SDS3	SSTB28	7/8"ø	24 7/8"	6x6	(24) SDS 1/4" x 3" SCREWS	–	–	7870
HD8	HD9B	SSTB28	7/8"ø	24 7/8"	6x6	(3) 7/8"ø BOLTS	–	–	9920
HD9	HD12	PAB9	1-1/8"ø	12" INTO FTG	6x6	(4) 1"ø BOLTS	–	–	15510
HD10	HD19	PAB10	1-1/4"ø	14" INTO FTG	6x6	(5) 1"ø BOLTS	–	–	19070
HD11	(2) CMST12x95	–	–	–	(4) 2x STUDS	(84) 16d PER STRAP	–	–	18250

1. NOT ALL HOLD-DOWNS SHOWN MAY BE USED.
2. ALL HOLD DOWNS ARE SITE-INSTALLED. PROVIDE COMPRESSION POSTS PER SCHEDULE IN MOD WALLS AS REQ.
3. REFERENCE SHEET S5.0 FOR MOD SHEAR WALL SCHEDULE & SHEET S6.0 FOR MOD FRAMING PLANS / H.D. LOCS.

NAIL DIAMETERS

6d	.099" ø
8d	.113" ø .131" ø AT SHEAR WALLS
10d	.128" ø .148" ø AT FLOOR SHEATHING
16d	.162" ø

NOTES:

1. REFER TO NAIL DIAMETERS FOR NAIL SIZE.
2. NAILS SPACED @ 4" O.C. AT EDGES & @ 10" O.C. AT INTERMEDIATE SUPPORTS, EXCEPT @ 4" O.C. AT ALL SUPPORTS WHERE SPANS ARE 48" OR MORE. FOR NAILING OF PLYWOOD AND PARTICLE BOARD DIAPHRAGMS AND SHEAR WALLS, REFER TO SCHEDULE.

PRESCRIPTIVE NAILING SCHEDULE

NO.	CONNECTION	TYPE	NAILING (NOTE 1)	
1	JOIST TO SILL OR GIRDER	TOE NAIL	(3) 3" x 0.131" NAILS	(3) 8d COMMON
2	BRIDGING TO JOIST	TOE NAIL EACH END	(2) 3" x 0.131" NAILS	(2) 8d COMMON
3	1" X 6" SUBFLR OR LESS TO EA JOIST	FACE NAIL	–	(2) 8d COMMON
4	WIDER THAN 1" X 6" SUBFLR TO EA JOIST	FACE NAIL	–	(3) 8d COMMON
5	2" SUBFLOOR TO JOIST OR GIRDER	BLIND & FACE NAIL	–	(2) 16d
6A	SOLE PLATE TO JOIST OR BLOCKING	TYP. FACE NAIL	3" x 0.131" NAILS @ 8" O.C.	16d @ 16" O.C.
6B		AT BRACED WALL PANELS	(4) 3" x 0.131" NAILS @ 16" O.C.	(3) 16d @ 16" O.C.
7	TOP PLATE TO STUD	END NAIL	(3) 3" x 0.131" NAILS	(2) 16d COMMON
8A	STUD TO SOLE PLATE	TOE NAIL	(4) 3" x 0.131" NAILS	(4) 8d COMMON
8B		END NAIL	(3) 3" x 0.131" NAILS	(2) 16d COMMON
9	DOUBLE STUDS	FACE NAIL	3" x 0.131" NAILS @ 8" O.C.	16d @ 24" O.C.
10A	DOUBLE TOP PLATES	TYP. FACE NAIL	3" x 0.131" NAILS @ 12" O.C.	16d @ 16" O.C.
10B		LAP SPLICE	(12) 3" x 0.131" NAILS	(8) 16d COMMON
11	BLKG BETWEEN JOISTS/RAFTERS TO TOP PL	TOE NAIL	(3) 3" x 0.131" NAILS	(3) 8d COMMON
12	RIM JOIST TO TOP PLATE	TOE NAIL	3" x 0.131" NAILS @ 6" O.C.	8d @ 6" O.C.
13	TOP PLATES, LAPS AND INTERSECTIONS	FACE NAIL	(3) 3" x 0.131" NAILS	(2) 16d COMMON
14	CONTINUOUS HEADER, TWO PIECES	16" O.C. ALONG EDGE	–	16d COMMON
15	CEILING JOISTS TO PLATE	TOE NAIL	(5) 3" x 0.131" NAILS	(3) 8d COMMON
16	CONTINUOUS HEADER TO STUD	TOE NAIL	–	(4) 8d COMMON
17	CEILING JOISTS, LAPS OVER PARTITIONS	FACE NAIL	(4) 3" x 0.131" NAILS	(3) 16d COMMON MIN.
18	CEILING JOISTS TO PARALLEL RAFTERS	FACE NAIL	(4) 3" x 0.131" NAILS	(3) 16d COMMON MIN.
19	RAFTER OR TRUSS TO PLATE	TOE NAIL	(3) 3" x 0.131" NAILS	(3) 8d COMMON
20	1" BRACE TO EACH STUD AND PLATE	FACE NAIL	(2) 3" x 0.131" NAILS	(2) 8d COMMON
21	1" x 8" SHTG OR LESS TO EA BEARING	FACE NAIL	–	(3) 8d COMMON
22	WIDER THAN 1" X 8" SHTG TO EA BEARING	FACE NAIL	–	(3) 8d COMMON
23	BUILT UP CORNER STUDS	–	3" x 0.131" NAILS @ 16" O.C.	16d COMMON @ 24" O.C.
24A	BUILT-UP GIRDER & BEAMS		3" x 0.131" NAILS @ 24" O.C.	20d COMMON @ 32" O.C.
24B			(3) 3" x 0.131" NAILS	(2) 20d COMMON
25	2" PLANKS	AT EACH BEARING	–	16d COMMON
26	COLLAR TIE TO RAFTER	FACE NAIL	(4) 3" x 0.131" NAILS	(3) 10d COMMON
27A	JACK RAFTER TO HIP	TOE NAIL	(4) 3" x 0.131" NAILS	(3) 10d COMMON
27B		FACE NAIL	(3) 3" x 0.131" NAILS	(2) 16d COMMON
28A	ROOF RAFTER TO 2x RIDGE BEAM	TOE NAIL	(3) 3" x 0.131" NAILS	(2) 16d COMMON
28B		FACE NAIL	(3) 3" x 0.131" NAILS	(2) 16d COMMON
29	JOIST TO BAND JOIST	FACE NAIL	(4) 3" x 0.131" NAILS	(3) 16d COMMON
30	LEDGER STRIP	FACE NAIL @ EACH JOIST	(4) 3" x 0.131" NAILS	(3) 16d COMMON
31A	WOOD STRUCTURAL PANELS & PARTICLE BOARD SUB-FLOOR, ROOF & WALL SHEATHING (TO FRAMING)	1/2" AND LESS	2.375" x 0.113" NAILS	6d
		10/32" TO 3/4"	2.375" x 0.113" NAILS	8d OR 6d
		7/8" TO 1"	–	8d
		1 1/8" TO 1 1/4"	–	10d OR 8d
31B	SINGLE FLOOR (SUBFLOOR-UNDERLAYMENT COMBINATION TO FRAMING)	3/4" AND LESS	–	6d
		7/8" TO 1"	–	8d
		1 1/8" TO 1 1/4"	–	10d OR 8d
32	PANEL SIDING (TO FRAMING)	1/2" AND LESS	–	6d
		5/8"	–	8d
33	FIBERBOARD SHEATHING	1/2"	2" x 0.113" NAILS	#11 GAGE ROOFING
		25/32"	2 1/2" x 0.113" NAILS	#11 GAGE ROOFING
34	INTERIOR PANELING	1/4"	–	4d
		3/8"	–	6d

GENERAL STRUCTURAL NOTES

CODE REQUIREMENTS:
CONFORM TO THE REQUIREMENTS OF THE 2022 OREGON STRUCTURAL SPECIALTY CODE (OSSC).

DESIGN CRITERIA:
DESIGN WAS BASED ON THE STRENGTH AND DEFLECTION CRITERIA OF THE OSSC. IN ADDITION TO THE DEAD LOADS, THE FOLLOWING LOADS AND ALLOWABLES WERE USED:

ROOF SNOW LOAD: 20 PSF + 5 PSF RAIN-ON-SNOW

LIVE LOAD: 100 PSF (OFFICE LOBBY AND CORRIDOR)

SEISMIC: Sds = 0.68, SITE CLASS D, R = 6.5, I = 1.0

WIND: 97 MPH (3 SEC GUSTS) MPH EXPOSURE B

SOIL BEARING: 1,500 PSF (ASSUMED)

EXISTING CONDITIONS:

THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES FROM CONDITIONS SHOWN ON THE DRAWINGS PRIOR TO THE START OF THE WORK.

TEMPORARY CONDITIONS:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR STRUCTURAL STABILITY OF THE NEW AND EXISTING STRUCTURES AND WALLS DURING CONSTRUCTION. THE STRUCTURE SHOWN ON THE DRAWINGS HAS BEEN DESIGNED FOR STABILITY UNDER THE FINAL CONFIGURATION ONLY.

SUBMITTALS:

SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER PRIOR TO FABRICATION AND CONSTRUCTION REGARDING ALL STRUCTURAL ITEMS, INCLUDING THE FOLLOWING:

NONE REQUIRED FOR CONSTRUCTION

IF THE SHOP DRAWINGS DIFFER FROM, OR ADD TO THE DESIGN OF THE STRUCTURAL DRAWINGS, THEY SHALL BE CLEARLY IDENTIFIED. ANY CHANGES TO THE STRUCTURAL DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER AND ARE SUBJECT TO REVIEW AND ACCEPTANCE OF THE ENGINEER.

EARTHWORK:

PROTECT INCOMPLETE WORK FROM FLOODING DURING STORMS OR OTHER CAUSES, THOROUGHLY BRACE OR OTHERWISE PROTECT ALL STRUCTURES NOT STABLE AGAINST UPLIFT DURING CONSTRUCTION. TAKE ALL NECESSARY PRECAUTIONS TO PREVENT DISTURBANCE OF AND TO PROPERLY DRAIN THE AREAS UPON WHICH CONCRETE IS TO BE POURED. DO NOT ALLOW WATER TO ACCUMULATE IN EXCAVATIONS. REMOVE WATER TO PREVENT SOFTENING OF THE BASE FOUNDATIONS. CONVEY WATER REMOVED FROM THE EXCAVATIONS AND RAINWATER TO TEMPORARY DRAINAGE DITCHES OR OTHER STRUCTURES OUTSIDE THE EXCAVATION LIMITS FOR THIS STRUCTURE. ENSURE THAT THE WATERING OPERATIONS WILL NOT ADVERSELY EFFECT FOUNDATIONS. MAINTAIN THE EXCAVATION FREE FROM GROUND WATER FOR THE TIME REQUIRED TO COMPLETE THE WORK IN A PROPER WORKMANLIKE MANNER. REMOVE LOOSE OR DISTURBED SOIL FROM THE BOTTOMS OF EXCAVATION.

CAST-IN-PLACE CONCRETE:
ADMIXTURES: AIR ENTRAINING AGENT IN ACCORDANCE WITH ASTM C260 AND WATER-REDUCING ADMIXTURE CONFORMING TO ASTM 494, USED IN STRICT ACCORDANCE WITH THE MANUFACTURERS' RECOMMENDATIONS, MAY BE INCORPORATED IN CONCRETE DESIGN MIXES. AN AIR-ENTRAINING AGENT CONFORMING TO ASTM C260 SHALL BE USED IN CONCRETE MIXES FOR EXTERIOR HORIZONTAL SURFACES EXPOSED TO WEATHER. THE AMOUNT OF ENTRAINED AIR SHALL BE 5% – 7% BY VOLUME. FLY ASH SHALL BE 15% MIN (25% MAX) OF CEMENT CONTENT BY WEIGHT. MAXIMUM WATER-CEMENT RATIO SHALL BE 0.49.

CONCRETE WORK SHALL CONFORM TO ACI 301. CONCRETE STRENGTHS SHALL BE VERIFIED BY STANDARD 28-DAY CYLINDER TESTS PER ASTM C39, AND SHALL BE AS FOLLOWS:

FOOTINGS AND WALLS: f'c = 3,000 PSI AT 28 DAYS: MAXIMUM SLUMP 3" PLUS OR MINUS 1".

SLEEVES, OPENINGS, CONDUIT, AND OTHER EMBEDDED ITEMS NOT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER BEFORE POURING. CONDUITS EMBEDDED IN SLABS SHALL NOT BE LARGER THAN ONE THIRD OF THE THICKNESS OF THE SLAB AND SHALL NOT BE SPACED CLOSER THAN THREE DIAMETERS ON CENTER. PROVIDE 3/4 CHAMFERS ON ALL EXPOSED CONCRETE EDGES UNLESS NOTED OTHERWISE.

REINFORCING STEEL:

REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60 FOR DEFORMED BARS, UNLESS OTHERWISE NOTED. REINFORCING STEEL TO BE WELDED SHALL CONFORM TO ASTM A706. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A82 AND A185.

REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH ACI 315 – LATEST EDITION ("DETAILS AND DETAILING CONCRETE REINFORCEMENT"). AT SPLICES LAP REINFORCMENT A MINIMUM OF 48 BAR DIAMETERS UNLESS NOTED OTHERWISE. STAGGER SPLICES IN FOOTINGS, BEAMS, COLUMNS AND WALLS A MINIMUM OF 24" UNLESS NOTED OTHERWISE.

REINFORCING STEEL SHALL HAVE PROTECTION AS FOLLOWS:

CONDITION: MINIMUM COVER

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"

CONCRETE EXPOSED TO EARTH AND WEATHER:
NO. 6 THROUGH NO. 18 BARS: 2"
NO. 5 BAR, W31 OR D31 WIRE AND SMALLER: 1 1/2"

CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH EARTH:
SLABS, WALLS, AND JOISTS
NO. 14 AND NO. 18 BARS: 1 1/2"
NO. 11 BARS AND SMALLER: 3/4"

BEAMS AND COLUMNS – PRIMARY REINFORCEMENT, TIES, STIRRUPS AND SPIRALS: 1 1/2"

CONCRETE ACCESSORIES:

ANCHOR BOLTS SHALL BE ASTM F1554-36, ASTM A307 OR A36 ATR UNLESS NOTED OTHERWISE. CONCRETE EXPANSION ANCHORS SHALL BE "SIMPSON STRONG-BOLT II ANCHORS" OR ENGINEER APPROVED EQUIVALENT.

CARPENTRY:

SAWN LUMBER DESIGN IS BASED ON THE NATIONAL DESIGN SPECIFICATION, LATEST EDITION. SAWN LUMBER SHALL CONFORM TO WEST COAST LUMBER INSPECTION BUREAU OR WESTERN WOOD PRODUCTS ASSOCIATION GRADING RULES. WALL STUDS AND PLATES MAY BE D.F. #2 OR BETTER. ALL OTHER LUMBER NOT SPECIFICALLY NOTED IS TO BE D.F. #2 OR BETTER. ALL WOOD IN PERMANENT CONTACT WITH CONCRETE OR CMU SHALL BE PRESSURE TREATED UNLESS AN APPROVED BARRIER IS PROVIDED. EXPOSED TIMBER FRAMING SHALL BE PRESSURE-TREATED OR WESTERN CEDAR WOOD. FRAMING ACCESSORIES AND STRUCTURAL FASTENERS SHALL BE MANUFACTURED BY SIMPSON STRONG-TIE COMPANY (OR ENGINEER APPROVED EQUAL) AND OF THE SIZE AND TYPE SHOWN ON THE DRAWINGS. HANGERS NOT SHOWN SHALL BE SIMPSON HU OF SIZE RECOMMENDED FOR MEMBER. ALL SIMPSON HARDWARE IN CONTACT WITH PRESSURE TREATED LUMBER, CONCRETE OR MASONRY SHALL HAVE "ZMAX" COATING PER MANUFACTURER. ALL FRAMING NAILS SHALL BE COMMON NAILS. NO BOX NAILS ALLOWED. NAILING NOT SPECIFICALLY IDENTIFIED ON THE DRAWINGS SHALL CONFORM TO NAILING SCHEDULE ON PLANS.

CARPENTRY (CONT.):

PLYWOOD PANELS SHALL CONFORM TO THE REQUIREMENTS OF "U.S. PRODUCT STANDARD PS 1 FOR CONSTRUCTION AND INDUSTRIAL PLYWOOD" OR APA PRP-108 PERFORMANCE STANDARDS. UNLESS NOTED, PANELS SHALL BE APA RATED SHEATHING, STRUCTURAL 1, OF THE THICKNESS AND SPAN RATING SHOWN ON THE DRAWINGS. PLYWOOD INSTALLATION SHALL BE IN CONFORMANCE WITH APA RECOMMENDATIONS. ALLOW 1/8" SPACING AT PANELS ENDS AND EDGES, UNLESS OTHERWISE RECOMMENDED BY THE PANEL MANUFACTURER.

ALL ROOF AND FLOOR SHEATHING SHALL BE INSTALLED WITH FACE GRAIN PERPENDICULAR TO SUPPORTS, EXCEPT AS INDICATED ON THE DRAWINGS. FLOOR SHEATHING BE SHALL TONGUE-AND- GROOVE. SHEAR WALL SHEATHING SHALL BE BLOCKED WITH 2X FRAMING AT ALL PANEL EDGES. NAILING NOT SPECIFICALLY IDENTIFIED ON THE DRAWINGS SHALL CONFORM TO IBC TABLE 2304.9.1. OSB MAY BE SUBSTITUTED FOR SPECIFIED PLYWOOD SHEATHING ON FLOORS AND WALLS. OSB MAY NOT BE USED FOR ROOF SHEATHING OR NON-VERTICAL SURFACES THAT MAY BE EXPOSED TO EXTERIOR MOISTURE.

GLUED LAMINATED MEMBERS SHALL BE FABRICATED IN CONFORMANCE WITH U.S. PRODUCT STANDARD PS 56, "STRUCTURAL GLUED LAMINATED TIMBER" AND AMERICAN INSTITUTE OF TIMBER CONSTRUCTION, AITC 117. EACH MEMBER SHALL BEAR AN AITC OR APA-EWS IDENTIFICATION MARK AND BE ACCOMPANIED BY A CERTIFICATE OF CONFORMANCE. ONE COAT OF END SEALER SHALL BE APPLIED IMMEDIATELY AFTER TRIMMING IN EITHER SHOP OR FIELD. GLULAM HANGERS NOT SHOWN SHALL BE SIMPSON EG. BEAMS SHALL BE VISUALLY GRADED WESTERN SPECIES INDUSTRIAL GRADE, AND OF THE STRENGTH INDICATED BELOW:

DEPTH	COMBINATION SYMBOL	SPECIES	USE
ALL	24F – V4	DF/DF	(SIMPLE SPAN)
ALL	24F – V8	DF/DF	(CONTINUOUS OR CANTILEVER)

INSTALL STEEL PLATE WASHERS BETWEEN ALL WOOD AND BOLT NUTS AND HEADS. NO WASHER IS REQUIRED IF BOLT HEAD OR NUT BEARS ON STEEL PLATE.

PREMANUFACTURED WOOD JOISTS SHALL BE OF THE SIZE AND TYPE SHOWN ON THE DRAWINGS, MANUFACTURED BY THE I-LEVEL COMPANY, OR AN ENGINEER APPROVED EQUAL. PROVIDE BRIDGING IN CONFORMANCE WITH THE MANUFACTURERS RECOMMENDATIONS. JOISTS AND BRIDGING SHALL BE CAPABLE OF RESISTING THE WIND UPLIFT NOTED ON THE DRAWINGS. THE JOIST MANUFACTURER SHALL VISIT JOB SITE AS REQUIRED AND VERIFY THE PROPER INSTALLATION OF JOISTS IN WRITING TO THE ARCHITECT/ENGINEER. PREMANUFACTURED WOOD JOIST ALTERNATES WILL BE CONSIDERED, PROVIDED THE ALTERNATE IS COMPATIBLE WITH THE LOAD CAPACITY, STIFFNESS, DIMENSIONAL, AND FIRE RATING REQUIREMENTS OF THE PROJECT, AND IS ICC APPROVED.

FASTENERS INSTALLED IN PRESERVATIVE-TREATED AND FIRE-RETARDANT TREATED WOOD SHALL BE HOT-DIP, ZINC-COATED GALVANIZED WITH A MINIMUM WEIGHT COMPLYING WITH ASTM A 153. FASTENERS OTHER THAN NAIL, WOOD SCREWS, AND LAG SCREWS ARE PERMITTED TO BE MECHANICALLY DEPOSITED ZINC-COATED WITH COATING COMPLYING WITH ASTM B 695, CLASS 55 MIN. PLAIN CARBON STEEL FASTENERS IN WOOD-PRESERVATIVE WITH SBX/DOT OR ZINC BORATE ARE NOT REQUIRED TO BE GALVANIZED.

INSPECTION:

SPECIAL INSPECTIONS: IN ACCORDANCE WITH 1704 OF THE OSSC AND APPLICABLE SECTIONS OF THE PROJECT SPECIFICATIONS. SPECIAL INSPECTIONS ARE TO BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY EMPLOYED BY THE OWNER FOR THE FOLLOWING AREAS OF WORK:

NONE REQUIRED

STRUCTURAL OBSERVATIONS:

STRUCTURAL OBSERVATIONS BY THE ENGINEER OF RECORD OR AN APPOINTED REPRESENTATIVE SHALL BE REQUIRED AT THE FOLLOWING TIMES DURING CONSTRUCTION:

NONE REQUIRED

DEFERRED STRUCTURAL SUBMITTALS:

NONE REQUIRED

SHEET LIST

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DRAWN BY: WM, RH
CHK'D BY: RH

SHEET
S1.0B

PROJECT #:
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FOUNDATION/ASSEMBLY PLAN NOTES

A. FOR PRE-MANUFACTURED MOD FABRICATION INFORMATION, SEE SHEET S6.0A

B. ALL FOOTINGS TO BEAR ON FIRM, UNDISTURBED, NON-ORGANIC, NATIVE SOIL.

C. 1'-0" WIDE x 0'-10" DEEP CONT. CONCRETE FOOTING w/ (2) #4 CONT. AT BOTTOM, TYPICAL U.N.O. ON PLAN

D. EXTEND LONGITUDINAL REINFORCEMENT INTO ADJACENT FOOTINGS TYPICAL.

E. CENTER FOOTINGS ON STEM WALLS.

F. 5/8"ø ANCHOR BOLTS SPACED AT 48" O.C. MAX. PROVIDE (2) A.B. MIN. PER NON-SHEAR WALL PANEL, TYPICAL.

G. INSTALL SIMPSON STHD14RJ CAST-IN-PLACE STRAP HOLD DOWN PER DETAIL 4/S3.0 AT PLAN LOCATIONS MARKED 'HD'. COORDINATE LOCATIONS WITH MOD FRAMING PLANS.

H. COORDINATE CRAWLSPACE ACCESS OPENING & VENTILATION REQS. w/ ARCH.

FOUNDATION PLAN LEGEND

PRE-MFR'D MOD STUD WALL SEE MOD FRAMING PLANS

CONT. CONCRETE STEM WALL PER DETAILS. TYP. @ BLDG. PERIMETER

CONT. CONCRETE FOOTING AT EXTERIOR WALL SEE PLAN FOR SIZE & REINFORCEMENT

ISOLATED CONCRETE FOOTING & FTG. MARK, SEE DETAILS FOR SIZE & REINFORCEMENT

COLUMN & COL. MARK, LOCATIONS PER ASSEMBLY PLAN. SEE DETAILS FOR COLUMN TYPES

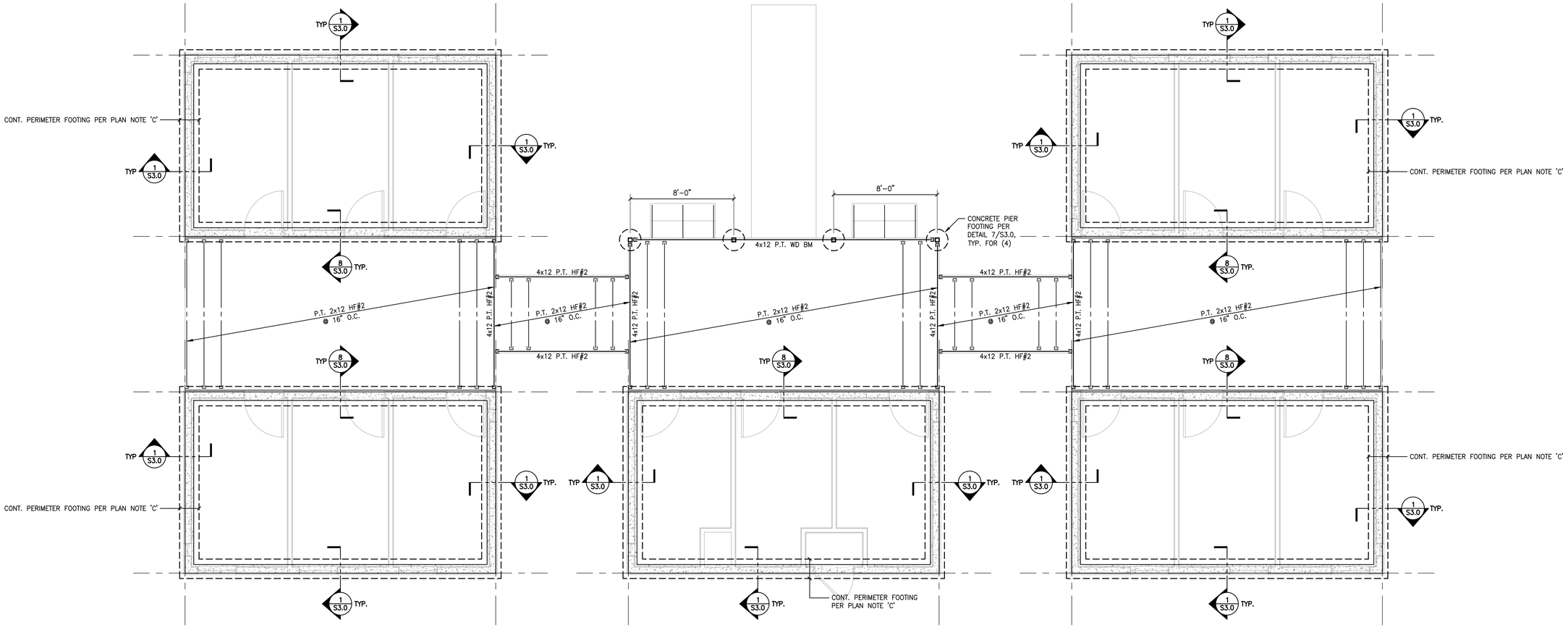
FACTORY-BUILT SHEAR WALL PER MOD FRAMING PLANS, SEE S6.0x SHEETS FOR MOD SHEAR PANEL EXTENTS & ASSOCIATED HOLD DOWN POSTS

SITE-INSTALLED HOLD DOWN - PLACE HDs AT ENDS OF SHEAR WALLS WHERE NOTED ON PLAN. SEE SCHEDULE, SHEET S1.0A, FOR HD TYPES & COMPRESSION POST REQUIREMENTS.

SITE-FRAMED DECK JOIST, SEE ASSEMBLY PLANS

SITE-FRAMED WOOD DECK BEAM, SEE ASSEMBLY PLANS

KEYNOTE TAG



1 S2.0A **FOUNDATION/MOD ATTACHMENT PLAN**
1/4" = 1'-0"

SHOWING SLEEPING/BATH UNIT MOD WALLS & S.F. ELEMENTS ABOVE / FOUNDATIONS BELOW

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C. 1'-0" WIDE x 0'-10" DEEP CONT. CONCRETE FOOTING w/ (2) #4 CONT. AT BOTTOM, TYPICAL U.N.O. ON PLAN

D. EXTEND LONGITUDINAL REINFORCEMENT INTO ADJACENT FOOTINGS TYPICAL.

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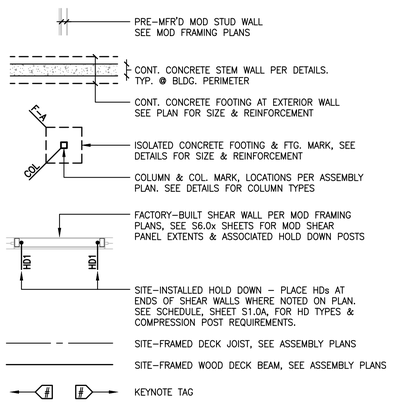
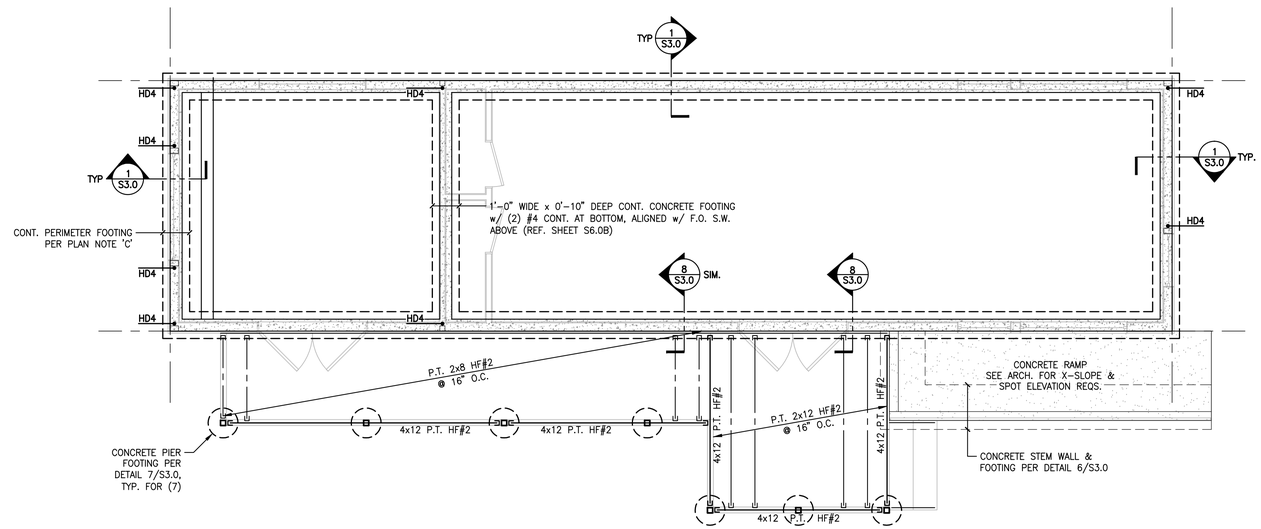
F. 5/8"ø ANCHOR BOLTS SPACED AT 48" O.C. MAX. PROVIDE (2) A.B. MIN. PER NON-SHEAR WALL PANEL, TYPICAL.

G. INSTALL SIMPSON STHD14RJ CAST-IN-PLACE STRAP HOLD DOWN PER DETAIL 4/S3.0 AT PLAN LOCATIONS MARKED 'HD'. COORDINATE LOCATIONS WITH MOD FRAMING PLANS.

H. COORDINATE CRAWLSPACE ACCESS OPENING & VENTILATION REQS. w/ ARCH.

FOUNDATION PLAN LEGEND





1/S2.0B FOUNDATION/MOD ATTACHMENT PLAN

1/4" = 1'-0"

SHOWING KITCHEN/DINING UNIT MOD WALLS & S.F. ELEMENTS ABOVE / FOUNDATION BELOW

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Portland, OR 97224
503.620.4314
www.allstructure.com

STRUCTURAL REGISTERED PROFESSIONAL ENGINEER 76768PE OREGON MARCH 10, 2006 RYAN HARDIE

RENEWS: 6.30.2025

CLACKAMAS EMERGENCY SHELTER
16590 SE 114TH AVE
CLACKAMAS, OR

KITCHEN/DINING UNIT MOD ATTACHMENT & FOUNDATION PLAN

ISSUE: FOR STATE & LOCAL PERMIT 01.04.24

DATE: 01.03.24
SHEET SIZE: 24x36
DRAWN BY: WM, RH
CHK'D BY: RH

SHEET
S2.0B

PROJECT #: 23444.00

FOUNDATION/ASSEMBLY PLAN NOTES

A. FOR PRE-MANUFACTURED MOD FABRICATION INFORMATION, SEE SHEET S6.0A

B. ALL FOOTINGS TO BEAR ON FIRM, UNDISTURBED, NON-ORGANIC, NATIVE SOIL.

C. 1'-0" WIDE x 0'-10" DEEP CONT. CONCRETE FOOTING w/ (2) #4 CONT. AT BOTTOM, TYPICAL U.N.O. ON PLAN

D. EXTEND LONGITUDINAL REINFORCEMENT INTO ADJACENT FOOTINGS TYPICAL.

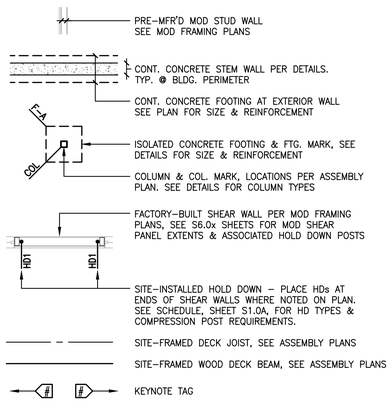
E. CENTER FOOTINGS ON STEM WALLS.

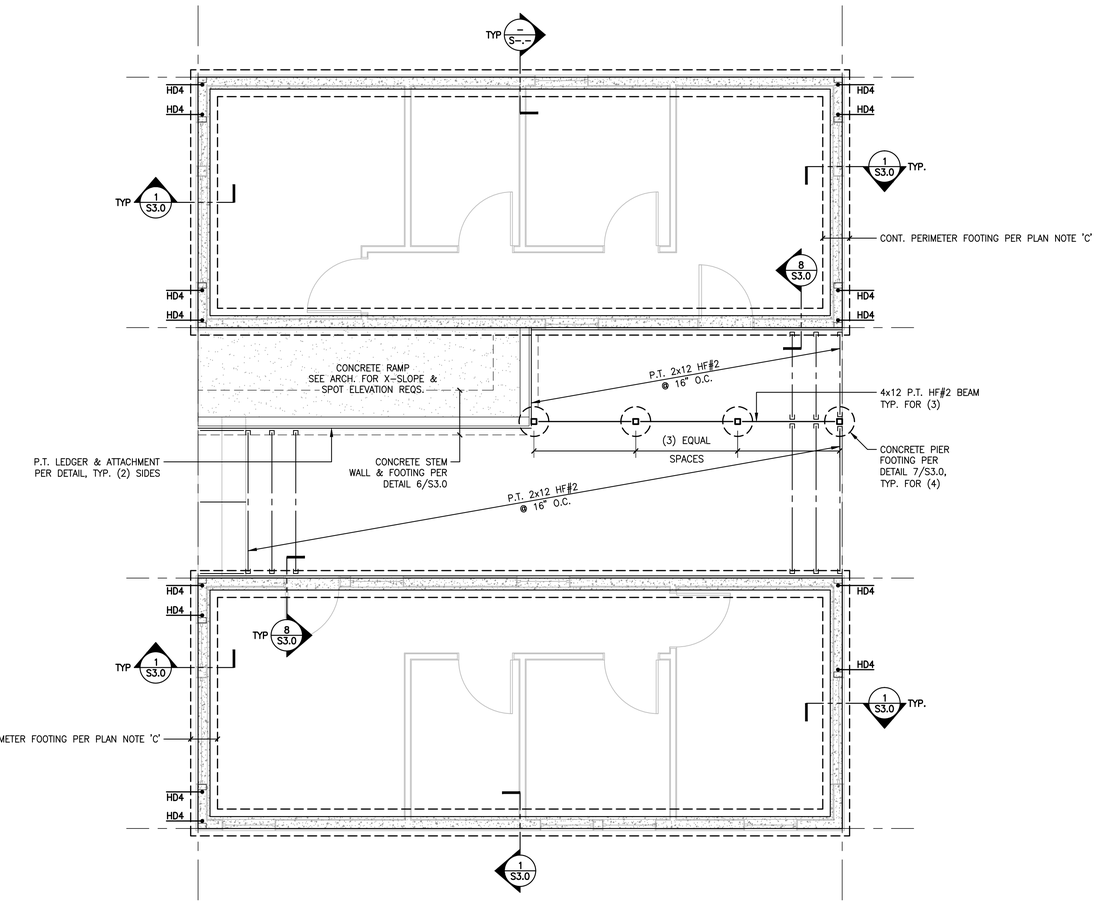
F. 5/8"ø ANCHOR BOLTS SPACED AT 48" O.C. MAX. PROVIDE (2) A.B. MIN. PER NON-SHEAR WALL PANEL, TYPICAL.

G. INSTALL SIMPSON STHD14RJ CAST-IN-PLACE STRAP HOLD DOWN PER DETAIL 4/S3.0 AT PLAN LOCATIONS MARKED 'HD'. COORDINATE LOCATIONS WITH MOD FRAMING PLANS.

H. COORDINATE CRAWLSPACE ACCESS OPENING & VENTILATION REQS. w/ ARCH.

FOUNDATION PLAN LEGEND





1 S2.0C FOUNDATION/MOD ATTACHMENT PLAN

1/4" = 1'-0"

SHOWING OFFICE UNIT MOD WALLS & S.F. ELEMENTS ABOVE / FOUNDATION BELOW

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STRUCTURAL
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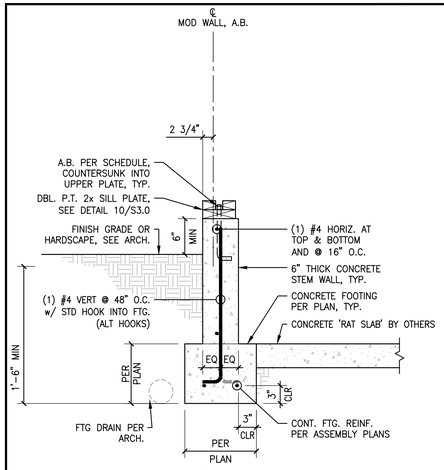
MOD ATTACHMENT & FOUNDATION PLAN

ISSUE: FOR STATE & LOCAL PERMIT 01.04.24

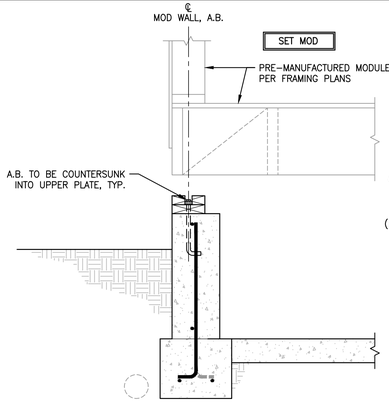
DATE: 01.03.24
SHEET SIZE: 24x36
DRAWN BY: WM, RH
CHK'D BY: RH

SHEET
S2.0C

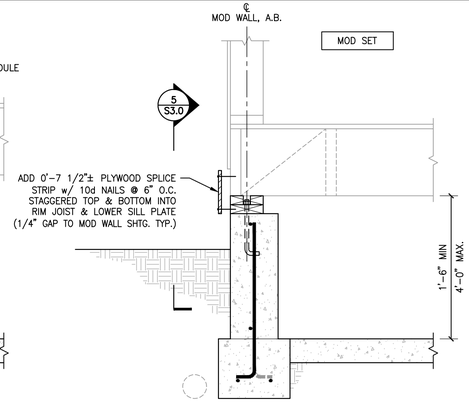
PROJECT #: 23444.00



STEP 1

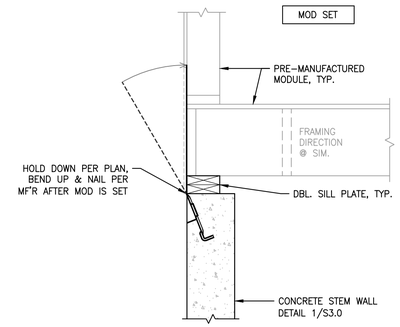


STEP 2

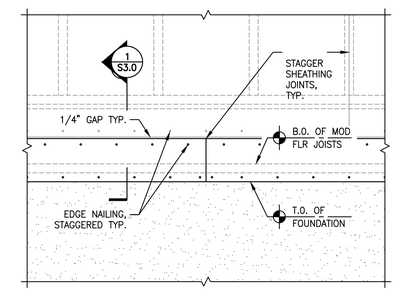


STEP 3

1 S3.0 TYPICAL FOUNDATION & MOD ATTACHMENT
1"=1'-0"

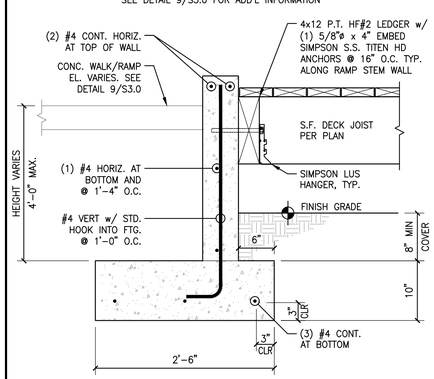


4 S3.0 MOD CONNECTION AT HOLD DOWN
1"=1'-0"

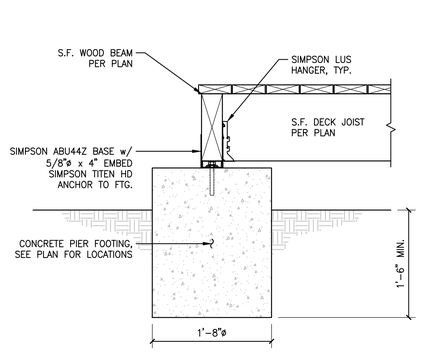


5 S3.0 TYP. MOD TO FOUNDATION
1"=1'-0"

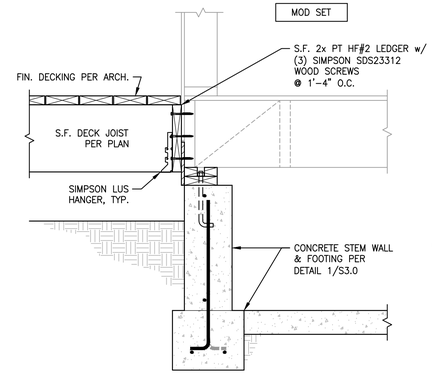
NOTE:
GUARDRAIL EMBEDS AT (WHERE REQ.) AT T.O. WALL NOT SHOWN
SEE DETAIL 9/S3.0 FOR ADD'L INFORMATION



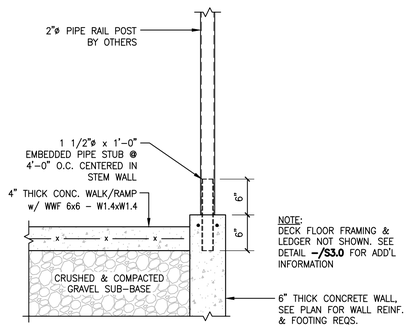
6 S3.0 DECK RAMP STEM WALL & FOOTING
1"=1'-0"



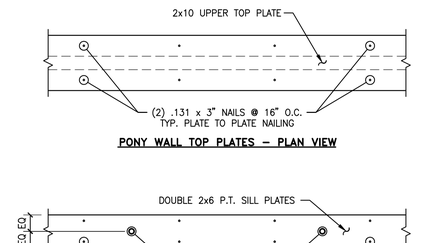
7 S3.0 DECK BEAM AT PIER FOOTING
1"=1'-0"



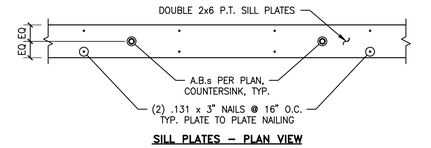
8 S3.0 SITE-FRAMED DECK TO MOD
1"=1'-0"



9 S3.0 DECK GUARDRAIL EMBED
1"=1'-0"



PONY WALL TOP PLATES – PLAN VIEW



SILL PLATES – PLAN VIEW

10 S3.0 TYP. DBL. SILL/TOP PLATE NAILING
1"=1'-0"

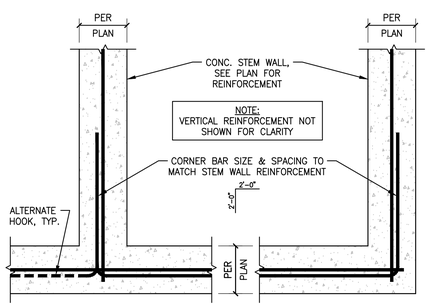
11 S3.0 NOT USED
1"=1'-0"

12 S3.0 NOT USED
1"=1'-0"

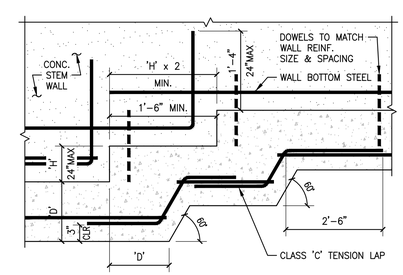
13 S3.0 NOT USED
1"=1'-0"

14 S3.0 NOT USED
1"=1'-0"

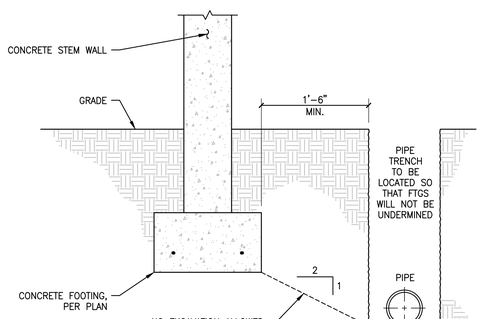
15 S3.0 NOT USED
1"=1'-0"



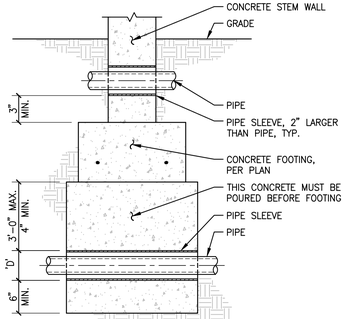
17 S3.0 CONCRETE WALL CORNER REINFORCEMENT
1"=1'-0"



18 S3.0 STEPPED FOOTING
1"=1'-0"



19 S3.0 PIPE PENETRATIONS THRU FOUNDATION
1"=1'-0"



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FOUNDATION & MOD ASSEMBLY DETAILS

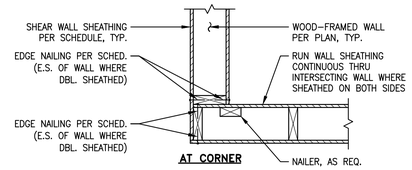
ISSUE: FOR STATE & LOCAL PERMIT 01.04.24

DATE: 01.03.24
SHEET SIZE: 24x36
DRAWN BY: WM, RH
CHK'D BY: RH

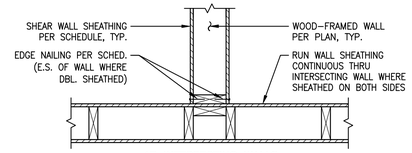
SHEET S3.0

PROJECT #: 23444.00

STATE / LOCAL REVIEW



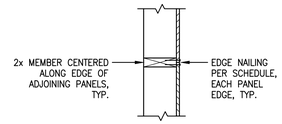
AT CORNER



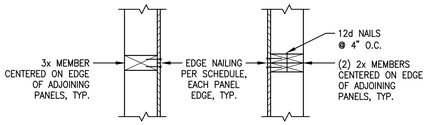
AT INTERSECTING WALLS

1 S4.0 SHEAR WALL INTERSECTION FRAMING
1"=1'-0"

NOTE:
SEE SHEET S1.0 FOR ADDITIONAL INFORMATION ON SHEAR WALL NAILING REQUIREMENTS



SHEAR WALLS w/ PANEL EDGE NAILING GREATER THAN 3" O.C.

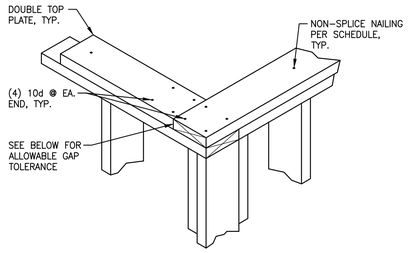


SHEAR WALLS w/ 3" OR LESS O.C. PANEL EDGE NAILING

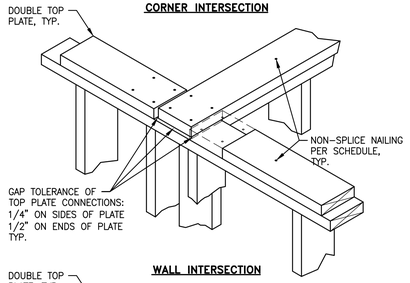
2 S4.0 ADJOINING SHEAR WALL PANEL NAILING
1"=1'-0"

3 S4.0 NOT USED
1"=1'-0"

4 S4.0 NOT USED
1"=1'-0"

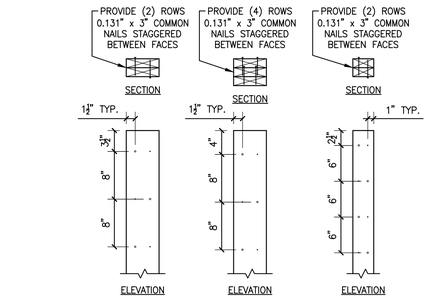


CORNER INTERSECTION



WALL INTERSECTION

5 S4.0 NOT USED
1"=1'-0"

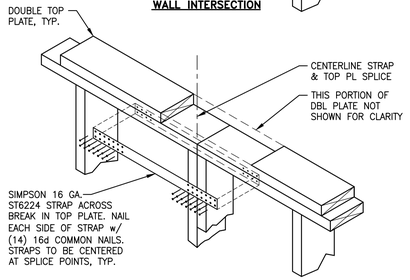


2 PLY 2x6 COLUMN | 3 PLY 2x6 COLUMN | 2 PLY 2x4 COLUMN

7 S4.0 BUILT-UP WOOD COLUMNS
1"=1'-0"

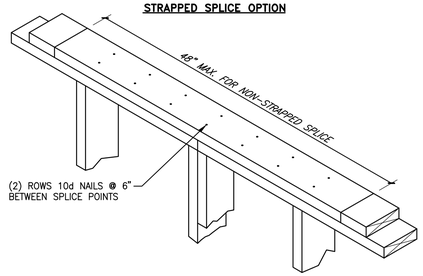
8 S4.0 NOT USED
1"=1'-0"

9 S4.0 NOT USED
1"=1'-0"



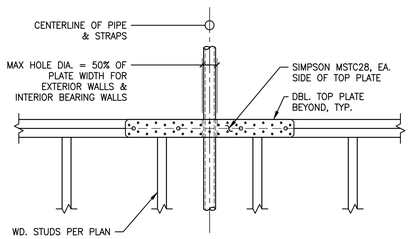
NOTE:
ALL TOP PLATE SPLICE OVERLAPS OF LESS THAN 48" SHALL BE STRAPPED AS SHOWN

STRAPPED SPLICE OPTION

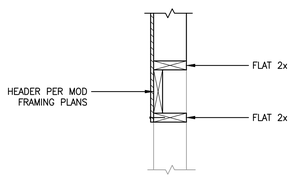


NAILED SPLICE OPTION

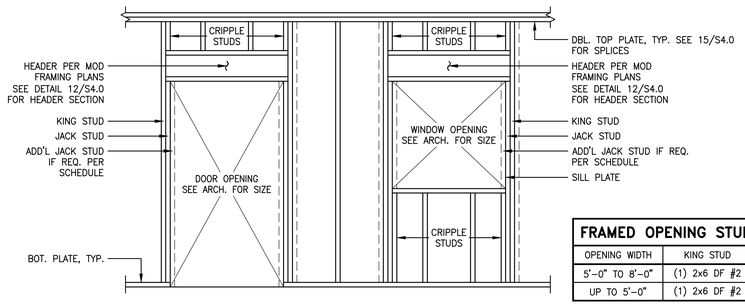
NOTE:
WALL/FLOOR FRAMING ABOVE TOP PLATE NOT SHOWN FOR CLARITY



11 S4.0 PIPE PENETRATIONS THRU TOP PLATE
1"=1'-0"



12 S4.0 TYPICAL HEADER SECTION
1"=1'-0"



FRAMED OPENING STUD SCHEDULE		
OPENING WIDTH	KING STUD	JACK STUD
5'-0" TO 8'-0"	(1) 2x6 DF #2	(2) 2x6 DF #2
UP TO 5'-0"	(1) 2x6 DF #2	(1) 2x6 DF #2

NOTE:
WHERE WALL STUDS ARE NOTED AS 3x ON PLANS, THE STUDS NOTED IN THE ABOVE TABLES SHALL BE 3x (EXCEPT HEADERS)

13 S4.0 TYPICAL MOD DOOR / WINDOW FRAMING
1/2"=1'-0"

15 S4.0 TYPICAL TOP PLATE CONNECTIONS
1"=1'-0"

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TYPICAL MOD FRAMING DETAILS

ISSUE: FOR STATE & LOCAL PERMIT 01.04.24

DATE: 01.03.24
SHEET SIZE: 24x36
DRAWN BY: WM, RH
CHK'D BY: RH

SHEET
S4.0

PROJECT #: 23444.00

MOD SHEAR WALL SCHEDULE [1,2,3,5,7,9]

NOTE: ALL FRAMING AT SHEAR WALLS IS TO BE DOUG FIR

WALL TYPE	A [4] SHEATHING	B PANEL EDGE NAILING	C FIELD NAILING	SHEATHING COMMENTS	D1 ROOF BLKG. TO RIM TRUSS	D2 RIM TRUSS TO TOP PLATE	E LAID FLAT PLATE TO RIM JOIST	F BOT PLATE TO RIM JOIST	G1 [13] ROOF BLKG. TO END WALL TRUSS	G2 WALL TRUSS TO TOP PLATE	H [6,8,10] SILL PLATE CONNECTION (DIA.x10" LONG ANCHOR BOLTS)		J SILL PLATE THICKNESS	SHEAR
A	15/32" CDX PLYWOOD	2 1/2" x 0.131" @ 6" O.C.	2 1/2" x 0.131" @ 12" O.C.	–	SIMPSON LP4 CLIPS @ 24" O.C.	SIMPSON SDWC15600 @ 24" O.C.	3" x 0.131" @ 12" O.C.	16d @ 8" O.C.	SIMPSON LP4 CLIPS @ 24" O.C.	SIMPSON SDWC15600 @ 24" O.C.	1/2"ø x 2'-6" O.C.	5/8"ø x 4'-0" O.C.	2x	260 PLF
B	15/32" CDX PLYWOOD	2 1/2" x 0.131" @ 4" O.C.	2 1/2" x 0.131" @ 12" O.C.	–	SIMPSON LP4 CLIPS @ 16" O.C.	SIMPSON SDWC15600 @ 16" O.C.	3" x 0.131" @ 8" O.C.	16d @ 6" O.C.	SIMPSON LP4 CLIPS @ 16" O.C.	SIMPSON SDWC15600 @ 16" O.C.	1/2"ø x 1'-4" O.C.	5/8"ø x 2'-8" O.C.	2x	380 PLF
C	15/32" CDX PLYWOOD	2 1/2" x 0.131" @ 3" O.C.	2 1/2" x 0.131" @ 12" O.C.	–	SIMPSON LP4 CLIPS @ 12" O.C.	SIMPSON SDWC15600 @ 16" O.C.	3" x 0.131" @ 4" O.C.	16d @ 4" O.C.	SIMPSON LP4 CLIPS @ 16" O.C.	SIMPSON SDWC15600 @ 16" O.C.	1/2"ø x 1'-4" O.C.	5/8"ø x 2'-0" O.C.	2x	490 PLF
D	15/32" CDX PLYWOOD	2 1/2" x 0.131" @ 2" O.C.	2 1/2" x 0.131" @ 12" O.C.	–	SIMPSON LP4 CLIPS @ 10" O.C.	SIMPSON SDWC15600 @ 12" O.C.	3" x 0.131" @ 3" O.C.	16d @ 3" O.C.	SIMPSON LP4 CLIPS @ 12" O.C.	SIMPSON SDWC15600 @ 12" O.C.	1/2"ø x 1'-0" O.C.	5/8"ø x 1'-6" O.C.	2x	640 PLF
E	NOT USED	–	–	–	–	–	–	–	–	–	–	–	–	–
F	15/32" CDX PLYWOOD	2 1/2" x 0.131" @ 6" O.C.	2 1/2" x 0.131" @ 12" O.C.	BOTH SIDES OF WALL	SIMPSON LP4 CLIPS @ 8" O.C.	SIMPSON SDWC15600 @ 8" O.C.	3" x 0.131" @ 3" O.C.	(2)16d NAILS @ 6" O.C. @ (2) PCS OF BLKG	SIMPSON LP4 CLIPS @ 8" O.C.	SIMPSON SDWC15600 @ 8" O.C.	1/2"ø x 1'-4" O.C.	5/8"ø x 2'-0" O.C.	2x	520 PLF
G	15/32" CDX PLYWOOD	2 1/2" x 0.131" @ 4" O.C.	2 1/2" x 0.131" @ 12" O.C.	BOTH SIDES OF WALL	SIMPSON LP4 CLIPS @ 8" O.C.	SIMPSON SDWC15600 @ 8" O.C.	(2) 3" x 0.131" @ 8" O.C.	(2)16d NAILS @ 8" O.C. @ (2) PCS OF BLKG	SIMPSON LP4 CLIPS @ 8" O.C.	SIMPSON SDWC15600 @ 8" O.C.	1/2"ø x 1'-0" O.C.	5/8"ø x 1'-4" O.C.	3x	760 PLF
H	15/32" CDX PLYWOOD	2 1/2" x 0.131" @ 3" O.C.	2 1/2" x 0.131" @ 12" O.C.	BOTH SIDES OF WALL	SIMPSON LP4 CLIPS @ 6" O.C.	SIMPSON SDWC15600 @ 6" O.C.	(2) 3" x 0.131" @ 4" O.C.	(2)16d NAILS @ 6" O.C. @ (2) PCS OF BLKG	SIMPSON LP4 CLIPS @ 6" O.C.	SIMPSON SDWC15600 @ 6" O.C.	1/2"ø x 8" O.C.	5/8"ø x 1'-4" O.C.	3x	980 PLF
J	15/32" CDX PLYWOOD	2 1/2" x 0.131" @ 2" O.C.	2 1/2" x 0.131" @ 12" O.C.	BOTH SIDES OF WALL	SIMPSON LP4 CLIPS @ 4 1/2" O.C.	SIMPSON SDWC15600 4 1/2" O.C.	(2) 3" x 0.131" @ 3" O.C.	(2)16d NAILS @ 5" O.C. @ (2) PCS OF BLKG	SIMPSON LP4 CLIPS @ 4 1/2" O.C.	SIMPSON SDWC15600	1/2"ø x 8" O.C.	5/8"ø x 1'-0" O.C.	3x	1280 PLF

FOR MODULAR CONSTRUCTION USE ONLY

SHEAR WALL SCHEDULE NOTES:

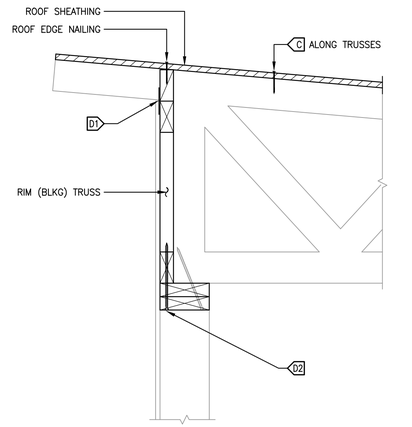
1. NOT ALL WALL TYPES SHOWN MAY BE USED ON PROJECT.
2. BLOCK ALL PANEL EDGES UNLESS NOTED OTHERWISE.
3. 7/16" OSB MAY BE INSTALLED IN PLACE OF PLYWOOD WHERE STUDS ARE SPACED A MAXIMUM OF 16" ON CENTER.
4. 3/8" STRUCTURAL I GRADE PLYWOOD MAY BE USED IF APPLIED DIRECTLY TO FRAMING AND STUDS ARE SPACED A MAXIMUM OF 16" O.C. OR PANELS ARE APPLIED WITH LONG DIMENSION ACROSS STUDS.
5. ALL DIAPHRAGM AND SHEAR WALL NAILING SHALL UTILIZE COMMON NAILS OR GALVANIZED BOX NAILS.
6. USE EITHER 1/2" OR 5/8" DIAMETER ANCHOR BOLTS. (2) ANCHOR BOLTS MIN. PER PLATE.
7. WHERE PANELS ARE APPLIED ON BOTH SIDES OF A WALL AND NAIL SPACING IS LESS THAN 6 INCHES ON CENTER ON EITHER SIDE, PANEL JOINTS SHALL BE OFFSET TO FALL ON DIFFERENT FRAMING MEMBERS AND FRAMING AT PANEL JOINTS SHALL BE 3 INCH NOMINAL OR THICKER AND NAILS ON EACH SIDE SHALL BE STAGGERED
8. A 1/2" DIA. HILTI KWIK BOLT TZ OR EQUAL MAY BE SUBSTITUTED. EMBED BOLT 2 3/4" INTO CONCRETE.
9. SHEATHING ON SHEAR WALLS SHALL NOT BE INTERUPTED BY ANY WALL BUTTING INTO SHEAR WALL. REFERENCE DETAIL 1/S4.0A.
10. SLOTTED STEEL PLATE WASHERS, 3 GA x 3" x 4 1/2" REQUIRED BETWEEN SILL PLATE AND ANCHOR BOLT NUT. PROVIDE MINIMUM SPACING FROM WASHER TO F.O. BOTTOM PLATE ON SHEATHING SIDE AS SHOWN.
11. ALL FRAMING MEMBERS RECEIVING EDGE NAILING FROM ABUTTING PANELS W/ NAIL SPACING 3" AND LESS SHALL NOT BE LESS THAN A SINGLE 3–INCH NOMINAL MEMBER. PLYWOOD JOINT AND SILL PLATE NAILING SHALL BE STAGGERED. SEE DETAIL 2/S4.0A.
12. ALL DIAPHRAGM AND SHEAR WALL NAILING SHALL UTILIZE COMMON NAILS OR GALVANIZED BOX NAILS.
13. AT INTERIOR SHEAR WALLS, PROVIDE SIMPSON A35 CLIPS AT SPACING SPECIFIED IN THIS ROW IN LIEU OF LPT4 CLIPS.

1 S5.0 NOT USED — 1 1/2"=1'-0"

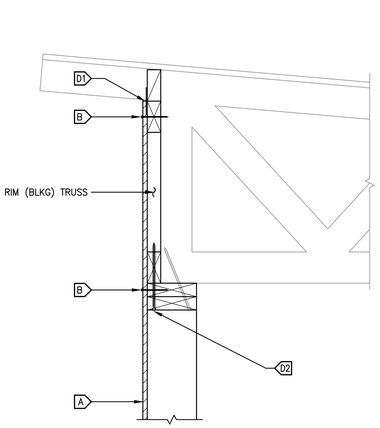
2 S5.0 NOT USED — 1 1/2"=1'-0"

3 S5.0 NOT USED — 1 1/2"=1'-0"

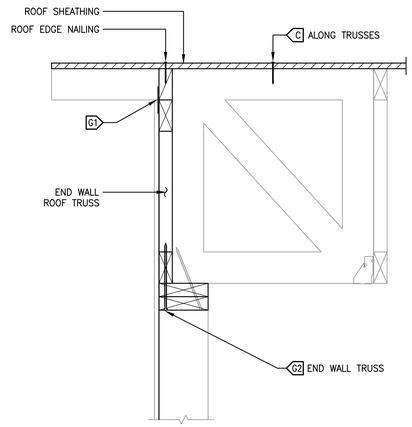
4 S5.0 NOT USED — 1 1/2"=1'-0"



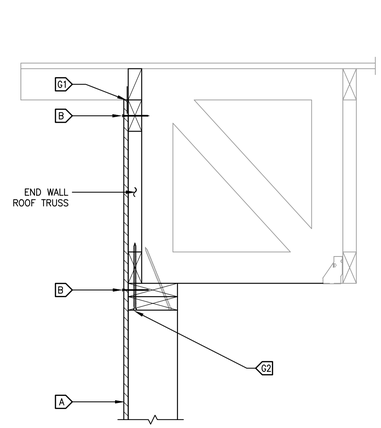
5 S5.0 ROOF SHEATHING — 1 1/2"=1'-0" — FOR STATE REVIEW



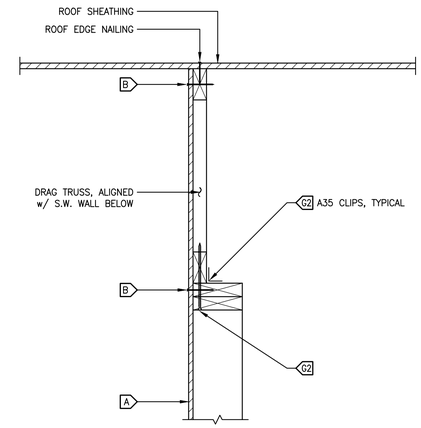
6 S5.0 WALL SHEATHING (COORD w/ SCHEDULE) — 1 1/2"=1'-0" — FOR STATE REVIEW



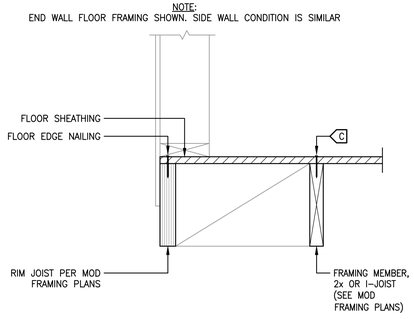
7 S5.0 ROOF SHEATHING — 1 1/2"=1'-0" — FOR STATE REVIEW



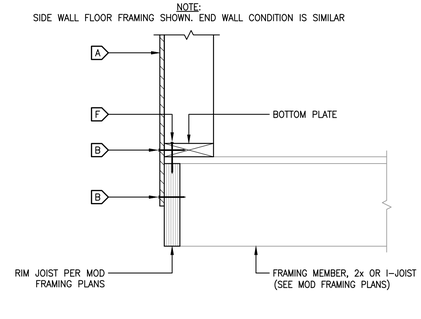
8 S5.0 WALL SHEATHING (COORD w/ SCHEDULE) — 1 1/2"=1'-0"



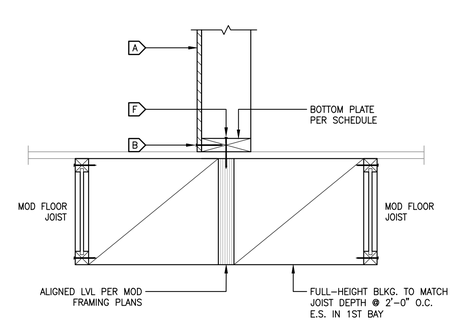
9 S5.0 INTERIOR SHEAR WALL SHEATHING — 1 1/2"=1'-0"



10 S5.0 FLOOR SHEATHING — 1 1/2"=1'-0" — FOR STATE REVIEW

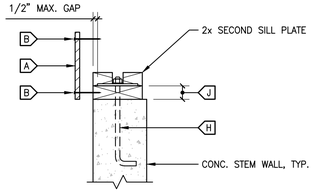


11 S5.0 WALL SHEATHING TO WALL — 1 1/2"=1'-0" — FOR STATE REVIEW



12 S5.0 --- — 1 1/2"=1'-0" — FOR STATE REVIEW

13 S5.0 NOT USED — 1 1/2"=1'-0" — FOR LOCAL REVIEW



14 S5.0 FOUNDATION ANCHORAGE — 1 1/2"=1'-0" — FOR LOCAL REVIEW

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STRUCTURAL REGISTERED PROFESSIONAL ENGINEER 76768PE OREGON MARCH 10, 2006 RYAN HARDIE

RENEWS: 6.30.2025

CLACKAMAS EMERGENCY SHELTER
16590 SE 114TH AVE
CLACKAMAS, OR

MOD LATERAL DETAILS

ISSUE: FOR STATE & LOCAL PERMIT 01.04.24

DATE: 01.03.24
SHEET SIZE: 24x36
DRAWN BY: WM, RH
CHK'D BY: RH

SHEET S5.0

PROJECT #: 23444.00

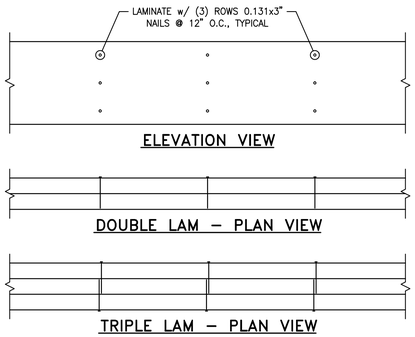
STATE / LOCAL REVIEW

STATE / LOCAL REVIEW

1. PRE-MANUFACTURED TRUSS PER MOD FRAMING PLAN. EXTEND TOP CHORD FOR EAVE CONSTRUCTION (SEE ARCH. FOR TRUSS GEOMETRY INFORMATION)
2. PRE-MANUFACTURED BLOCKING (RIM) TRUSS, HOLD DOWN TOP CHORD AS REQ. FOR TYP. ROOF TRUSS TOP CHORD EXTENSION
3. END WALL BLOCKING TRUSS. EXTEND TOP CHORD FOR EAVE CONSTRUCTION (SEE ARCH. FOR TRUSS GEOMETRY INFORMATION)
4. SIMPSON SDWC SCREW PER MOD SHEAR WALL SCHEDULE
5. SIMPSON SDWC15600 SCREW INTO EA TRUSS/TRUSS BLCOKING
6. (2) 2x6 TOP PLATE, TYP.
7. SIDE WALL RIM JOIST PER MOD FRAMING PLAN
8. END WALL RIM JOIST PER MOD FRAMING PLAN
9. FLOOR JOIST PER MOD FRAMING PLAN
10. FULL-HEIGHT BLOCKING @ 2'-0" O.C. IN 1ST BAY TO MATCH JOIST DEPTH
11. (3) 0.131 x 3" END NAILS, RIM JOIST TO EACH ROOF/CLG/FLR JOIST. WHERE MUTIPLE LAM RIMS ARE SPECIFIED, LAMINATE MEMBERS PER DETAIL 6/S5.1 & NAIL TO JOISTS THROUGH INNER RIM, TYPICAL
12. SIMPSON IUS2.06/11.88 TOP-MOUNT HANGER
13. SIMPSON LUS FACE-MOUNT HANGER
14. HOLD BACK WALL SHEATHING 4 1/2" FROM BOTTOM OF MOD

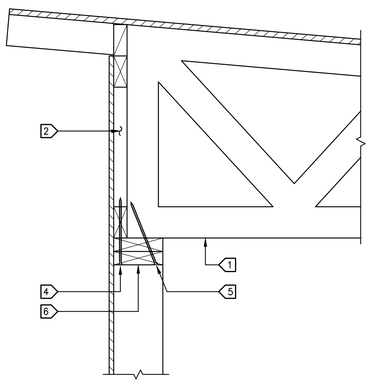
1 S5.1 MOD FRAMING SECTION KEYNOTES

NO SCALE — KEYNOTES ARE TYPICAL FOR ALL DETAILS THIS SHEET



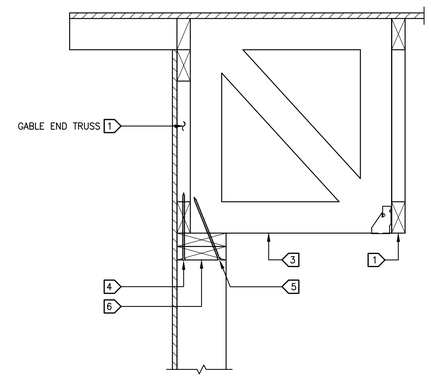
2 S5.1 TRUSSED ROOF AT SIDE WALL

1 1/2"=1'-0" — FOR STATE REVIEW



3 S5.1 TRUSSED ROOF AT END WALL

1 1/2"=1'-0" — FOR STATE REVIEW



4 S5.1 NOT USED

1 1/2"=1'-0"

5 S5.1 NOT USED

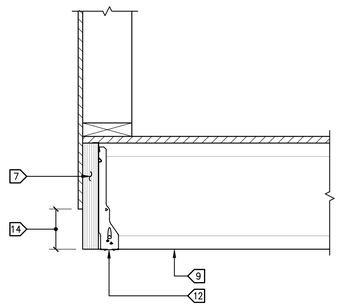
1 1/2"=1'-0"

6 S5.1 TYP. NAILING FOR LAMINATED RIMS/BEAMS

1 1/2"=1'-0" — FOR STATE REVIEW

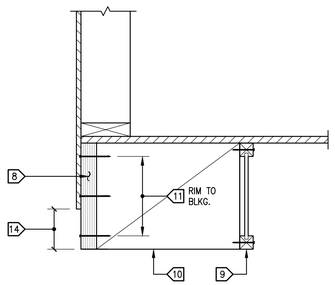
7 S5.1 NOT USED

1 1/2"=1'-0"



8 S5.1 NOT USED

1 1/2"=1'-0"



9 S5.1 NOT USED

1 1/2"=1'-0"

10 S5.1 NOT USED

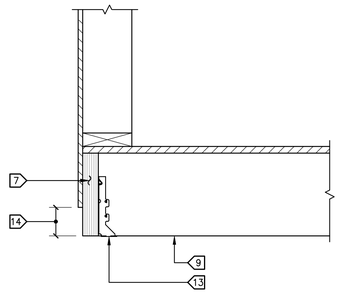
1 1/2"=1'-0"

11 S5.1 NOT USED

1 1/2"=1'-0"

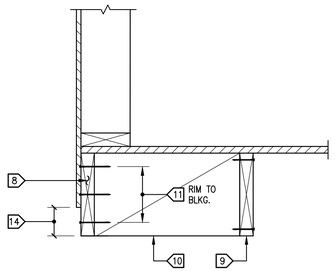
12 S5.1 FLOOR SECTION AT SIDE WALL

1 1/2"=1'-0" — FOR STATE REVIEW



13 S5.1 FLOOR SECTION AT END WALL

1 1/2"=1'-0" — FOR STATE REVIEW



14 S5.1 NOT USED

1 1/2"=1'-0"

15 S5.1 NOT USED

1 1/2"=1'-0"

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STRUCTURAL REGISTERED PROFESSIONAL ENGINEER 76768PE OREGON MARCH 10, 2006 RYAN HARDIE

RENEWS: 6.30.2025

CLACKAMAS EMERGENCY SHELTER
16590 SE 114TH AVE
CLACKAMAS, OR

MOD FABRICATION DETAILS

ISSUE: FOR STATE & LOCAL PERMIT 01.04.24

DATE: 01.03.24
SHEET SIZE: 24x36
DRAWN BY: WM, RH
CHK'D BY: RH

SHEET
S5.1

PROJECT #:
23444.00

STATE REVIEW

STATE REVIEW

MOD FRAMING NOTES

A. VERIFY ALL MOD ROUGH FRAMING DIMENSIONS & WALL TYPES w/ ARCHITECT PRIOR TO MOD FABRICATION.

B. TYPICAL SLEEP/BATH MOD UNITS SHOWN (NOTE: MODS MAY BE IN OPPOSITE CONFIGURATION ALONG LONGITUDINAL DIRECTION). CONFIRM ALL FINAL MOD CONFIGURATIONS w/ ARCH PRIOR TO START OF CONSTRUCTION.

C. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL REQUIREMENTS FOR FIREBLOCKING, FIRESTOPS & RATED ASSEMBLIES.

D. DETAIL REFERENCES ON FLOOR & CEILING FRAMING PLANS ARE TYPICAL FOR WALL FRAMING PLANS.

E. MOD FLOOR SHEATHING IS TO BE (1) LAYER 3/4" OSB w/ 0.131"ø x 2 1/2" NAILS @ 6" O.C. EDGES & 12" O.C. FIELD, TYP. U.N.O.

F. MOD WALL SHEATHING TO BE 1/2" PLYWOOD OR OSB. SEE SHEAR WALL SCHEDULE, SHEET S5.0 FOR NAILING, CLIP & PLATE REQUIREMENTS AT SPECIFIED SHEAR PANELS. AT NON-SHEAR WALL LOCATIONS, NAILING TO BE 0.131"ø x 2 1/2" NAILS @ 6" O.C. EDGES & 12" O.C. FIELD, TYP.

G. MOD ROOF SHEATHING IS TO BE 5/8" PLYWOOD OR OSB w/ 0.148"ø x 2 1/2" NAILS @ 6" O.C. EDGES & 12" O.C. FIELD.

H. SEE DETAIL 13/S4.0 FOR TYPICAL DOOR / WINDOW FRAMING.

J. 2x8 DF#2 DR/WIN HEADERS TYPICAL U.N.O. ON PLAN

K. AT HOLD DOWN LOCATIONS SPECIFIED ON FRAMING PLAN PROVIDE IN-WALL SOLID-SAWN POST PER HOLD DOWN SCHEDULE AT LOCATIONS INDICATED. LAMINATED STUD NAILING TO BE PER DETAIL 7/S4.0 U.N.O. SEE ASSEMBLY PLANS FOR ADDITIONAL INFORMATION.

MOD FRAMING PLAN LEGEND

WOOD STUD WALL: 2x @ 16" O.C. TYP. U.N.O. COORDINATE FRAMED WALL CONSTRUCTION w/ ARCH. DRAWINGS.

SHEAR WALL: SHEATHING & NAILING TO BE PER MOD SHEAR WALL SCHEDULE, SHEET S5.0.

H.D. LOCATION, SEE PLAN NOTE 'J'

ROOF TRUSS

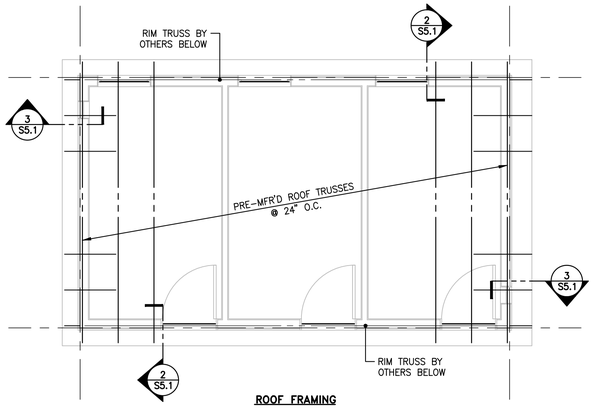
ROOF TRUSS

RIM JOIST OR WOOD BEAM

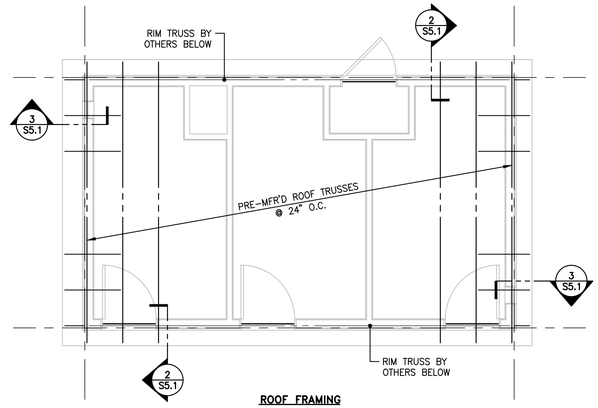
ROOF TRUSS DESIGN CRITERIA	
LOADING DESCRIPTION	LOADS
BOTTOM CHORD DEAD LOAD	6 PSF
TOP CHORD DEAD LOAD	10 PSF (+ 5 PSF)*
TOP CHORD LOAD	25 PSF SNOW
WIND SPEED	97 MPH
EXPOSURE	B
SHEAR TRUSS LATERAL LOAD	N/A

NOTE (*):

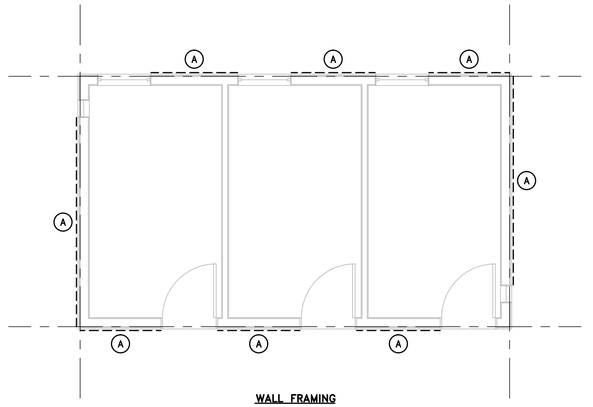
INCLUDE 5 PSF COLLATERAL LOAD FOR 'SOLAR READY ZONE'. COLLATERAL LOAD SHALL BE INCLUDED FOR ENTIRE ROOF.



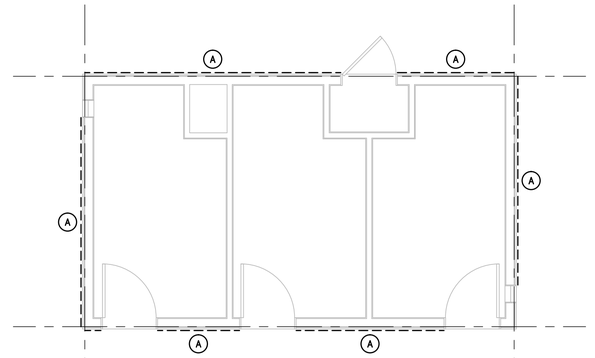
ROOF FRAMING



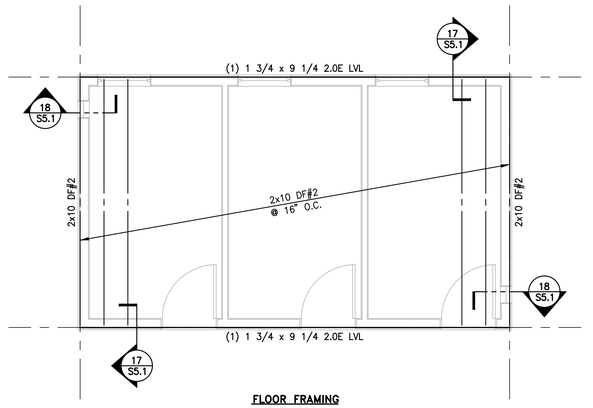
ROOF FRAMING



WALL FRAMING

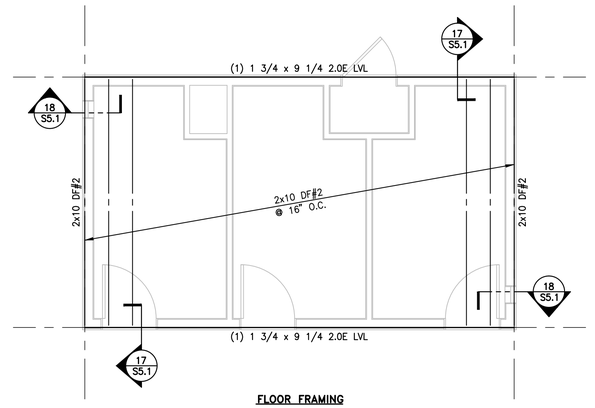


WALL FRAMING



FLOOR FRAMING

1 S6.0A MOD FRAMING PLANS – SLEEPING UNIT
1/4" = 1'-0"



FLOOR FRAMING

2 S6.0A MOD FRAMING PLANS – BATHROOM UNIT
1/4" = 1'-0"

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STRUCTURAL REGISTERED PROFESSIONAL ENGINEER 76768PE OREGON MARCH 10, 2006 RYAN HARDIE

RENEWS: 6.30.2025

CLACKAMAS EMERGENCY SHELTER
16590 SE 114TH AVE
CLACKAMAS, OR

SLEEPING & BATHROOM UNIT
MOD FRAMING PLANS

ISSUE: FOR STATE & LOCAL PERMIT 01.04.24

DATE: 01.03.24
SHEET SIZE: 24x36
DRAWN BY: WM, RH
CHK'D BY: RH

SHEET
S6.0A

PROJECT #:
23444.00

MOD FRAMING NOTES

A. VERIFY ALL MOD ROUGH FRAMING DIMENSIONS & WALL TYPES w/ ARCHITECT PRIOR TO MOD FABRICATION.

B. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL REQUIREMENTS FOR FIREBLOCKING, FIRESTOPS & RATED ASSEMBLIES.

C. DETAIL REFERENCES ON FLOOR & CEILING FRAMING PLANS ARE TYPICAL FOR WALL FRAMING PLANS.

D. MOD FLOOR SHEATHING IS TO BE (1) LAYER 3/4" OSB w/ 0.131"ø x 2 1/2" NAILS @ 6" O.C. EDGES & 12" O.C. FIELD, TYP. U.N.O.

E. MOD WALL SHEATHING TO BE 1/2" PLYWOOD OR OSB. SEE SHEAR WALL SCHEDULE, SHEET S5.0 FOR NAILING, CLIP & PLATE REQUIREMENTS AT SPECIFIED SHEAR PANELS. AT NON-SHEAR WALL LOCATIONS, NAILING TO BE 0.131"ø x 2 1/2" NAILS @ 6" O.C. EDGES & 12" O.C. FIELD, TYP.

F. MOD ROOF SHEATHING IS TO BE 5/8" PLYWOOD OR OSB w/ 0.148"ø x 2 1/2" NAILS @ 6" O.C. EDGES & 12" O.C. FIELD.

G. SEE DETAIL 13/S4.0 FOR TYPICAL DOOR / WINDOW FRAMING.

H. 2x8 DF#2 DR/WIN HEADERS TYPICAL U.N.O. ON PLAN. SEE DETAIL 12/S4.0.

J. AT HOLD DOWN LOCATIONS SPECIFIED ON FRAMING PLAN PROVIDE IN-WALL SOLID-SAWN POST PER HOLD DOWN SCHEDULE AT LOCATIONS INDICATED. LAMINATED STUD NAILING TO BE PER DETAIL 7/S4.0 U.N.O. SEE ASSEMBLY PLANS FOR ADDITIONAL INFORMATION.

MOD FRAMING PLAN LEGEND

WOOD STUD WALL: 2x @ 16" O.C. TYP. U.N.O. COORDINATE FRAMED WALL CONSTRUCTION w/ ARCH. DRAWINGS.

SHEAR WALL: SHEATHING & NAILING TO BE PER MOD SHEAR WALL SCHEDULE, SHEET S5.0.

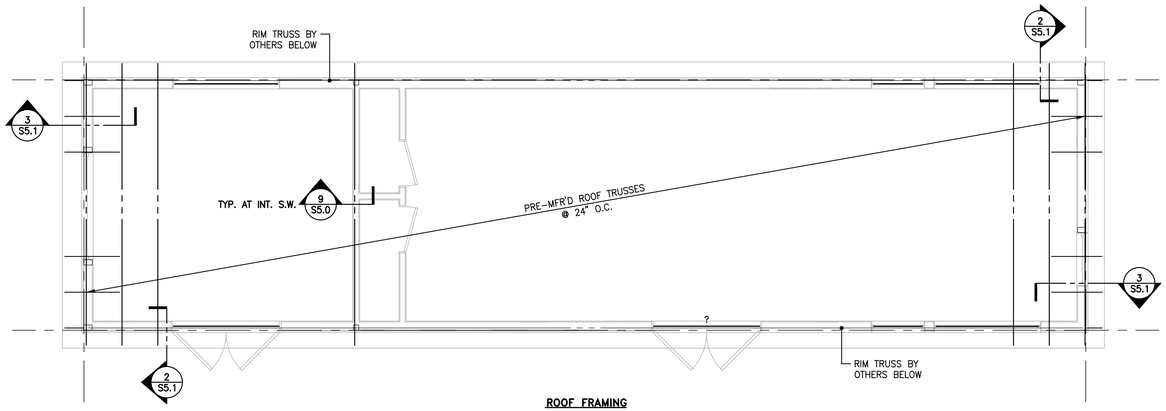
H.D. LOCATION, SEE PLAN NOTE 'J'

F.T.

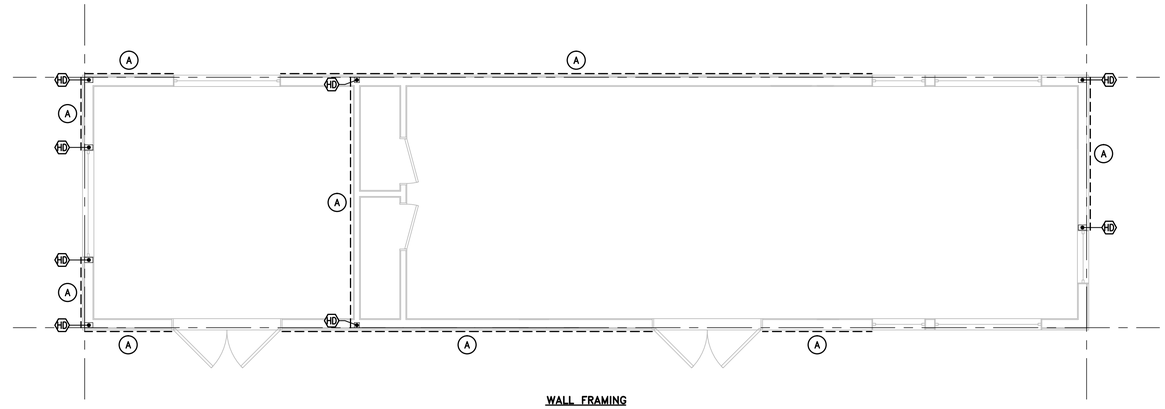
ROOF TRUSS

ROOF TRUSS

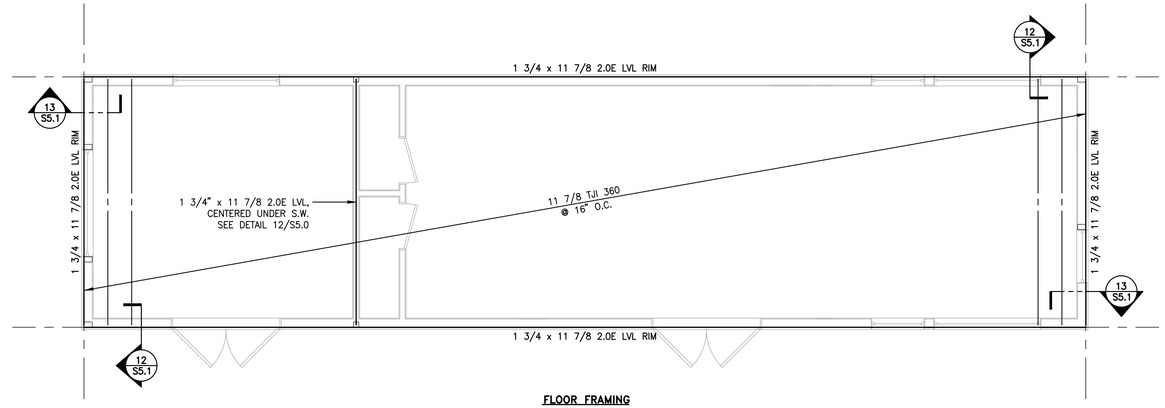
RIM JOIST OR WOOD BEAM



ROOF FRAMING



WALL FRAMING



FLOOR FRAMING

1 S6.0B MOD FRAMING PLANS – KITCHEN/DINING UNIT

1/4" = 1'-0"

ROOF TRUSS DESIGN CRITERIA	
LOADING DESCRIPTION	LOADS
BOTTOM CHORD DEAD LOAD	6 PSF
TOP CHORD DEAD LOAD	10 PSF (+ 5 PSF)*
TOP CHORD LOAD	25 PSF SNOW
WIND SPEED	97 MPH
EXPOSURE	B
SHEAR TRUSS LATERAL LOAD	1,750# (ASD)

NOTE (*):

INCLUDE 5 PSF COLLATERAL LOAD FOR 'SOLAR READY ZONE'. COLLATERAL LOAD SHALL BE INCLUDED FOR ENTIRE ROOF.

ALLSTRUCTURE ENGINEERING
16535 SW 72nd Ave
Portland, OR 97224
503.620.4314
www.allstructure.com

STRUCTURAL REGISTERED PROFESSIONAL ENGINEER 76768PE OREGON MARCH 10, 2006 RYAN HARDIE

RENEWS: 6.30.2025

CLACKAMAS EMERGENCY SHELTER
16590 SE 114TH AVE
CLACKAMAS, OR

KITCHEN/DINING UNIT
MOD FRAMING PLANS

ISSUE: FOR STATE & LOCAL PERMIT 01.04.24

DATE: 01.03.24
SHEET SIZE: 24x36
DRAWN BY: WM, RH
CHK'D BY: RH

SHEET
S6.0B

PROJECT #:
23444.00

MOD FRAMING NOTES

A. VERIFY ALL MOD ROUGH FRAMING DIMENSIONS & WALL TYPES w/ ARCHITECT PRIOR TO MOD FABRICATION.

B. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL REQUIREMENTS FOR FIREBLOCKING, FIRESTOPS & RATED ASSEMBLIES.

C. DETAIL REFERENCES ON FLOOR & CEILING FRAMING PLANS ARE TYPICAL FOR WALL FRAMING PLANS.

D. MOD FLOOR SHEATHING IS TO BE (1) LAYER 3/4" OSB w/ 0.131"ø x 2 1/2" NAILS @ 6" O.C. EDGES & 12" O.C. FIELD, TYP. U.N.O.

E. MOD WALL SHEATHING TO BE 1/2" PLYWOOD OR OSB. SEE SHEAR WALL SCHEDULE, SHEET S5.0 FOR NAILING, CLIP & PLATE REQUIREMENTS AT SPECIFIED SHEAR PANELS. AT NON-SHEAR WALL LOCATIONS, NAILING TO BE 0.131"ø x 2 1/2" NAILS @ 6" O.C. EDGES & 12" O.C. FIELD, TYP.

F. MOD ROOF SHEATHING IS TO BE 5/8" PLYWOOD OR OSB w/ 0.148"ø x 2 1/2" NAILS @ 6" O.C. EDGES & 12" O.C. FIELD.

G. SEE DETAIL 13/S4.0 FOR TYPICAL DOOR / WINDOW FRAMING.

H. 2x8 DF#2 DR/WIN HEADERS TYPICAL U.N.O. ON PLAN. SEE DETAIL 12/S4.0.

J. AT HOLD DOWN LOCATIONS SPECIFIED ON FRAMING PLAN PROVIDE IN-WALL SOLID-SAWN POST PER HOLD DOWN SCHEDULE AT LOCATIONS INDICATED. LAMINATED STUD NAILING TO BE PER DETAIL 7/S4.0 U.N.O. SEE ASSEMBLY PLANS FOR ADDITIONAL INFORMATION.

MOD FRAMING PLAN LEGEND

WOOD STUD WALL: 2x @ 16" O.C. TYP. U.N.O. COORDINATE FRAMED WALL CONSTRUCTION w/ ARCH. DRAWINGS.

SHEAR WALL: SHEATHING & NAILING TO BE PER MOD SHEAR WALL SCHEDULE, SHEET S5.0.

H.D. LOCATION, SEE PLAN NOTE 'J'

ROOF TRUSS

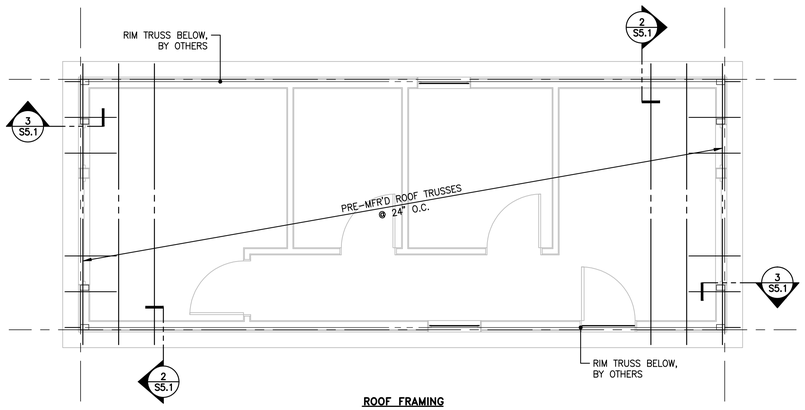
ROOF TRUSS

RIM JOIST OR WOOD BEAM

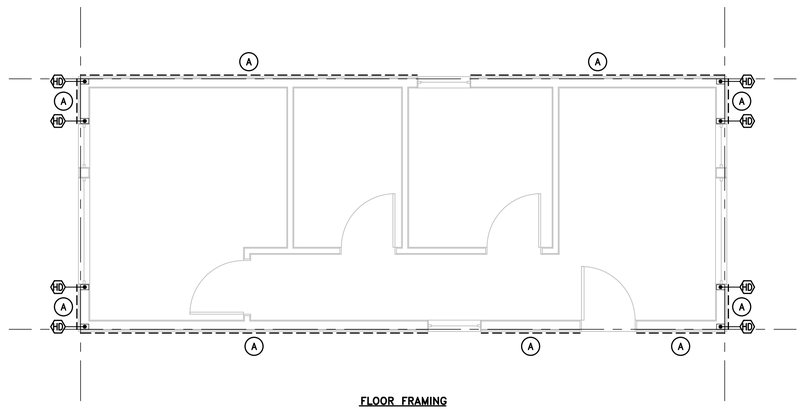
ROOF TRUSS DESIGN CRITERIA	
LOADING DESCRIPTION	LOADS
BOTTOM CHORD DEAD LOAD	6 PSF
TOP CHORD DEAD LOAD	10 PSF (+ 5 PSF)*
TOP CHORD LOAD	25 PSF SNOW
WIND SPEED	97 MPH
EXPOSURE	B
SHEAR TRUSS LATERAL LOAD	N/A

NOTE (*):

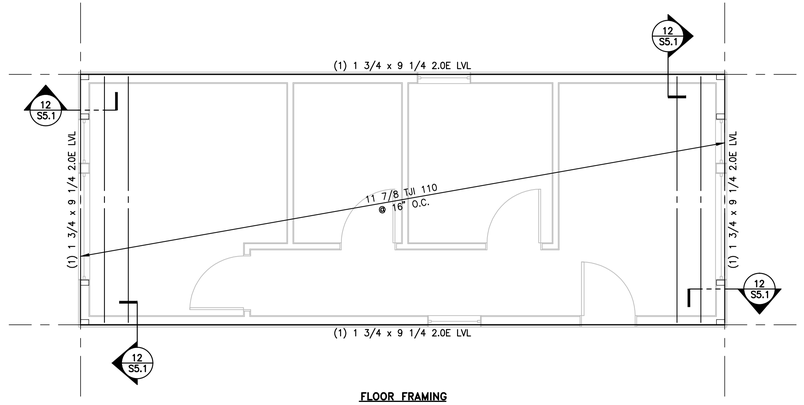
INCLUDE 5 PSF COLLATERAL LOAD FOR "SOLAR READY ZONE". COLLATERAL LOAD SHALL BE INCLUDED FOR ENTIRE ROOF.



ROOF FRAMING



FLOOR FRAMING



FLOOR FRAMING

1 S6.0C MOD FRAMING PLANS – OFFICE MOD 1

1/4" = 1'-0"

ALLSTRUCTURE ENGINEERING
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STRUCTURAL REGISTERED PROFESSIONAL ENGINEER 76768PE OREGON MARCH 10, 2006 RYAN HARDIE

RENEWS: 6.30.2025

CLACKAMAS EMERGENCY SHELTER
16590 SE 114TH AVE
CLACKAMAS, OR

OFFICE UNIT 1
MOD FRAMING PLANS

ISSUE: FOR STATE & LOCAL PERMIT 01.04.24

DATE: 01.03.24
SHEET SIZE: 24x36
DRAWN BY: WM, RH
CHK'D BY: RH

SHEET
S6.0C

PROJECT #:
23444.00

MOD FRAMING NOTES

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MOD FRAMING PLAN LEGEND

- WOOD STUD WALL: 2x @ 16" O.C. TYP. U.N.O. COORDINATE FRAMED WALL CONSTRUCTION w/ ARCH. DRAWINGS.
- SHEAR WALL: SHEATHING & NAILING TO BE PER MOD SHEAR WALL SCHEDULE, SHEET S5.0.
- H.D. LOCATION, SEE PLAN NOTE 'J'
- ROOF TRUSS
- ROOF TRUSS
- RIM JOIST OR WOOD BEAM

ROOF TRUSS DESIGN CRITERIA	
LOADING DESCRIPTION	LOADS
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TOP CHORD LOAD	25 PSF SNOW
WIND SPEED	97 MPH
EXPOSURE	B
SHEAR TRUSS LATERAL LOAD	N/A

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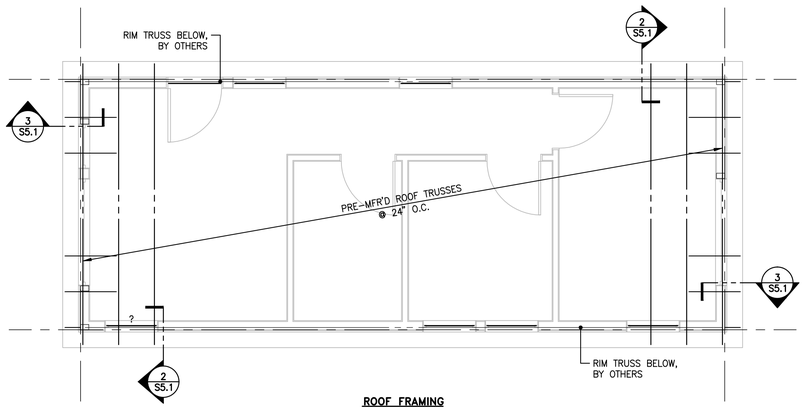
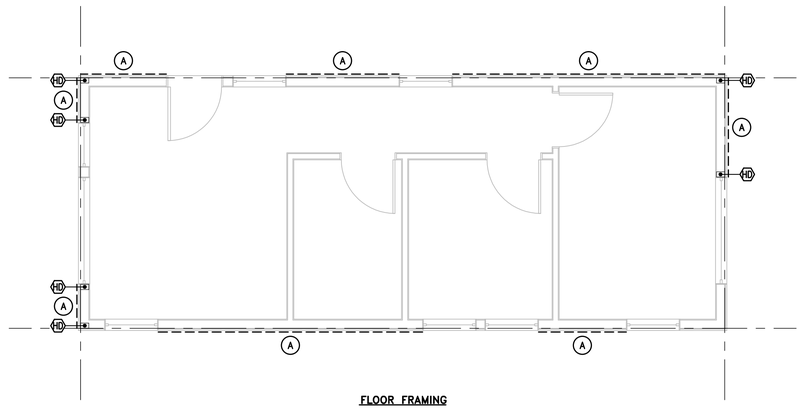
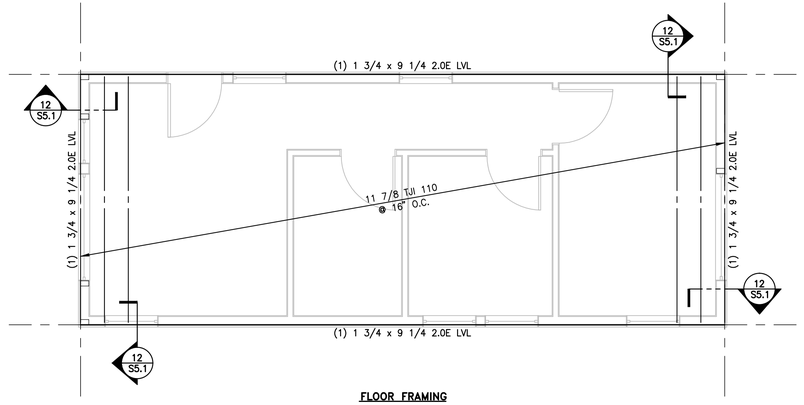


ROOF FRAMING



FLOOR FRAMING



FLOOR FRAMING

1 S6.00 MOD FRAMING PLANS – OFFICE MOD 2

1/4" = 1'-0"

ALLSTRUCTURE ENGINEERING
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STRUCTURAL REGISTERED PROFESSIONAL ENGINEER 76768PE OREGON MARCH 10, 2006 RYAN HARDIE

RENEWS: 6.30.2025

CLACKAMAS EMERGENCY SHELTER
16590 SE 114TH AVE
CLACKAMAS, OR

OFFICE UNIT 2
MOD FRAMING PLANS

ISSUE: FOR STATE & LOCAL PERMIT 01.04.24

DATE: 01.03.24
SHEET SIZE: 24x36
DRAWN BY: WM, RH
CHK'D BY: RH

SHEET

S6.0D

PROJECT #:
23444.00

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 04/08/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Parker, Smith & Feek Insurance, LLC. 3700 Centerpoint Drive, Suite 102 Anchorage, AK 99503	**CONTACT NAME:** **PHONE (A/C, No, Ext):** 907-562-2225 **FAX (A/C, No):** 907-561-2504 **E-MAIL ADDRESS:**
	INSURER(S) AFFORDING COVERAGE / **NAIC #**
	INSURER A : Upland Specialty Insurance Company
INSURED ASA Construction LLC PO Box 699 Estacada, OR 97023	**INSURER B :** Ohio Security Insurance Company **INSURER C :** SAIF Corporation **INSURER D :** **INSURER E :** **INSURER F :**

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	**GENERAL LIABILITY** [x] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS-MADE [x] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [x] POLICY [ ] PRO-JECT [ ] LOC	X		USPCL0067923 General Liability	06/01/2023	06/01/2024	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 100,000 $ Excluded $ 1,000,000 $ 2,000,000 $ 2,000,000
B	**AUTOMOBILE LIABILITY** [ ] ANY AUTO [ ] ALL OWNED AUTOS [x] SCHEDULED AUTOS [x] HIRED AUTOS [x] NON-OWNED AUTOS			BAS2459159769	06/01/2023	06/01/2024	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
	[ ] **UMBRELLA LIAB** [ ] OCCUR [ ] **EXCESS LIAB** [ ] CLAIMS-MADE [ ] DED [ ] RETENTION $						EACH OCCURRENCE AGGREGATE	$ $
C	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? **Y / N** [ ] **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	**N / A**		100024580 Workers' Compensation	06/01/2023	06/01/2024	[x] WC STATU-TORY LIMITS [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ 1,000,000 $ 1,000,000 $ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

H3S Contract - Project Name: New Clackamas Village Project; Project Address: 16575 SE 115th Ave, Clackamas, OR 97015.

Clackamas County and Clackamas County – Health, Housing & Human Services Department are additional insureds on the general liability policy per the attached endorsement/form.

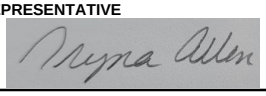
CERTIFICATE HOLDER

Clackamas County
11750 SE 82nd Ave. Suite D
Happy Valley, OR 97086

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE



THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – SCHEDULED PERSON OR ORGANIZATION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s)	Location(s) Of Covered Operations
Any person or organization when you have agreed in a written and executed contract, prior to an "occurrence", that such person or organization be added as an additional insured on your policy.	All locations and completed operations for which you have agreed in a written and executed contract prior to an "occurrence."
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or

2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured(s) at the location(s) designated above.

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and

2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to "bodily injury" or "property damage" occurring after:

1. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or

2. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

INVITATION TO BID - Questions and Answers
New Clackamas Village Project
January 30, 2024

Clackamas County ("County"), on behalf of Housing and Community Development Division, through their Board of County Commissioners is accepting sealed bids for the New Clackamas Village Project until **March 5, 2024, 2:00 PM,** Pacific Time, ("Bid Closing"). Development of an emergency housing village on a vacant lot. Structures to be built offsite through modular construction process consisting of a kitchen module, two office modules, two bathroom modules, and eight sleeping modules. All units will be accessible by site built ramps and decks that are site built. Site work includes all foundations, utilities, storm ponds and paved areas. The project site is located at 16575 SE 115th Ave, Clackamas, OR 97015.

Bid Questions and Answers:

Q1. BOLI Rates are not in the bid docs?
A1. There is a link to the January 5, 2024 BOLI site and rates. The work will be in Clackamas County.

Q2. Are pages missing from the specs and plans?
A2. No pages are missing. Attached to this addendum are revised page numbers:
The Table of Contents page numbers on the plans are incorrect:

1. The Civil pages are all included just labeled as C vs. ESC. Additionally the Erosion Sediment Control permit drawings and Stormwater Management Report have been added as an additional drawing set that will be used for the Clackamas County Permit. This information needs to be accounted for in the excavation costs.

2. Spec pages for Architectural A003, A004 and A005

A001	SITE PLAN
A002	MODEL IMAGES - FOR REFERENCE ONLY
A003	SPECIFICATIONS DIVISIONS 1-6
A004	SPECIFICATIONS DIVISIONS 7-8
A005	SPECIFICATIONS DIVISIONS 9-33
A101	OFFICE - FLOOR PLAN & FOUNDATION PLAN
A102	OFFICE - RCP & ROOF PLAN
A103	OFFICE - BUILDING ELEVATIONS & WINDOW SCHEDULES
A104	OFFICE - BUILDING SECTION & INTERIOR ELEVATIONS
A111	KITCHEN - PLANS & WALL TYPES
A112	KITCHEN - BUILDING ELEVATIONS & WINDOW SCHEDULES
A113	KITCHEN - BUILDING SECTION & INTERIOR ELEVATIONS
A121 (A120)	SLEEPING MODULE - PLANS & WALL TYPES
A122 (A121)	SLEEPING MODULE - BUILDING ELEVATIONS & WINDOW SCHEDULES
~~A123 (NOT USED)~~	~~SLEEPING MODULE - BUILDING SECTION & INTERIOR ELEVATIONS~~
A131 (A130)	BATH MODULE - PLANS & WALL TYPES
A132 (A131)	BATH MODULE - BUILDING ELEVATIONS & WINDOW SCHEDULES
~~A133 (NOT USED)~~	~~BATH MODULE - BUILDING SECTION & INTERIOR ELEVATIONS~~

The 'C' drawings that were attached in the original PDF:

C0.00 COVER SHEET
C0.10 GENERAL NOTES
C0.11 GENERAL NOTES
C EXISTING CONDITIONS & DEMOLITION PLAN
C2.00 SITE LAYOUT PLAN
C2.10 SITE LAYOUT DETAILS
C3.00 GRADING PLAN
C3.10 FINE GRADING PLAN
C4.00 STORMWATER DRAINAGE PLAN
C4.10 STORMWATER DRAINAGE DETAILS
C5.00 UTILITY PLAN
C5.10 UTILITY DETAILS

The 'ESC' drawings added today:

ESC -000 EROSION AND SEDIMENT CONTROL COVER SHEET
ESC-100 EXISTING CONDITIONS AND DEMOLITION PLAN
ESC-150 MASS GRADING EROSION CONTROL PLAN
ESC-200 GRADING, STREET, AND UTILITIES EROSION CONTROL PLAN
ESC-300 RUNOFF CONTROL PLAN
ESC-400 EROSION AND SEDIMENT CONTROL DETAILS
ESC-401 EROSION AND SEDIMENT CONTROL DETAILS

Q3.Is there a soils report? And a topo survey?
A3. Yes. Included with this addendum. A Geotech Report and a Topo Survey

Q4. Who is responsible for the survey and staking?
A4. Contractor is responsible for the survey and staking.

Q5. Div 2. What is the actual style of Fence to be constructed for the perimeter?
A5. The perimeter fence is a typical 7' ht. chain link with metal poles and metal pole top rail with a B wire, galvanized with slats.

Q6. Div 2. Fence. What is the system being proposed to attach 4 x 4 post to the concrete slab?
A6. The 4x4 post question is regarding the wood fence around the 6' ht trash enclosure. A 12" diameter concrete sono tube with a simpson CB44 bracket cast into the concrete would be sufficient.

Q7. Structural detail 1/S3.00 calls out for a "rat slab by others" in the crawlspace. Architectural calls out for 6 mil Vapor barrier. What way would you like the crawlspace finished?
A7. A 6 mil vapor barrier is sufficient.

Q8. I do not see electrical drawings. Is this a design build project?

A8. There is a lighting plan for each of the modules as a basis of design. Yes the mechanical, electrical and plumbing scopes will be design build. General Contractors are responsible for providing necessary subcontractor drawings for state and local permitting. This also includes the coordination of the underground utilities.

Q9. There was discussion of aluminum modular decks, stairs, rail, and ramps being acceptable in lue of wood framed. Please confirm.
A9. Bid will need to include concrete ramps and wood framed decks as the basis of design. A substitution of aluminum may be submitted that offers comparable slip resistance, durability, maintenance, and accessibility standards.

Q10. Is the basis of design for the modulars to be fully built offsite and connections only to be made onsite?
A10. The modules are designed to be built offsite with the majority of elements installed in the facility, but understood there will be onsite installation of the connections requiring patches in the siding.

Q11. Where is the existing power for tie ins?
A11. There is an existing power pole at the NW corner of the property. Assume an overhead line, similar to the Veterans' Village, to a meter at the office building. This has not been confirmed with PGE.

Q12. Is there anywhere we can put dirt on the hillside or is all dirt to be hauled away?
A12. Existing organic soil and clean fill can be distributed onsite as outlined by ESC drawings. Debris such as trash, abandoned materials must be removed. Final grade to be per ESC 150 for permanent erosion control measures.

Q13. Plumbing, Electrical, and Mechanical are all design build and need to procure their respective permits for this project.

A13. Yes the mechanical, electrical and plumbing scopes will be design build. General Contractors are responsible for providing necessary subcontractor drawings for state and local permitting. This also includes the coordination of the underground utilities.

Q14. C1.00 Note 4 states to remove concrete, however during the bid walk on Thursday we were told that it did not need to be removed, please clarify.

A14. Approximately 20 concrete square stones currently onsite may remain onsite. This includes leaving the foundations on the south boundary of the fence.

Q15. Is there access to the Survey, Civil, and Architectural plans in cad if awarded the project? Is the current surveyor on the project willing to continue to work with the contractor for additional services?

A15. Contractor will hire a surveyor to stake the project. A shared DWG of the Survey and Architectural plans will be shared for reference but it is the responsibility of the contractor to verify all dimensions to the printed plans.

Q16. Is there a rat slab in the crawl spaces? The architectural plans do not show it, but the structural plans do, please clarify?

A16. A 6 mil vapor barrier is sufficient rather than a concrete rat slab.

Q17. On S6.0C the structural floor system is noted as using a 9 1/4 x 1 3/4" LVL with 11 7/8" TJI's, can this rim be changed to an 11 7/8" rim to match the joist depth or the joist changed to match the rim depth?

A17. Yes.

Q18. Is there a belly band on the modular units to allow for the structural connections shown on 1/S3.0?

A18. Yes, a 5/4 x 10 primed cedar trim board acting as a belly band around the structural connection to the foundation is necessary. This will cover the plywood connection and allow the majority of the siding to be built in the facility.

Q19. On S2.0B there are holddowns shown at the end of the wall separating the kitchen from the laundry, can we introduce an additional 2x2 on the long wall towards the kitchen to allow for the unit to be sided in the shop and still achieve the structural connection in the field with minimal site siding?

A19. Yes, this is acceptable

End of Questions and Answers

Also added to Bid Docs on 2/27/24:

- Geotech Report
- Topo Survey
- Civil 23032
- Stormwater Management Report

Carlson Geotechnical

A Division of Carlson Testing, Inc.
Phone: (503) 601-8250
www.carlsontesting.com

Bend Office	**(541) 330-9155**
Eugene Office	**(541) 345-0289**
Salem Office	**(503) 589-1252**
Tigard Office	**(503) 684-3460**

Report of
Geotechnical Investigation & Infiltration Testing
Clackamas Emergency Housing
16590 SE 114th Avenue
Clackamas County, Oregon

CGT Project Number G2306020

Prepared for

Mark Sirois
Clackamas County Community Development
2051 Kaen Rd # 245
Oregon City, OR 97045

December 1, 2023

Carlson Geotechnical

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Phone: (503) 601-8250
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December 1, 2023

Mark Sirois
Clackamas County Community Development
2051 Kaen Rd # 245
Oregon City, OR 97045

Report of
Geotechnical Investigation & Infiltration Testing
Clackamas Emergency Housing
16590 SE 114th Avenue
Clackamas County, Oregon

CGT Project Number G2306020

Dear Mark Sirois:

Carlson Geotechnical (CGT), a division of Carlson Testing, Inc. (CTI), is pleased to submit this report summarizing the results of our geotechnical investigation and infiltration testing for the proposed Clackamas Emergency Housing project. The site is located at 16590 SE 114th Avenue in Clackamas County, Oregon. We performed our work in general accordance with CGT Proposal GP23-283, dated October 4, 2023. Written authorization for our services was received on October 25, 2023, in the form of Personal Services Contract H3S Contract # 11402

We appreciate the opportunity to work with you on this project. Please contact us at (503) 601-8250 if you have any questions regarding this report.

Respectfully Submitted,
CARLSON GEOTECHNICAL

EXPIRES: 6/30/2024

Ariana Tenold, G.I.T.
Geotechnical Project Manager
atenold@carlsontesting.com

Brad M. Wilcox, P.E., G.E.
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ATTACHMENTS

1.0 INTRODUCTION

Carlson Geotechnical (CGT), a division of Carlson Testing, Inc. (CTI), is pleased to submit this report summarizing the results of our geotechnical investigation and infiltration testing for the proposed Clackamas Emergency Housing project. The site is located at 16590 SE 114th Avenue in Clackamas County, Oregon, as shown on the attached Site Location, Figure 1.

1.1 Project Information

CGT developed an understanding of the proposed project based on our correspondence with Base Design + Architecture, LLC, and project documents provided to us on September 22 and 29, 2023. The documents provided included a Schematic Design Site Plan, prepared by BDA, dated July 28, 2023. Based on our review, we understand the project will include:

- Construction of four new, multi dwelling structures as well as an office and facility buildings (bathrooms, kitchen, laundry) to serve the new dwellings. The buildings will be one story, wood-framed, with a slab on grade floor. The multi dwelling structures have an approximate footprint of 960 square feet with a deck. For the purposes of this report, we have assumed maximum column, continuous wall, and uniform floor slab loads will be on the order of 25 kips, 2 kips per lineal foot (klf), and 150 pounds per square foot (psf), respectively.
- Construction of a parking lot and trash enclosure on the western portion of the site and a pathway to access the dwellings. We anticipate the parking lot will be surfaced with asphalt concrete (AC).
- Although no stormwater management plans have been provided, we understand that, if conditions allow, stormwater collected from new impervious areas of the site will be disposed of, at least in part, via onsite infiltration. Design of on-site stormwater facilities will rest with others. Two infiltration tests were requested in the northeastern and northwestern portions of the site as part of this assignment.
- Although no grading plans have been provided, we anticipate permanent grade changes at the site will be minimal, with maximum cuts and fills on the order of about 2 feet relative to existing grades.

1.2 Scope of Services

Our scope of work included the following:

- Contact the Oregon Utilities Notification Center to mark the locations of public utilities within a 20-foot radius of our explorations at the site.
- Explore subsurface conditions at the site by observing the excavation of thirteen test pits to depths of up to about 9½ feet below ground surface (bgs). Details of the subsurface investigation are presented in Appendix A.
- Conduct infiltration testing in two of the test pits. Results of the infiltration testing are presented in Appendix B.
- Classify the soils encountered in the explorations in general accordance with ASTM D2488 (Visual-Manual Procedure).
- Provide a technical narrative describing surface and subsurface deposits, and local geology of the site, based on the results of our explorations and published geologic mapping.
- Provide recommendations for the Seismic Site Class, mapped maximum considered earthquake spectral response accelerations, and site seismic coefficients.

- Provide a qualitative evaluation of seismic hazards at the site, including earthquake-induced liquefaction, landsliding, and surface rupture due to faulting or lateral spread.
- Provide geotechnical recommendations for site preparation and earthwork.
- Provide geotechnical engineering recommendations for use in design and construction of shallow foundations, floor slabs, and pavements.
- Provide this written report summarizing the results of our geotechnical investigation and recommendations for the project.

2.0 SITE DESCRIPTION

2.1 Site Geology

Based on available geologic mapping[1,2] of the area, the site is underlain by younger terrace deposits of the Clackamas River. The terrace deposits were produced by the periodic buildup of fluvial deposits about 10,000 years ago, which flank the current channel and floodplain of the Clackamas River. The terrace deposits typically consist of unconsolidated sand, gravel and cobbles. Based on nearby well logs, this unit extends to depths in excess of 100 feet below ground surface in the vicinity of the site.

2.2 Site Surface Conditions

During our field investigation, the approximate 3¾-acre site was bordered by commercial properties to the north, east and south, and an emergency housing pods facility to the west. Lithgow Creek was observed to cut across the southern portion of the site. The site was terraced; the upper portion (area of proposed site development) was relatively flat and then descended to the south at gradients of up to 1¾ horizontal to 1 vertical (1¾H:1V), to the southern portion which was also relatively flat. Partially buried structures (e.g. foundations and retaining walls) were observed near the crest of the upper terrace. A relatively large soil stockpile was observed in the eastern portion of the upper terrace. Site layout and surface conditions at the time of our field investigation are shown on the attached Site Plan (Figure 2) and Site Photographs (Figure 3).

2.3 Subsurface Conditions

2.3.1 Subsurface Investigation & Laboratory Testing

Our subsurface investigation consisted of thirteen test pits (TP-1 through TP-13) completed on November 10, 2023. While onsite we also observed and logged an additional test pit (TP-14) which had been excavated by others prior to our arrival onsite. The approximate exploration locations are shown on the Site Plan, attached as Figure 2. In summary, the test pits were excavated to depths ranging from about 3 to 9½ feet bgs. Details regarding the subsurface investigation, logs of the explorations, and results of laboratory testing are presented in Appendix A. Subsurface conditions encountered during our investigation are summarized below.

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1 Wells, R.E., Haugerud, R.A., Niem, A.R., Niem, W.A., Ma, Lina, Evarts, R.C., O'Connor, J.E., Madin, I.P., Sherrod, D.R., Beeson, M.H., Tolan, T.L., Wheeler, K.L., Hanson, W.B., and Sawlan, M.G., 2020. Geologic map of the greater Portland metropolitan area and surrounding region, Oregon and Washington: U.S. Geological Survey, Scientific Investigations Map SIM-3443. scale 1:63,360.

2 Ma, L., Madin, I.P., Duplantis, S., and Williams, K.J., 2012. Lidar-based surficial geologic map and database of the greater Portland, Oregon, area, Clackamas, Columbia, Marion, Multnomah, Washington, and Yamhill Counties, Oregon, and Clark County, Washington: Oregon Department of Geology and Mineral Industries, Open-File Report 0-2012-02, scale 1:8,000.

2.3.2 Subsurface Materials

The following describes each of the subsurface materials encountered at the site.

2.3.2.1 Site Soils

Undocumented Poorly Graded Gravel with Sand and Cobbles Fill (GP Fill)

Undocumented poorly graded gravelly fill was encountered at the surface of TP-1 through TP-12. Undocumented fill refers to materials placed without (available) records of subgrade conditions or evaluation of compaction. The poorly graded gravel fill was typically brown to gray, moist, subrounded to subangular, and contained varying amounts of cobbles up to 12-inches in diameter, and varying amounts of sand and silt fines. Varying amounts of debris was also observed within the fill soil, the debris consisted of glass, metal, plastic, concrete, brick and asphalt pieces up to 4 inches in diameter. The fill soil extended to depths of about 1 to 2½ feet bgs in TP-1 through TP-12.

Poorly Graded Gravel with Sand, Cobbles and Boulders (GP-GM)

Underlying the undocumented fill soils in TP-1 through TP-12 was native, poorly graded gravelly soil. This soil was typically dense, dark brown, moist, contained subangular gravel and cobbles up to 12-inches in diameter, a varying amount of boulders up to 18-inches in diameter, and a varying amount of silt and sand. Some caving was observed in this material at depths of about 3 to 9½ feet bgs. This soil extended to the full depth explored in TP-1 through TP-12, about 3 to 9½ feet bgs.

The native soils encountered during our subsurface investigation were consistent with the lower Clackamas River terrace deposits described in Section 2.1.

2.3.2.2 Stockpiled Soils

Exploration TP-13 and TP-14 were excavated into the existing soil stockpile that was observed on the eastern portion of the site. The log for TP-14 was based on the observations made of the sidewalls of the excavation.

Undocumented Poorly Graded Silty Gravel to Gravel with Sand Fill (GM Fill, GP Fill)

Undocumented gravelly fill was observed at the surface of TP-13 and TP-14. This soil was gray/brown to brown, moist to wet, angular to subrounded, up to 2-inches in diameter, and contained varying amounts of sand and silt. Varying amounts of debris consisting of plastic, brick, concrete and asphalt chunks up to 2 feet long. The stockpiled soil extended to a depth of about 2 feet bgs in TP-14. In TP-13, the silty gravel fill extended to the full depth explored, about 6 feet bgs.

Undocumented Silt with Sand Fill (ML Fill)

Underlying the undocumented silty gravel fill in TP-14, we observed undocumented silt with sand fill. This soil was typically gray/brown, wet, and exhibited low plasticity. This soil extended the full depth of the excavation, about 6 feet bgs.

2.3.3 Groundwater

We did not encounter groundwater within the depths explored at the site on November 10, 2023. To determine approximate regional groundwater levels in the area, we researched well logs available on the

Oregon Water Resources Department (OWRD)[3] website for wells located within Section 15, Township 2 South, Range 2 East, Willamette Meridian. Our review indicated that groundwater levels in the area generally ranged from about 45 to 65 feet bgs. It should be noted groundwater levels vary with local topography. In addition, the groundwater levels reported on the OWRD logs often reflect the purpose of the well, so water well logs may only report deeper, confined groundwater, while geotechnical or environmental borings will often report any groundwater encountered, including shallow, unconfined groundwater. Therefore, the levels reported on the OWRD well logs referenced above are considered generally indicative of local water levels and may not reflect actual groundwater levels at the project site. We anticipate that groundwater levels will fluctuate due to seasonal and annual variations in precipitation, changes in site utilization, or other factors.

The depth to groundwater map for the Portland area[4] indicates groundwater is present at depths of 30 feet bgs in the vicinity of the site. It should be noted that the levels reported by the referenced map are average values for a given location and incorporate a degree of uncertainty.

3.0 SEISMIC CONSIDERATIONS

3.1 Seismic Design

Section 1613.2.2 of the 2022 Oregon Structural Specialty Code (2022 OSSC) requires that the determination of the seismic site class be in accordance with Chapter 20 of the American Society of Civil Engineers Minimum Design Loads for Buildings and Other Structures (ASCE 7-16). We have assigned the site as Site Class D ("Stiff Soil") based on geologic mapping and subsurface conditions encountered during our investigation. Earthquake ground motion parameters for the site were obtained in accordance with the 2022 OSSC using the Seismic Hazards by Location calculator on the ATC website[5]. The site Latitude 45.401263° North and Longitude 122.54433° West were input as the site location. The following table shows the recommended seismic design parameters for the site.

Table 1 Seismic Ground Motion Values

Parameter		Value
Mapped Acceleration Parameters	Spectral Acceleration, 0.2 second (S_s)	0.833g
	Spectral Acceleration, 1.0 second (S_1)	0.368g
Coefficients (Site Class D)	Site Coefficient, 0.2 second (F_A)	1.167
	Site Coefficient, 1.0 second (F_V)[1]	1.932
Adjusted MCE Spectral Response Parameters	MCE Spectral Acceleration, 0.2 second (S_{MS})	0.972g
	MCE Spectral Acceleration, 1.0 second (S_{M1})	0.711g
Design Spectral Response Accelerations	Design Spectral Acceleration, 0.2 second (S_{DS})	0.648g
	Design Spectral Acceleration, 1.0 second (S_{D1})	0.474g
Seismic Design Category (Risk Category II)		D

[1] Value determined from 2022 OSSC Table 1613.2.3(2).

[3] Oregon Water Resources Department, 2023. Well Log Records, *accessed November 2023*, from OWRD web site: http://apps.wrd.state.or.us/apps/gw/well_log/.

[4] Snyder, D.T., 2008, Estimated depth to ground water and configuration of the water table in the Portland, Oregon area: U.S. Geological Survey, Scientific Investigations Report SIR-2008-5059, scale 1:60,000.

[5] Applied Technology Council (ATC), 2023. SGS seismic design parameters determined using "Seismic Hazards by Location," *accessed November 2023*, from the ATC website https://hazards.atcouncil.org/.

3.2 Seismic Hazards

3.2.1 Liquefaction

In general, liquefaction occurs when deposits of loose/soft, saturated, cohesionless soils, generally sands and silts, are subjected to strong earthquake shaking. If these deposits cannot drain quickly enough, pore water pressures can increase, approaching the value of the overburden pressure. The shear strength of a cohesionless soil is directly proportional to the effective stress, which is equal to the difference between the overburden pressure and the pore water pressure. When the pore water pressure increases to the value of the overburden pressure, the shear strength of the soil approaches zero, and the soil can liquefy. The liquefied soils can undergo rapid consolidation or, if unconfined, can flow as a liquid. Structures supported by the liquefied soils can experience rapid, excessive settlement, shearing, or even catastrophic failure.

For fine-grained soils, susceptibility to liquefaction is evaluated based on penetration resistance and plasticity, among other characteristics. Criteria for identifying non-liquefiable, fine-grained soils are constantly evolving. Current practice to identify non-liquefiable, fine-grained soils is based on moisture content and plasticity characteristics of the soils[6,7,8]. The susceptibility of sands, gravels, and sand-gravel mixtures to liquefaction is typically assessed based on penetration resistance, as measured using SPTs, CPTs, or Becker Hammer Penetration tests (BPTs).

Based on their dense relative density, lack of saturated conditions, static groundwater, etc., the coarse-grained soils encountered within our explorations are considered non-liquefiable. Based on review of geologic mapping and our previous experience in the area, we do not anticipate liquefiable conditions are present at depths below those explored as part of this assignment.

3.2.2 Slope Instability

We did not observe any obvious signs of past or on-going slope instability at the site. Review of the Statewide Landslide Information Database for Oregon (SLIDO), available at the DOGAMI website[9], shows no historic or prehistoric landslides at or in the immediate vicinity of the site. HazVu shows a *moderate to high* hazard for landslides at the site, however, we anticipate those hazard levels were assigned based on the on-site slope gradients. Given the lack of evidence of previous landslides in the vicinity, and our observations while onsite, the risk of seismically-induced slope instability occurring at the site is considered low. Provided our recommendations for grading and stormwater management, as described below, are followed, the proposed development is not anticipated to increase this risk.

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6 Seed, R.B. et al., 2003. Recent Advances in Soil Liquefaction Engineering: A Unified and Consistent Framework. Earthquake Engineering Research Center Report No. EERC 2003-06.

7 Bray, Jonathan D., Sancio, Rodolfo B., et al., 2006. Liquefaction Susceptibility of Fine-Grained Soils, Journal of Geotechnical and Geoenvironmental Engineering, Volume 132, Issue 9, September 2006.

8 Idriss, I.M., Boulanger, R.W., 2008. Soil Liquefaction During Earthquakes, Earthquakes Engineering Research Institute Monograph MNO-12.

9 Oregon Department of Geology and Mineral Industries, 2023. Statewide Landslide Information Database for Oregon (SLIDO), *accessed November 2023*, from DOGAMI web site: https://gis.dogami.oregon.gov/maps/slido/.

3.2.3 Surface Rupture

3.2.3.1 Faulting

Although the site is situated in a region of the country with known active faults and historic seismic activity, no known faults exist on or immediately adjacent to the site. Therefore, the risk of surface rupture at the site due to faulting is considered low.

3.2.3.2 Lateral Spread

Surface rupture due to lateral spread can occur on sites underlain by liquefiable soils that are located on or immediately adjacent to slopes steeper than about 3 degrees (20H:1V), and/or adjacent to a free face, such as a stream bank or the shore of an open body of water. During lateral spread, the materials overlying the liquefied soils are subject to lateral movement downslope or toward the free face. Based on the non-liquefiable nature of the soils at the site, the risk of damage associated with lateral spread is negligible.

4.0 CONCLUSIONS

Based on the results of our field explorations and analyses, the site may be developed as described in Section 1.1 of this report, provided the recommendations presented in this report are incorporated into the design and development. Satisfactory subgrade support for planned shallow foundations, floor slabs, and pavements can be achieved by the native, medium dense to dense, gravelly soils (GP, GP-GM), or structural fill that is properly placed and compacted on these materials during construction. These soils were encountered at depths of 1 to 2½ feet bgs within our explorations.

As indicated in Section 2.3.2 of this report, the subsurface explorations indicate the majority of the proposed development site is underlain by undocumented poorly graded gravel fill (GP Fill) containing a varying amount of refuse and construction debris and extending to depths of up to about 2½ feet bgs. Based on the presence of debris, it is evident the existing fills were not placed and compacted in accordance with typical code requirements for structural fill. Due to the risk of excessive, total and differential settlements, we do not recommend relying on the undocumented fill for support of shallow foundations, floor slabs or pavements. Where encountered at design subgrade elevations for those features, the undocumented fill materials should be over-excavated and replaced with structural fill in conformance with section 5.4 of this report.

Based on our explorations, isolated boulders may be encountered at design subgrade elevations for shallow foundations. Structural elements placed directly on boulders can result in uneven ground response. To minimize this potential, CGT recommends that boulders (i.e. particles in excess of 12-inches in diameter) encountered during foundation subgrade preparation be removed in their entirety and replaced with imported granular structural fill.

5.0 RECOMMENDATIONS

The recommendations presented in this report are based on the information provided to us, results of our field investigation and analyses, laboratory data, and professional judgment. CGT has observed only a small portion of the pertinent subsurface conditions. The recommendations are based on the assumptions that the subsurface conditions do not deviate appreciably from those found during the field investigation. CGT should be consulted for further recommendations if the design of the proposed development changes and/or variations or undesirable geotechnical conditions are encountered during site development.

5.1 Site Preparation

5.1.1 Demolition

As shown on Photograph 3 on Figure 3, partially buried remnants of former buildings were observed along the crest of the upper terrace. Demolition of remnants of former buildings and appurtenant structures should include complete removal of all structural elements, including foundations and concrete slabs, where encountered in planned building pads, structural fill areas, and pavement areas. Abandoned buried utilities should similarly be removed or grouted full. Concrete or asphalt concrete debris resulting from demolition activities may be re-used as structural fill, provided it is processed in accordance with the recommendations presented in Section 5.4.1 of this report. Alternatively, demolition debris should be hauled off site for disposal.

5.1.2 Stripping

Existing vegetation, topsoil, rooted soils, and undocumented fill (GM Fill, GP Fill) should be removed from within, and for a minimum 5-foot margin around, proposed building pad, structural fill, and pavement areas. Based on the results of our field explorations, undocumented fill encountered at the site extended to depths of up to about 2½ feet bgs. These materials may be deeper or shallower at locations away from the completed explorations. The geotechnical engineer's representative should provide recommendations for actual stripping depths based on observations during site stripping. Stripped surface vegetation and rooted soils should be transported off-site for disposal, or stockpiled for later use in landscaped areas. Stripped, inorganic fill materials should be transported off-site for disposal, or may be stockpiled for later use as structural fill as described in Section 5.4.1 of this report.

5.1.3 Grubbing

Grubbing of trees should include the removal of the root mass and roots greater than ½ inch in diameter. Grubbed materials should be transported off-site for disposal. Root masses from larger trees may extend greater than 3 feet bgs. Where root masses are removed, the resulting excavation should be properly backfilled with structural fill in conformance with Section 5.4 of this report.

5.1.4 Test Pit Backfills

The test pits conducted at the site by CGT were loosely backfilled during our field investigation. Where test pits are located within finalized building, structural fill, or pavement areas, the loose backfill materials should be re-excavated. The resulting excavations should be backfilled with structural fill in conformance with Section 5.4 of this report.

5.1.5 Existing Utilities & Below-Grade Structures

All existing utilities at the site should be identified prior to excavation. Abandoned utility lines beneath the new buildings, pavements, and hardscaping features should be completely removed or grouted full. Soft, loose, or otherwise unsuitable soils encountered in utility trench excavations should be removed and replaced with structural fill in conformance with Section 5.4 this report. Buried structures (i.e. footings, foundation walls, retaining walls, slabs-on-grade, tanks, etc.), if encountered within, and for a minimum 5-foot margin around, the proposed building pad and pavement areas, should be completely removed and replaced with structural fill in conformance with Section 5.4 of this report.

5.1.6 Subgrade Preparation Building Pads & Pavements

After site preparation as recommended above, but prior to placement of structural fill and/or aggregate base, the geotechnical engineer's representative should observe the exposed subgrade soils in order to identify areas of excessive yielding through either proof rolling or probing. Proof rolling of subgrade soils is typically conducted during dry weather using a fully-loaded, 10- to 12-cubic-yard, tandem-axle, tire-mounted, dump truck or equivalent weighted water truck. Areas of limited access or that appear too soft or wet to support proof rolling equipment should be evaluated by probing. If areas of soft soil or excessive yielding are identified, the affected material should be over-excavated to firm, unyielding subgrade, and replaced with imported granular structural fill in conformance with Section 5.4.3 of this report.

5.1.7 Erosion Control

Erosion and sedimentation control measures should be employed in accordance with applicable County and State regulations.

5.2 Temporary Excavations

5.2.1 Overview

Conventional earthmoving equipment in proper working condition should be capable of making necessary excavations for the anticipated site cuts as described earlier in this report. All excavations should be in accordance with applicable OSHA and state regulations. It is the contractor's responsibility to select the excavation methods, to monitor site excavations for safety, and to provide any shoring required to protect personnel and adjacent improvements. A "competent person," as defined by OR-OSHA, should be on-site during construction in accordance with regulations presented by OR-OSHA. CGT's current role on the project does not include review or oversight of excavation safety.

5.2.2 OSHA Soil Type

For use in the planning and construction of temporary excavations up to 10 feet in depth, an OSHA soil type "C" should be used for the granular soils (GP) encountered within our explorations.

5.2.3 Utility Trenches

As evidenced during excavation of the test pits, caving of the native gravelly soils may be encountered in excavations extending more than a few feet below the ground surface. If groundwater seepage undermines the stability of the trench, or if sidewall caving is observed during excavation, the sidewalls should be flattened or shored. Depending on the time of year trench excavations occur, trench dewatering may be required in order to maintain dry working conditions. Although not anticipated, if groundwater is encountered, we recommend placing trench stabilization material at the base of the excavations. Trench stabilization material should be in conformance with Section 5.4.4.

5.2.4 Excavations Near Foundations

Excavations near footings should not extend within a 1 horizontal to 1 vertical (1H:1V) plane projected out and down from the outside, bottom edge of the footings. In the event excavation needs to extend below the referenced plane, temporary shoring of the excavation and/or underpinning of the subject footing may be required. The geotechnical engineer should be consulted to review proposed excavation plans for this design case to provide specific recommendations.

5.3 Wet Weather Considerations

For planning purposes, the wet season should be considered to extend from late September to late June. It is our experience that dry weather working conditions should prevail between early July and mid-September.

Due to their coarse-grained nature and the relative lack of fines, the native gravelly soils (GP, GP-GM) are not considered susceptible to disturbance during wet weather. The gravelly soils are anticipated to perform well under repeated construction traffic during wet weather conditions.

Surface water should not be allowed to collect in footing excavations. The excavations should be draped and/or provided with sumps to preclude water accumulation during inclement weather.

5.4 Structural Fill

The geotechnical engineer should be provided the opportunity to review all materials considered for use as structural fill (prior to placement). Samples of the proposed fill materials should be submitted to the geotechnical engineer a minimum of 5 business days prior their use on site[10]. The geotechnical engineer's representative should be contacted to evaluate compaction of structural fill as the material is being placed. Evaluation of compaction may take the form of in-place density tests and/or proof roll tests with suitable equipment. Structural fill should be evaluated at intervals not exceeding every 2 vertical feet as the fill is being placed.

5.4.1 On-Site Soils

5.4.1.1 Concrete Debris

Concrete debris resulting from the demolition of existing buried structures and other features (foundations, retaining walls.) can be re-used as structural fill if processed/crushed into material that is fairly well-graded between coarse and fine. The processed/crushed concrete should contain no organic matter, debris, or particles larger than 4 inches in diameter. Moisture conditioning (wetting) should be expected in order to achieve adequate compaction. When used as structural fill, this material should be placed and compacted in general accordance with Section 5.4.3.

5.4.1.2 Poorly Graded Gravel (GP, GP-GM, GP Fill)

Re-use of the on-site, relatively clean, gravelly soils as structural fill is feasible, provided the materials are kept clean of organics, debris, and particles larger than 4 inches in diameter. Re-use of the on-site gravelly fill soils will likely require processing (removal) of large cobbles, occasional boulders, and debris. If reused as structural fill, these materials should be prepared in general accordance with Section 5.4.3.

5.4.2 Stockpiled Soils (GP Fill, GM Fill, ML Fill)

Re-use of the stockpiled soils (as shown on Figure 2) as structural fill may be very difficult based on the observed refuse and construction debris observed within the stockpiled soil. Re-use of the stockpiled soil will require blending of the soil to reach a homogeneous state, and processing (removal) of trash and construction debris as well as large cobbles. The moisture sensitivity of the silty soils observed in a portion of the stockpile (TP-14) should also be taken into account. These soils are sensitive to small changes in moisture content and are difficult, if not impossible, to adequately compact during wet weather. We anticipate the moisture content of these soils will be higher than the optimum moisture content for satisfactory

[10] Laboratory testing for moisture density relationship (Proctor) is required. Tests for gradation may be required.

compaction. Therefore, moisture conditioning (drying) should be expected in order to achieve adequate compaction. Where properly processed and moisture-conditioned, these materials should be placed in lifts with a maximum thickness of about 12 inches, and compacted to not less than 95 percent of the material's maximum dry density, as determined in general accordance with ASTM D1557 (Modified Proctor).

If the on-site materials cannot be properly processed, we recommend using imported granular material for structural fill.

5.4.3 Imported Granular Structural Fill General Use

Imported granular structural fill should consist of angular pit or quarry run rock, crushed rock, or crushed gravel that is fairly well graded between coarse and fine particle sizes. The granular fill should contain no organic matter, debris, or particles larger than 4 inches, and have less than 5 percent material passing the U.S. Standard No. 200 Sieve. For fine-grading purposes, the maximum particle size should be limited to 1½ inches. The percentage of fines can be increased to 12 percent of the material passing the U.S. Standard No. 200 Sieve if placed during dry weather, and provided the fill material is moisture-conditioned, as necessary, for proper compaction. Imported granular fill material should be placed in lifts with a maximum thickness of about 12 inches, and compacted to not less than 95 percent of the material's maximum dry density, as determined in general accordance with ASTM D1557 (Modified Proctor). Proper moisture conditioning and the use of vibratory equipment will facilitate compaction of these materials.

Granular fill materials with high percentages of particle sizes in excess of 1½ inches are considered non-moisture-density testable materials. As an alternative to conventional density testing, compaction of these materials should be evaluated by proof roll test observation (deflection tests), where accepted by the geotechnical engineer.

5.4.4 Trench Base Stabilization Material

If groundwater is present at the base of utility excavations, trench base stabilization material should be placed. Trench base stabilization material should consist of a minimum of 1 foot of well-graded granular material with a maximum particle size of 4 inches and less than 5 percent material passing the U.S. Standard No. 4 Sieve. The material should be free of organic matter and other deleterious material, placed in one lift, and compacted until well-keyed.

5.4.5 Trench Backfill Material

Trench backfill for the utility pipe base and pipe zone should consist of granular material as recommended by the utility pipe manufacturer. Trench backfill above the pipe zone should consist of well-graded granular material containing no organic matter or debris, have a maximum particle size of ¾ inch, and have less than 8 percent material passing the U.S. Standard No. 200 Sieve. As a guideline, trench backfill should be placed in maximum 12-inch-thick lifts. The earthwork contractor may elect to use alternative lift thicknesses based on their experience with specific equipment and fill material conditions during construction in order to achieve the required compaction. The following table presents recommended relative compaction percentages for utility trench backfill.

Table 2 Utility Trench Backfill Compaction Recommendations

Backfill Zone	Recommended Minimum Relative Compaction	
	Structural Areas[1,2]	Landscaping Areas
Pipe Base and Within Pipe Zone	90% ASTM D1557 or pipe manufacturer's recommendation	85% ASTM D1557 or pipe manufacturer's recommendation
Above Pipe Zone	92% ASTM D1557	88% ASTM D1557
Within 3 Feet of Design Subgrade	95% ASTM D1557	90% ASTM D1557

1 Includes proposed buildings, pavement areas, structural fill areas, exterior hardscaping, etc.
2 Or as specified by the local jurisdiction where located in the public right of way.

5.4.6 Controlled Low-Strength Material (CLSM)

CLSM is a self-compacting, cementitious material that is typically considered when backfilling localized areas. CLSM is sometimes referred to as "controlled density fill" or CDF. Due to its flowable characteristics, CLSM typically can be placed in restricted-access excavations where placing and compacting fill is difficult. If chosen for use at this site, we recommend the CLSM be in conformance with Section 00442 of the most recent, ODOT SSC. The geotechnical engineer's representative should observe placement of the CLSM and obtain samples for compression testing in accordance with ASTM D4832. As a guideline, for each day's placement, two compressive strength specimens from the same CLSM sample should be tested. The results of the two individual compressive strength tests should be averaged to obtain the reported 28-day compressive strength. If CLSM is considered for use on this site, please contact the geotechnical engineer for site-specific and application-specific recommendations.

5.5 Permanent Slopes

Permanent cut slopes constructed at the site should be graded at 2H:1V or flatter. The surface of all slopes should be protected from erosion by seeding, sodding, or other acceptable means. Adjacent on-site and off-site structures should be located at least 5 feet from the top of slopes. Although not anticipated for this project, in the event fill slopes are to be constructed on portions of the site exhibiting gradients steeper than 5H:1V, the geotechnical engineer should be consulted to review the proposed construction and provide specific recommendations for preparation of sloping surfaces.

5.6 Shallow Foundations

5.6.1 Subgrade Preparation

Satisfactory subgrade support for shallow foundations can be obtained from a minimum 4 inches of imported granular structural fill (granular pads) placed on the native, medium dense to dense, gravelly soils (GP, GP-GM), or new structural fill that is properly placed and compacted on these materials during construction. The granular pads are recommended to assist with fine-grading and help achieve a more uniform surface for foundation concrete.

The geotechnical engineer's representative should be contacted to observe subgrade conditions prior to placement of the granular pads. If soft, loose, or otherwise unsuitable soils are encountered, they should be over-excavated as recommended by the geotechnical representative at the time of construction. Boulders encountered within foundation excavations should similarly be removed. The resulting over-excavation(s) should be brought back to grade with imported granular structural fill in conformance with Section 5.4.3. The

maximum particle size of over-excavation backfill should be limited to 1½ inches. All granular pads for footings should be constructed a minimum of 6 inches wider on each side of the footing for every vertical foot of over-excavation.

5.6.2 Minimum Footing Width & Embedment

Minimum footing widths should be in conformance with the current OSSC. As a guideline, CGT recommends individual spread footings have a minimum width of 24 inches. For one- to two-story, light framed structures, we recommend continuous wall footings have a minimum width of 12 inches and 15 inches respectively. All footings should be founded at least 18 inches below the lowest, permanent adjacent grade to develop lateral capacity and for frost protection.

5.6.3 Horizontal Setback from Descending Slopes

Foundations constructed within or near descending slopes should be setback a minimum of 8 feet from the slope surface. This distance should be measured between the face of the slope and the bottom, outside edge of the respective foundation. Organic topsoil and loose surface soils (if present) should not be included when determining this distance. The geotechnical engineer or his representative should be contacted to observe foundation subgrade conditions and confirm this recommended minimum setback is achieved.

5.6.4 Bearing Pressure & Settlement

Footings founded as recommended above should be proportioned for a maximum allowable soil bearing pressure of 2,500 pounds per square foot (psf). This bearing pressure is a net bearing pressure, applies to the total of dead and long-term live loads, and may be increased by one-third when considering seismic or wind loads. For foundations founded as recommended above, total settlement of foundations is anticipated to be less than 1 inch. Differential settlements between adjacent columns and/or bearing walls should not exceed ½ inch. If an increased allowable soil bearing pressure is desired, the geotechnical engineer should be consulted.

5.6.5 Lateral Capacity

A maximum passive (equivalent fluid) earth pressure of 300 pounds per cubic foot (pcf) is recommended for design of footings cast neat into excavations in suitable native soil or confined by granular structural fill that is properly placed and compacted during construction. The recommended earth pressure was computed using a factor of safety of 1½, which is appropriate due to the amount of movement required to develop full passive resistance. In order to develop the above capacity, the following should be understood:

1. Concrete must be poured neat in excavations or the foundations must be backfilled with imported granular structural fill,
2. The adjacent grade must be level,
3. The static ground water level must remain below the base of the footings throughout the year.
4. Adjacent floor slabs, pavements, or the upper 12-inch-depth of adjacent, unpaved areas should not be considered when calculating passive resistance.

An ultimate coefficient of friction equal to 0.45 may be used when calculating resistance to sliding for footings founded as recommended above.

5.7 Floor Slabs

5.7.1 Subgrade Preparation

Satisfactory subgrade support for slabs constructed on grade, supporting up to 150 psf area loading, can be obtained from the native, medium dense to better, poorly graded gravel (GP, GP-GM), or new structural fill that is properly placed and compacted on these materials during construction. The geotechnical engineer's representative should observe floor slab subgrade soils to evaluate surface consistencies. If soft, loose, or otherwise unsuitable soils are encountered, they should be over-excavated as recommended by the CGT geotechnical representative at the time of construction. The resulting over-excavation should be brought back to grade with imported granular structural fill as described in Section 5.4.3.

5.7.2 Crushed Rock Base

Concrete floor slabs should be supported on a minimum 6-inch-thick layer of crushed rock (base rock).

5.7.2.1 Conventional Base Rock

Floor slab base rock should consist of well-graded granular material (crushed rock) containing no organic matter or debris, have a maximum particle size of ¾ inch, and have less than 5 percent material passing the U.S. Standard No. 200 Sieve. Floor slab base rock should be placed in one lift and compacted to not less than 95 percent of the material's maximum dry density as determined in general accordance with ASTM D1557 (Modified Proctor). We recommend "choking" the surface of the base rock with sand just prior to concrete placement. Choking means the voids between the largest aggregate particles are filled with sand, but does not provide a layer of sand above the base rock. Choking the base rock surface reduces the lateral restraint on the bottom of the concrete during curing. Choking the base rock also reduces punctures in vapor retarding membranes due to foot traffic where such membranes are used.

5.7.2.2 Gas Permeable Base Rock

Floor slab base rock in areas where radon gas mitigation is desired should consist of open-graded crushed rock containing no organic matter or debris, with all material passing through a 2-inch sieve and retained on the ¼-inch sieve, in accordance with Section 1812.2.1, Bullet 1, of the 2022 OSSC.

CGT recommends that a minimum 10-mil polyethylene sheeting or equivalent material with equal or greater tensile strength, resistance to puncture, resistance to deterioration, and resistance to water-vapor transmission be placed on top of the gas-permeable base rock to act as a soil-gas-retarder. Placement and installation of this sheeting should be in conformance with that indicated in Section 1812.2.2 of the 2022 OSSC.

The geotechnical engineer or their representative should be contacted to observe gas-permeable base rock conditions prior to placement of the soil-gas-retarder.

5.7.3 Design Considerations

For floor slabs constructed as recommended, an effective modulus of subgrade reaction of 400 pounds per cubic inch (pci) is recommended for the design of the floor slab. A higher effective modulus of subgrade reaction can be obtained by increasing the base rock thickness. Please contact the geotechnical engineer for additional recommendations if a higher modulus is desired. Floor slabs constructed as recommended will likely settle less than ½ inch. For general floor slab construction, slabs should be jointed around columns and walls to permit slabs and foundations to settle differentially.

5.7.4 Subgrade Moisture Considerations

Liquid moisture and moisture vapor should be expected at the subgrade surface. The recommended crushed rock base is anticipated to provide protection against liquid moisture. Where moisture vapor emission through the slab must be minimized, e.g. impervious floor coverings, storage of moisture sensitive materials directly on the slab surface, etc., a vapor retarding membrane or vapor barrier below the slab should be considered. Factors such as cost, special considerations for construction, floor coverings, and end use suggest that the decision regarding a vapor retarding membrane or vapor barrier be made by the architect and owner.

If a vapor retarder or vapor barrier is placed below the slab, its location should be based on current American Concrete Institute (ACI) guidelines, ACI 302 Guide for Concrete Floor and Slab Construction. In some cases, this indicates placement of concrete directly on the vapor retarder or barrier. Please note that the placement of concrete directly on impervious membranes increases the risk of plastic shrinkage cracking and slab curling in the concrete. Construction practices to reduce or eliminate such risk, as described in ACI 302, should be employed during concrete placement.

5.8 Pavements

5.8.1 Subgrade Preparation

Pavement subgrade preparation should be performed in general accordance with the recommendations presented in Section 5.1.6 above. Subgrade surfaces should be crowned (or sloped) for proper drainage in accordance with specifications provided by the project civil engineer.

5.8.2 Pavement Design Sections

Recommendations for pavement design sections were not included as part of this assignment, but could be provided, upon request, for an additional fee.

5.9 Additional Considerations

5.9.1 Drainage

Subsurface drains should be connected to the nearest storm drain, on-site infiltration system (to be designed by others) or other suitable discharge point. Paved surfaces and grading near or adjacent to the buildings should be sloped to drain away from the buildings. Surface water from paved surfaces and open spaces should be collected and routed to a suitable discharge point. Surface water should not be directed into foundation drains, if incorporated, or onto site slopes.

5.9.2 Expansive Potential

The near surface native soils consist of gravelly soils with minimal fines. These soils are not considered to be susceptible to appreciable movements from changes in moisture content. Accordingly, no special considerations are required to mitigate expansive potential of the near surface soils at the site.

6.0 RECOMMENDED ADDITIONAL SERVICES

6.1 Design Review

Geotechnical design review is of paramount importance. We recommend the geotechnical design review take place prior to releasing bid packets to contractors.

6.2 Observation of Construction

Satisfactory earthwork, foundation, floor slab, and pavement performance depends to a large degree on the quality of construction. Sufficient observation of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications. Subsurface conditions observed during construction should be compared with those encountered during subsurface explorations, and recognition of changed conditions often requires experience. We recommend that qualified personnel visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those observed to date and anticipated in this report. We recommend geotechnical engineer's representative attend a pre-construction meeting coordinated by the contractor and/or developer. The project geotechnical engineer's representative should provide observations and/or testing of at least the following earthwork elements during construction:

- Site Stripping and Demolition
- Subgrade Preparation for Shallow Foundations, Structural Fills, Floor Slabs, and Pavements
- Compaction of Structural Fill and Utility Trench Backfill
- Compaction of Base Rock for Floor Slabs and Pavements
- Compaction of Asphalt Concrete for Pavements

It is imperative that the owner and/or contractor request earthwork observations and testing at a frequency sufficient to allow the geotechnical engineer to provide a final letter of compliance for the earthwork activities.

7.0 LIMITATIONS

We have prepared this report for use by the owner/developer and other members of the design and construction team for the proposed development. The opinions and recommendations contained within this report are forwarded to assist in the planning and design process and are not intended to be, nor should they be construed as, a warranty of subsurface conditions.

We have made observations based on our explorations that indicate the soil conditions at only those specific locations and only to the depths penetrated. These observations do not necessarily reflect soil types, strata thickness, or water level variations that may exist between or away from our explorations. If subsurface conditions vary from those encountered in our site explorations, CGT should be alerted to the change in conditions so that we may provide additional geotechnical recommendations, if necessary. Observation by experienced geotechnical personnel should be considered an integral part of the construction process.

The owner/developer is responsible for ensuring that the project designers and contractors implement our recommendations. When the design has been finalized, prior to releasing bid packets to contractors, we recommend that the design drawings and specifications be reviewed by our firm to see that our recommendations have been interpreted and implemented as intended. If design changes are made, we request that we be retained to review our conclusions and recommendations and to provide a written

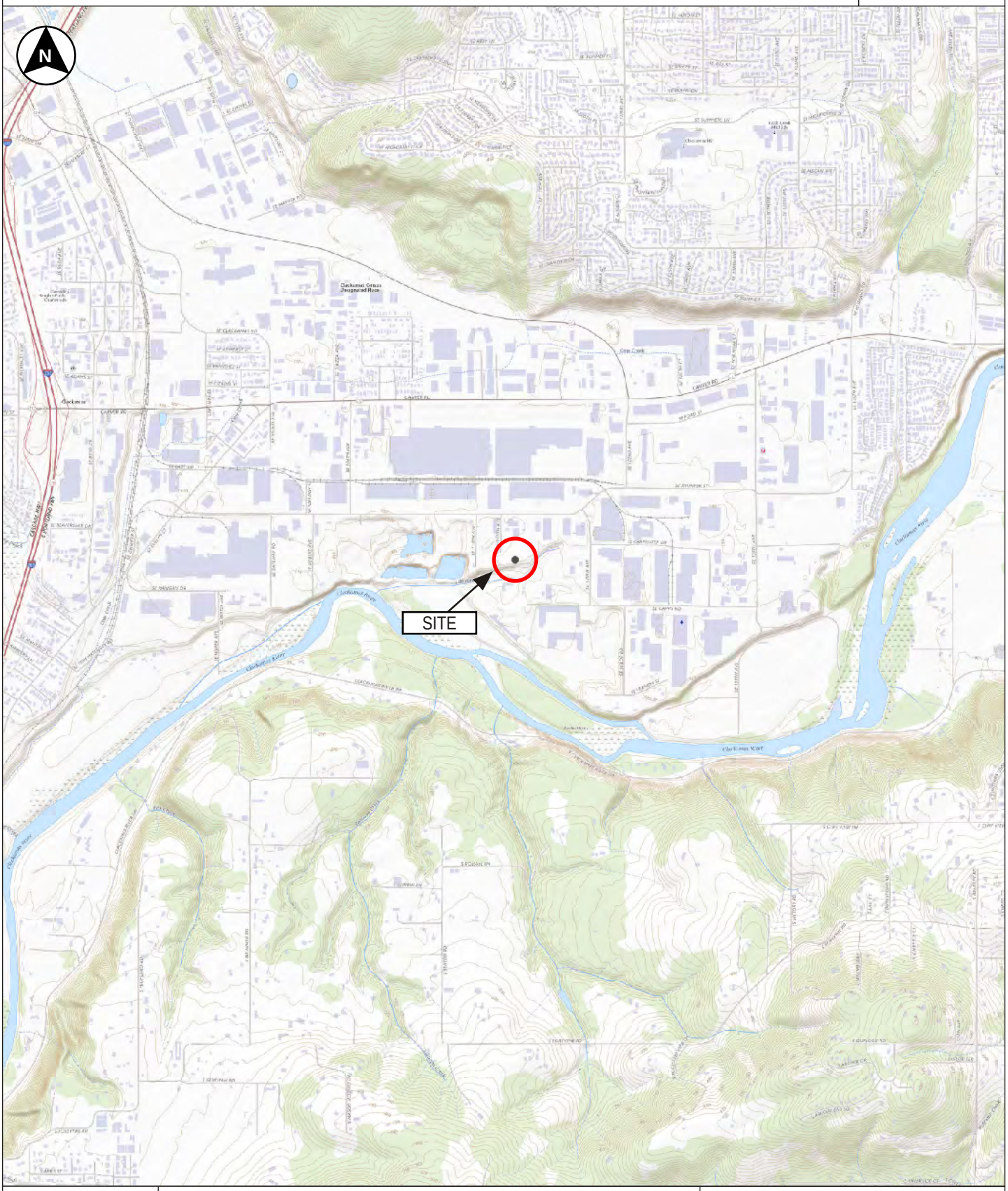
modification or verification. Design review and construction phase testing and observation services are beyond the scope of our current assignment, but will be provided for an additional fee.

The scope of our services does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractor's methods, techniques, sequences, or procedures, except as specifically described in our report for consideration in design.

Geotechnical engineering and the geologic sciences are characterized by a degree of uncertainty. Professional judgments presented in this report are based on our understanding of the proposed construction, familiarity with similar projects in the area, and on general experience. Within the limitations of scope, schedule, and budget, our services have been executed in accordance with the generally accepted practices in this area at the time this report was prepared; no warranty, expressed or implied, is made. This report is subject to review and should not be relied upon after a period of three years.

CLACKAMAS EMERGENCY HOUSING - CLACKAMAS COUNTY, OREGON
Project Number G2306020

FIGURE 1
Site Location



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503-601-8250
Drafted by: AET

USGS Topographic base map created with The National Map, 2023, at https://apps.nationalmap.gov/viewer/

Township 2 South, Range 2 East, Section 15, Willamette Meridian

Latitude: 45.401263° North
Longitude: 122.54433° West

1 Inch = 2,000 feet

0 2000 4000

CLACKAMAS EMERGENCY HOUSING - CLACKAMAS COUNTY, OREGON
Project Number G2306020

FIGURE 2

Site Plan

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LEGEND

TP-2 (1½') — Test Pit. Depth of fill indicated in ().

TP-1/IT-1 (2') — Infiltration Test. Depth of fill indicated in ().

TP-14 (6'+) — Test pit performed by others, observed on 11/10/23. Depth of fill observed in ().

Approximate boundary of soil stockpile.

1 — Orientation of Site Photographs shown on Figure 3.

1 Inch = 40 Feet

0 40 80

NOTES: 2021 aerial photograph from Clackamas County Mapping System https://cmap.clackamas.us/maps/cmap. Proposed development based on Sheet A0.1, "Site Layout", dated September 28, 2023, produced by Base Design + Architecture. All locations are approximate.

Photograph 1

Photograph 2

Photograph 3

Photograph 4

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Appendix A: Subsurface Investigation and Laboratory Testing

Clackamas Emergency Housing
16590 SE 114th Avenue
Clackamas County, Oregon

CGT Project Number G2306020

December 1, 2023

Prepared For:

Mark Sirois
Clackamas County Community Development
2051 Kaen Rd # 245
Oregon City, OR 97045

Prepared by
Carlson Geotechnical

A.1.0 SUBSURFACE INVESTIGATION

Our field investigation consisted of thirteen test pits completed on November 10, 2023. The exploration locations are shown on the Site Plan, attached to the geotechnical report as Figure 2. The exploration locations shown therein were determined based on measurements from existing site features (trees, etc.) and are approximate. Surface elevations indicated on the logs were estimated based on the topographic contours (by others) shown on the referenced Site Plan and are approximate. The attached figures detail the exploration methods (Figure A1), soil classification criteria (Figure A2), and present detailed logs of the explorations (Figures A3 through A16), as discussed below.

A.1.1 Test Pits

CGT observed the excavation of thirteen test pits (TP-1 through TP-13) at the site to depths of about 3 to 9½ feet bgs. The test pits were excavated using a Bobcat E63 mini excavator provided and operated by our excavation subcontractor, Doug Shepherd's Dirtworks of Keizer, Oregon. The test pits were loosely backfilled with the excavated materials upon completion. CGT also logged the sidewalls of an additional test pit excavation (TP-14) that had been excavated by others and left open prior to CGT's arrival onsite.

A.1.2 In-Situ Testing

A.1.2.1 Infiltration Tests

CGT performed two infiltration tests at the site within two of the test pits (TP-1 and TP-11). Details regarding the test procedure and results of the tests are presented in Appendix B.

A.1.3 Material Classification & Sampling

Representative disturbed (grab) samples of the soils encountered were obtained at select intervals within the test pits. A qualified member of CGT's geological staff collected the samples and logged the soils in general accordance with the Visual-Manual Procedure (ASTM D2488). An explanation of this classification system is attached as Figure A2. The grab samples were stored in sealable plastic bags and transported to our soils laboratory for further examination and testing. Our geotechnical staff visually examined all samples in order to refine the initial field classifications.

A.1.4 Subsurface Conditions

Subsurface conditions are summarized in Section 2.3 of the geotechnical report. Detailed logs of the explorations are presented on the attached exploration logs, Figures A3 through A16.

A.2.0 LABORATORY TESTING

Laboratory testing was performed on samples collected in the field to refine our initial field classifications and determine in-situ parameters. Laboratory testing included the following:

- Nine moisture content determinations (ASTM D2216).
- Three percentages passing the U.S. Standard No. 200 Sieve tests (ASTM D1140).

Results of the laboratory tests are shown on the exploration logs.

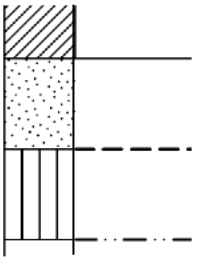
CLACKAMAS EMERGENCY HOUSING - CLACKAMAS COUNTY, OREGON *Project Number G2306020*	**FIGURE A1** **Exploration Key**

PL — LL MC	Atterberg limits (plasticity) test results (ASTM D4318): PL = Plastic Limit, LL = Liquid Limit, and MC= Moisture Content (ASTM D2216)
☐ FINES CONTENT (%)	Percentage passing the U.S. Standard No. 200 Sieve (ASTM D1140)

SAMPLING

GRAB	Grab sample
BULK	Bulk sample
SPT	**Standard Penetration Test** (SPT) consists of driving a 2-inch, outside-diameter, split-spoon sampler into the undisturbed formation with repeated blows of a 140-pound, hammer falling a vertical distance of 30 inches (ASTM D1586). The number of blows (N-value) required to drive the sampler the last 12 inches of an 18-inch sample interval is used to characterize the soil consistency or relative density. The drill rig was equipped with an cat-head or automatic hammer to conduct the SPTs. The observed N-values, hammer efficiency, and N_{60} are noted on the boring logs.
MC	**Modified California** sampling consists of 3-inch, outside-diameter, split-spoon sampler (ASTM G3550) driven similarly to the SPT sampling method described above. A sampler diameter correction factor of 0.44 is applied to calculate the equivalent SPT N_{60} value per Lacroix and Horn, 1973.
CORE	**Rock Coring** interval
SH	**Shelby Tube** is a 3-inch, inner-diameter, thin-walled, steel tube push sampler (ASTM D1587) used to collect relatively undisturbed samples of fine-grained soils.
WDCP	**Wildcat Dynamic Cone Penetrometer** (WDCP) test consists of driving 1.1-inch diameter, steel rods with a 1.4-inch diameter, cone tip into the ground using a 35-pound drop hammer with a 15-inch free-fall height. The number of blows required to drive the steel rods is recorded for each 10 centimeters (3.94 inches) of penetration. The blow count for each interval is then converted to the corresponding SPT N_{60} values.
DCP	**Dynamic Cone Penetrometer** (DCP) test consists of driving a 20-millimeter diameter, hardened steel cone on 16-millimeter diameter steel rods into the ground using a 10-kilogram drop hammer with a 460-millimeter free-fall height. The depth of penetration in millimeters is recorded for each drop of the hammer.
POCKET PEN. (tsf)	**Pocket Penetrometer** test is a hand-held instrument that provides an approximation of the unconfined compressive strength in tons per square foot (tsf) of cohesive, fine-grained soils.

CONTACTS



Observed (measured) contact between soil or rock units.

Inferred (approximate) contact between soil or rock units.

Transitional (gradational) contact between soil or rock units.

ADDITIONAL NOTATIONS

Italics	Notes drilling action or digging effort
{ Braces }	Interpretation of material origin/geologic formation (e.g. { Base Rock } or { Columbia River Basalt })

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All measurements are approximate.

CLACKAMAS EMERGENCY HOUSING - CLACKAMAS COUNTY, OREGON
Project Number G2306020

FIGURE A2
Soil Classification

Classification of Terms and Content

NAME: Group Name and Symbol
Relative Density or Consistency
Color
Moisture Content
Plasticity
Other Constituents
Other: Grain Shape, Approximate Gradation
Organics, Cement, Structure, Odor, etc.
Geologic Name or Formation

Grain Size

		U.S. Standard Sieve
Fines		<#200 (0.075 mm)
Sand	Fine	#200 - #40 (0.425 mm)
	Medium	#40 - #10 (2 mm)
	Coarse	#10 - #4 (4.75 mm)
Gravel	Fine	#4 - 0.75 inch
	Coarse	0.75 inch - 3 inches
Cobbles		3 to 12 inches
Boulders		> 12 inches

Coarse-Grained (Granular) Soils

Relative Density

SPT N_{60}-Value	Density
0 - 4	Very Loose
4 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
>50	Very Dense

Minor Constituents

Percent by Volume	Descriptor	Example
0 - 5%	"Trace" as part of soil description	"trace silt"
5 - 15%	"With" as part of group name	"**POORLY GRADED SAND WITH SILT**"
15 - 49%	Modifier to group name	"**SILTY SAND**"

Fine-Grained (Cohesive) Soils

SPT N_{60}-Value	Torvane tsf Shear Strength	Pocket Pen tsf Unconfined	Consistency	Manual Penetration Test
<2	<0.13	<0.25	Very Soft	Thumb penetrates more than 1 inch
2 - 4	0.13 - 0.25	0.25 - 0.50	Soft	Thumb penetrates about 1 inch
4 - 8	0.25 - 0.50	0.50 - 1.00	Medium Stiff	Thumb penetrates about ¼ inch
8 - 15	0.50 - 1.00	1.00 - 2.00	Stiff	Thumb penetrates less than ¼ inch
15 - 30	1.00 - 2.00	2.00 - 4.00	Very Stiff	Readily indented by thumbnail
>30	>2.00	>4.00	Hard	Difficult to indent by thumbnail

Minor Constituents

Percent by Volume	Descriptor	Example
0 - 5%	"Trace" as part of soil description	"trace fine-grained sand"
5 - 15%	"Some" as part of soil description	"some fine-grained sand"
15 - 30%	"With" as part of group name	"**SILT WITH SAND**"
30 - 49%	Modifier to group name	"**SANDY SILT**"

Moisture Content

Dry: Absence of moisture, dusty, dry to the touch

Moist: Leaves moisture on hand

Wet: Visible free water, likely from below water table

	Plasticity	Dry Strength	Dilatancy	Toughness
ML	Non to Low	Non to Low	Slow to Rapid	Low, can't roll
CL	Low to Medium	Medium to High	None to Slow	Medium
MH	Medium to High	Low to Medium	None to Slow	Low to Medium
CH	Medium to High	High to Very High	None	High

Structure

Stratified: Alternating layers of material or color >6 mm thick

Laminated: Alternating layers < 6 mm thick

Fissured: Breaks along definite fracture planes

Slickensided: Striated, polished, or glossy fracture planes

Blocky: Cohesive soil that can be broken down into small angular lumps which resist further breakdown

Lenses: Has small pockets of different soils, note thickness

Homogeneous: Same color and appearance throughout

Visual-Manual Classification

Major Divisions			Group Symbols	Typical Names
Coarse Grained Soils: More than 50% retained on No. 200 sieve	Gravels: 50% or more *retained* on the No. 4 sieve	Clean Gravels	GW	Well-graded gravels and gravel/sand mixtures, little or no fines
			GP	Poorly-graded gravels and gravel/sand mixtures, little or no fines
		Gravels with Fines	GM	Silty gravels, gravel/sand/silt mixtures
			GC	Clayey gravels, gravel/sand/clay mixtures
	Sands: More than 50% *passing* the No. 4 sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines
			SP	Poorly-graded sands and gravelly sands, little or no fines
		Sands with Fines	SM	Silty sands, sand/silt mixtures
			SC	Clayey sands, sand/clay mixtures
Fine-Grained Soils: 50% or more Passes No. 200 Sieve	Silt and Clays Low Plasticity Fines		ML	Inorganic silts, rock flour, clayey silts
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
			OL	Organic soil of low plasticity
	Silt and Clays High Plasticity Fines		MH	Inorganic silts, clayey silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic soil of medium to high plasticity
Highly Organic Soils			PT	Peat, muck, and other highly organic soils

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References:

ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)
Terzaghi, K., and Peck, R.B., 1948, Soil Mechanics in Engineering Practice, John Wiley & Sons.

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FIGURE A3

Test Pit TP-01

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ / PL LL MC / ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
					0						
118		GP FILL	**POORLY GRADED GRAVEL WITH COBBLES FILL:** Gray, moist, subangular to subrounded gravel up to 1 inch in diameter, some silt fines. Subrounded cobbles up 5 inches in diameter below ½ foot bgs.		2						
116		GP-GM	**POORLY GRADED GRAVEL WITH SAND AND COBBLES:** *Dense,* brown, moist, subrounded gravels to cobbles up to 12 inches in diameter (40% by volume), with fine- to medium- grained sand, trace to some silt fines. {Terrace deposits}.		4						
114					6	GRAB 1	100				8 9
112			• Infiltration test IT-1 performed at 6 feet bgs. Reference Appendix B for test results. •Test pit terminated at 6½ feet bgs. •Some caving encountered at and below approximately 3 feet bgs. •No groundwater encountered. •Test pit loosely backfilled with excavated spoils.								
110											

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FIGURE A4

Test Pit TP-02

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel/Grass **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC; ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
		GP FILL	**POORLY GRADED GRAVEL FILL:** Gray, moist, subangular to subrounded gravel up to 1 inch in diameter, some silt fines. 3 inch thick, light gray, nonplastic silt lens at ½ foot bgs. Processed wood fragments 2 inches in length, copper pipe debris.		0						
118		GP-GM	**POORLY GRADED GRAVEL WITH COBBLES:** *Dense,* brown, moist, subrounded to rounded gravels and cobbles up to 12 inches in diameter (40% by volume), with medium- to coarse- grained sand, some low plasticity silt fines. {Terrace deposits}.		2						
116					4	GRAB 1	100				● 7
114			Increase in coarse-grained sand content below 6½ feet bgs.		6						
112					8	GRAB 2	100				● 6
110			•Test pit terminated at 8½ feet bgs due to caving of coarse particles. •Caving encountered at and below approximately 3 feet bgs. •No groundwater encountered. •Test pit loosely backfilled with excavated spoils.								

CGT EXPLORATION WITH WDCP DRAFT LOGS 2.GPJ 11/30/23 DRAFTED BY: AFJ

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FIGURE A5

Test Pit TP-03

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
					0						
118		GP FILL	**POORLY GRADED GRAVEL WITH COBBLES FILL:** Gray, moist, subangular to subrounded gravel up to ¾ inch in diameter and subrounded cobbles up to 4 inches in diameter, some medium plasticity fines, some rootlets, trace wire debris and glass debris.		2						
116		GP	**POORLY GRADED GRAVEL WITH SAND AND COBBLES:** *Dense,* light brown, moist, subangular to subrounded gravel and cobbles up to 12 inches in diameter (40% by volume), with medium- to coarse- grained sand, trace silt fines. {Terrace deposits}.		4	GRAB 1	100				7
114											
112											
110											

- Test pit terminated at 5 feet bgs.
- Caving encountered at and below approximately 3 feet bgs.
- No groundwater encountered.
- Test pit loosely backfilled with excavated spoils.

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FIGURE A6

Test Pit TP-04

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
		GP FILL	**POORLY GRADED GRAVEL WITH COBBLES FILL:** Gray, moist, subrounded gravels and cobbles up to 6 inches in diameter, some silt fines and rootlets, some concrete, wire and glass fragments up to 3 inches in diameter.		0						
118		GP	**POORLY GRADED GRAVEL WITH SAND AND COBBLES:** *Dense,* light brown, moist, subangular to subrounded cobbles up to 12 inches in diameter (40% by volume), with medium- to coarse- grained sand, trace silt fines. {Terrace deposits}.		2						
116					4						
114			Increase in coarse-grained sand below approximately 6 feet bgs.		6						
112					8	GRAB 1	100				6
110			•Test pit terminated at 8½ feet bgs, due to caving of coarse particles. •Caving encountered at and below approximately 3 feet bgs. •No groundwater encountered. •Test pit loosely backfilled with excavated spoils.								

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FIGURE A7

Test Pit TP-05

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
		GP FILL	**POORLY GRADED GRAVEL AND COBBLES FILL:** Gray, moist, subangular to subrounded gravel and cobbles up to 4 inches in diameter, some medium plasticity fines.		0						
118		GP	**POORLY GRADED GRAVEL WITH SAND, COBBLES, AND BOULDERS:** *Dense,* dark brown, moist, subrounded gravel, cobbles, and boulders up to 18 inches in diameter (40% by volume), some medium- to coarse- grained sand, trace silt fines. {Terrace deposits}.		2						
116					4						
114					6						
112					8	GRAB 1	100				5
110			•Test pit terminated at 8 feet bgs, due to caving of coarse particles. •Severe caving encountered at and below approximately 3 feet bgs. •No groundwater encountered. •Test pit loosely backfilled with excavated spoils.								

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FIGURE A8

Test Pit TP-06

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft
ELEVATION DATUM See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel
LOGGED BY AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks
SEEPAGE ---
EQUIPMENT Bobcat E63 Mini Excavator
GROUNDWATER DURING DRILLING ---
EXCAVATION METHOD 24" Rock Bucket
GROUNDWATER AFTER EXCAVATION ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
		GP FILL	**POORLY GRADED GRAVEL FILL:** Gray, moist, subangular to subrounded gravels up to 1½ inch in diameter, some medium plasticity fines, trace to some rootlets at 1 foot bgs, trace glass debris at 3 inches bgs.		0						
118		GP-GM	**POORLY GRADED GRAVEL WITH SAND, COBBLES, AND BOULDERS:** *Dense,* dark brown, moist, subrounded gravel, cobbles and boulders up to 18 inches in diameter (40% by volume), some medium- to coarse- grained sand, some silt fines. {Terrace deposits}.		2						
						GRAB 1	100				13 ● 8 ☐
116					4						
114											
112											
110											

- Test pit terminated at 4 feet bgs.
- Moderate caving encountered at and below approximately 3 feet bgs.
- No groundwater encountered.
- Test pit loosely backfilled with excavated spoils.

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FIGURE A9

Test Pit TP-07

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ / PL LL MC / ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
					0						
118		GP FILL	**POORLY GRADED GRAVEL FILL:** Gray, moist, subangular to subrounded gravels up to 1 inch in diameter, some medium plasticity fines, trace glass debris at 3 inches bgs, trace to some rootlets below 1 foot bgs.		2						
		GP	**POORLY GRADED GRAVEL WITH SAND, COBBLES, AND BOULDERS:** *Dense,* dark brown, moist, subrounded cobbles and boulders up to 18 inches in diameter (40% by volume), some medium- to coarse- grained sand, trace silt fines. {Terrace deposits}.								
116			•Test pit terminated at 3½ feet bgs. •Moderate caving encountered at and below approximately 3 feet bgs. •No groundwater encountered. •Test pit loosely backfilled with excavated spoils.								
114											
112											
110											

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FIGURE A10

Test Pit TP-08

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Organics/Gravel **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
		GP FILL	**POORLY GRADED GRAVEL FILL:** Gray, moist, rounded to angular gravel up to 3 inches in diameter, wire, plastic, brick, and wood debris at 6 inches bgs, some low plasticity silt fines.		0	GRAB 1	100			
118		GP	**POORLY GRADED GRAVEL WITH SAND AND COBBLES:** Dark brown, moist, subrounded cobbles (40% by volume) up to 12 inches in diameter, some medium- to coarse- grained sand, trace silt fines. {Terrace deposits}.		2					
116					4					
114					6					
			Increase in coarse-grained sand below 7 feet bgs.							
112					8					
						GRAB 2	100			
110			•Test pit terminated at 9½ feet bgs due to caving of coarse particles. •Caving encountered at and below approximately 3 feet bgs. •No groundwater encountered. •Test pit loosely backfilled with excavated spoils.							
108										

▲ WDCP N_{60} VALUE ▲
PL LL MC
☐ FINES CONTENT (%) ☐
0 20 40 60 80 100
13
8

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FIGURE A11

Test Pit TP-09

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
					0						
118		GP FILL	**POORLY GRADED GRAVEL FILL:** Gray to brown, moist, subangular to subrounded gravel up to 2 inches in diameter, some medium plasticity fines, some trash debris (plastic, glass, wood).		2						
116		GP-GM	**POORLY GRADED GRAVEL WITH SAND AND COBBLES:** *Dense,* dark brown, moist, subrounded gravels to cobbles (40% by volume) up to 12 inches in diameter, some medium- to coarse- grained sand, trace to some silt fines. {Terrace deposits}.		4						
114			•Test pit terminated at 4 feet bgs. •Moderate caving encountered at and below approximately 3 feet bgs. •No groundwater encountered. •Test pit loosely backfilled with excavated spoils.								
112											
110											

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FIGURE A12

Test Pit TP-10

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ / PL LL MC / ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
					0						
118		GP FILL	**POORLY GRADED GRAVEL FILL:** Dark brown to gray, moist, subangular to subrounded gravel up to ¾ inch in diameter, some medium plasticity fines, some rootlets and roots up to 1 inch in diameter, some metal fragments observed at 6 inches bgs.								
					2						
		GP-GM	**POORLY GRADED GRAVEL WITH SAND AND COBBLES:** *Dense,* dark brown, moist, subrounded gravels and cobbles (40% by volume) up to 12 inches in diameter, some medium- to coarse- grained sand, trace to some silt fines. {Terrace deposits}.								
116			•Test pit terminated at 3 feet bgs. •Caving encountered at and below approximately 3 feet bgs. •No groundwater encountered. •Test pit loosely backfilled with excavated spoils.								
114											
112											
110											

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FIGURE A13
Test Pit TP-11

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel/Grass **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
		GP FILL	**POORLY GRADED GRAVEL FILL:** Gray, moist, subangular to subrounded gravel up to 1½ inch in diameter, some medium plasticity fines, trace glass and wood debris, trace rootlets up to ½ inch in diameter.		0						
118		GP	**POORLY GRADED GRAVEL WITH SAND AND COBBLES:** *Dense,* dark brown, moist, subrounded to rounded gravels and cobbles (40% by volume) up to 6 inches in diameter, some fine- to medium- grained sand, trace silt fines. {Terrace deposits}.		2						
116					4						
114					6	GRAB 1	100				3 7
112											
110											

- Infiltration test IT-2 performed at 6 feet bgs. Reference Appendix B for test results.
- Test pit terminated at 6½ feet bgs.
- Moderate caving encountered at and below approximately 3 feet bgs.
- No groundwater encountered.
- Test pit loosely backfilled with excavated spoils.

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FIGURE A14

Test Pit TP-12

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 90 ft
ELEVATION DATUM See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel
LOGGED BY AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks
SEEPAGE ---
EQUIPMENT Bobcat E63 Mini Excavator
GROUNDWATER DURING DRILLING ---
EXCAVATION METHOD 24" Rock Bucket
GROUNDWATER AFTER EXCAVATION ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC; ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
		GP FILL	**POORLY GRADED GRAVEL FILL:** Gray, moist, subangular to subrounded gravel up to 2½ inches in diameter, asphalt debris up to 4 inches in diameter, dark gray basalt fragments up to 3½ inches in diameter.		0						
88		GP	**POORLY GRADED GRAVEL WITH SAND AND COBBLES:** *Dense,* brown, moist, subrounded gravels and cobbles up to 5 inches in diameter (40% by volume), some fine-to medium-grained sand, trace silt fines. {Terrace deposits}.		2						
86					4						
						GRAB 1	100				8
84			*Very dense* below 6 feet bgs based on digging effort.		6						
82					8						
						GRAB 2	100				11
80			•Test pit terminated at 9½ feet bgs,due to caving of coarse particles. •Caving encountered at and below approximately 3 feet bgs. •No groundwater encountered. •Test pit loosely backfilled with excavated spoils.								
78											

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FIGURE A15

Test Pit TP-13

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 126 ft
ELEVATION DATUM See Figure 2
WEATHER Overcast 50°F **SURFACE** Blackberry Bushes
LOGGED BY AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks
SEEPAGE 6.0 ft / El. 120.0 ft
EQUIPMENT Bobcat E63 Mini Excavator
GROUNDWATER DURING DRILLING ---
EXCAVATION METHOD 24" Rock Bucket
GROUNDWATER AFTER EXCAVATION ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
			POORLY GRADED GRAVEL WITH SAND FILL: Brown, moist, subangular to subrounded gravel up to 2 inches in diameter, some medium-to coarse-grained sand, some medium plasticity silt fines.		0						
124					2						
		GP-GM FILL									
122			Some plastic, brick, concrete, asphalt debris up to 2 feet in diameter at about 4 feet bgs		4						
120				≈	6						
118											
116											

- Test pit terminated at 6 feet bgs.
- Test pit performed in soil stockpile.
- Light groundwater seepage at approximately 6 feet bgs.
- No caving encountered.
- Test pit loosely backfilled with excavated spoils.

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FIGURE A16

Test Pit TP-14

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 128 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Grass **LOGGED BY** AET **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Unknown **SEEPAGE** ---
EQUIPMENT Unknown **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD Unknown **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
126		GM FILL	**SILTY GRAVEL FILL:** Gray/brown, wet, angular up to 1-inch in diameter, with low plasticity silt fines, some rootlets.		0						
124		ML FILL	**SILT WITH SAND FILL** Gray/brown, wet, low plasticity, with fine-grained sand, trace roots up to ½-inch in diameter.		2						
122					4						
120					6						
118											

- TP-14 was excavated by others prior to CGT's presence on site. Soils described above are determined by observations of the test pits sidewalls.
- No caving or groundwater was observed in the excavation.
- Exploration was left open due to inaccessible conditions with our excavation equipment.

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Appendix B: Results of Infiltration Testing

Clackamas Emergency Housing
16590 SE 114th Avenue
Clackamas County, Oregon

CGT Project Number G2306020

December 1, 2023

Prepared For:

Mark Sirois
Clackamas County Community Development
2051 Kaen Rd # 245
Oregon City, OR 97045

Prepared by
Carlson Geotechnical

B.1.0 INTRODUCTION

The project civil engineer Mr. Kyle England, P.E., of DCI Engineers, requested infiltration testing at two locations, indicated on a site plan, provided during a virtual meeting on November 1, 2023. The tests were performed within excavated test pits at a depth of 6 feet below ground surface (bgs), designated TP-1 and TP-11 on the Site Plan, which is attached to the main report as Figure 2.

B.2.0 TEST PROCEDURE

The infiltration tests (IT-1 and IT-2) were performed in general accordance with the Open Pit- Falling Head method as described in Appendix A of the Clackamas County Water Environment Services Stormwater Standards, dated April 2023.

The tests was performed within test pit TP-1 and TP-11 which were advanced to the infiltration test depth with a Bobcat E63 mini track-mounted excavator with a 2-foot wide toothed bucket provided and operated by our subcontractor, Doug Shepherd's Dirtworks of Keizer, Oregon. The test pits were excavated to the infiltration test depths and the base measured approximately 2 feet by 2 feet.

In IT-1, we attempted to soak the subsurface soils by pouring an approximate 10 gallons of water into the test pit. The water infiltrated into the subsurface materials in less than 10 minutes. This was repeated a second time with similar results; therefore, we immediately proceeded with the infiltration test. A steady source of water (hose connected to a nearby spigot) was introduced into the test pit at an inflow rate of 3¾ gallons every minute (measured using a 5-gallon bucket and a stopwatch). Approximately 250 gallons of water[1] was introduced into the base of the test pit over the span of 1 hour and 7 minutes and we were unable to achieve any measurable head of water during that time. The test was then terminated; refer to Table B1 for details of the infiltration test.

In IT-2, we attempted to soak the subsurface soils by pouring an approximate 10 gallons of water into the test pit. The water infiltrated into the subsurface materials in less than 10 minutes. This was repeated a second time with similar results; therefore, we immediately proceeded with the infiltration test. A steady source of water (hose connected to a nearby spigot) was introduced into the test pit at an inflow rate of 2¾ gallons every minute (measured using a 5-gallon bucket and a stopwatch). Approximately 250 gallons of water[1] was introduced into the base of the test pit over the span of 1 hour and 53 minutes with an approximate 3 inch head being maintained during the test. The test was terminated after the infiltration of 250 gallons of water; refer to Table B2 for details of the infiltration test.

[1] This volume of water (250 gallons) was selected for testing in general accordance with a similar testing procedure outlined in the 2020 Portland Stormwater Management Manual where encountering rapidly draining, coarse-grained soils are encountered.

Table B1 Results of Infiltration Test IT-1

Location:	Clackamas Emergency Housing		Date:	11-10-2023	Exploration Number: TP-1
Test Method:	Clackamas County Open Pit Method				Infiltration Test Depth: 6 feet bgs
Length:	2 feet		Width:	2 feet	
Soil at infiltration test depth:	Poorly Graded Gravel with Cobbles and Sand			See exploration log for detail	
Test Start Time:	9:00 AM	Notes:		Water inflow = 3¾ gallons per minute. No head build up during test. Test terminated following introduction of approximately 250 gallons of water.	
Test End Time:	10:07 AM				
Head During Test:	None				

Table B2 Results of Infiltration Test IT-2

Location:	Clackamas Emergency Housing		Date:	11-10-2023	Exploration Number: TP-11
Test Method:	Clackamas County Open Pit Method				Infiltration Test Depth: 6 feet bgs
Length:	2 feet		Width:	2 feet	
Soil at infiltration test depth:	Poorly Graded Gravel with Cobbles and Sand			See exploration log for detail	
Test Start Time:	9:30 AM	Notes:		Water inflow = 2¾ gallons per minute. Approximate 3 inch head build up during test. Test terminated following introduction of approximately 250 gallons of water.	
Test End Time:	11:23 AM				
Head During Test:	3 inches				

B.3.0 DISCUSSION

As indicated above, in IT-1 we were unable to develop a head of water at the base of the prepared test pit in the test area (measuring 2-foot square) using the steady inflow rate (3¾ gallons per minute). In IT-2, we were able to maintain an approximate 3 inch head within the test area using the steady inflow rate (2¾ gallons per minute). Based on the manual, for rapidly draining soils, the raw measured infiltration rate for IT-1 was calculated to be 5,373 inches per hour, and for IT-2 the raw measured infiltration rate was calculated to be 2,609 inches per hour.

We recommend the raw measured infiltration rate for both tested locations be assigned as 100 inches per hour as means to add some conservatism in design. In the event a larger infiltration rate is desired, we recommend an increased scale of testing be performed using a larger volume of water delivered from a higher flow, steady water source (e.g. water truck, fire hydrant, etc.).

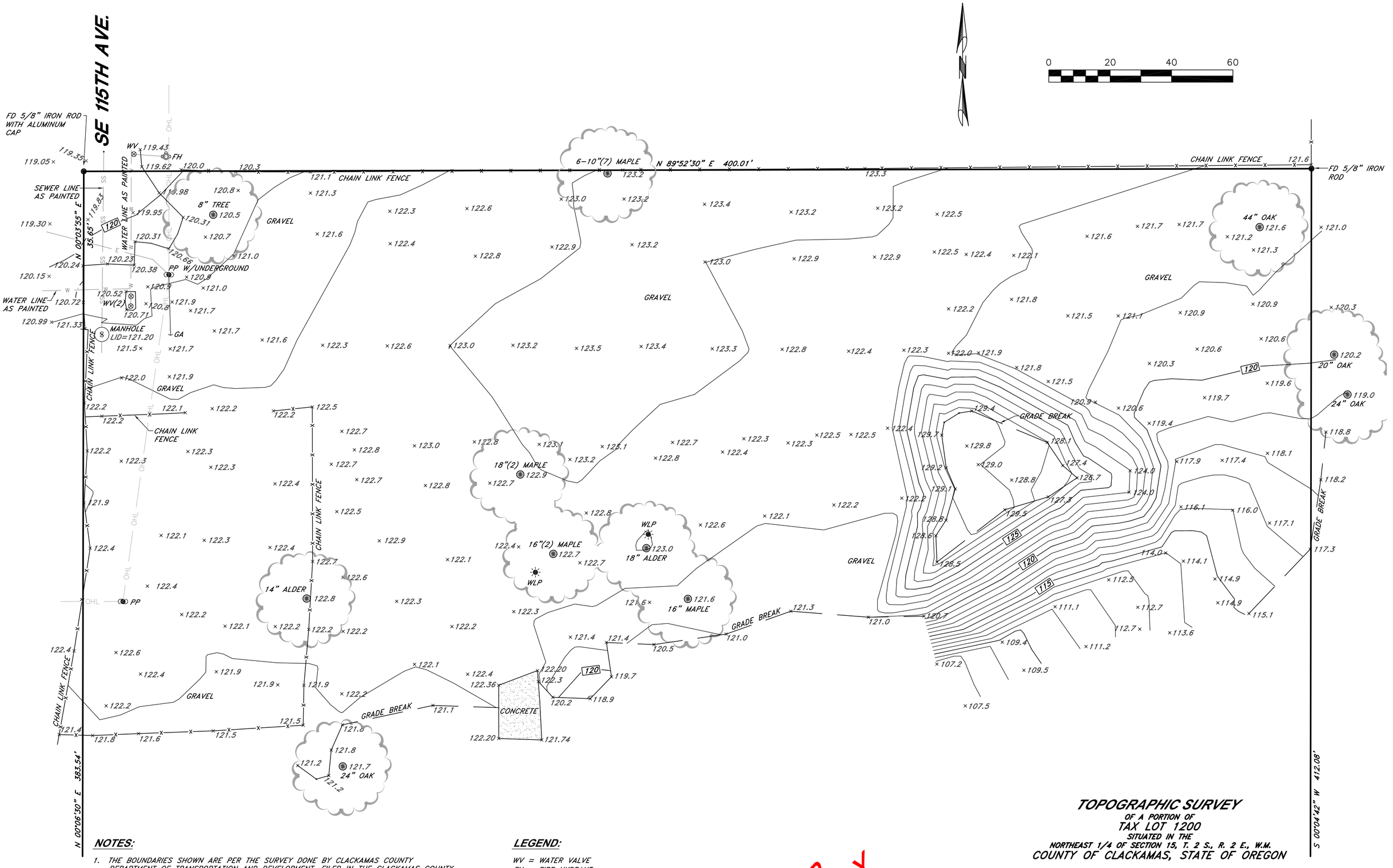
Per Table 18 of the referenced manual, a minimum allowable factor of safety (FoS) of 2.0 shall be applied to the field-tested infiltration rate(s) where the open pit test method is used. We recommend this FoS be applied to calculate the design infiltration rate for use in design of the stormwater infiltration system(s) to be constructed at/near the test location(s) and depth(s).

Once the design is completed, we recommend the infiltration system design (provided by others) and location be reviewed by the geotechnical engineer. If the location and/or depth of the system(s) change from what was indicated at the time of our fieldwork, additional testing may be recommended.

B.4.0 SEASONAL HIGH GROUNDWATER LEVEL

As indicated in Appendix A of the referenced stormwater manual, a minimum of 5 feet of separation (measured vertically) is required between the base of the stormwater facility and the "seasonal high groundwater level".

Groundwater was not encountered within depths explored at the site, and no indications (e.g. mottling) of seasonal fluctuations of groundwater were observed in the site soils. Based on our explorations, our experience in the area, review of local water well logs (see Section 2.3.3 of main body of report), and review of the site's geologic setting, we anticipate the groundwater level in the area is at an approximate elevation of 80 feet (mean sea level). Accordingly, the area of proposed site development is situated at an elevation of approximately 120 feet (mean sea level), therefore the groundwater level (phreatic surface) is not anticipated to be a factor for design of infiltration facilities within the planned development area.



NOTES:

1. THE BOUNDARIES SHOWN ARE PER THE SURVEY DONE BY CLACKAMAS COUNTY DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT, FILED IN THE CLACKAMAS COUNTY SURVEYOR'S OFFICE AS SURVEY NUMBER SN2015-128.
2. BENCH MARK: THE ELEVATIONS ARE BASED ON THE NAVD 88 VERTICAL DATUM FROM A STATIC GPS OBSERVATION AS COMPUTED BY TRIMBLE POST-PROCESSING SERVICE BASED ON RTX TECHNOLOGY. THE STATIC OBSERVATION WAS PERFORMED ON NOVEMBER 3, 2023.
3. CONTOURS ARE AT ONE-FOOT INTERVALS AND ARE COMPUTER GENERATED.
4. UNDERGROUND UTILITIES ARE SUBJECT TO ACTUAL FIELD LOCATION.
5. ALL UTILITIES MAY NOT BE SHOWN.
6. TREE SPREADS ARE NOT TO SCALE.
7. NO TITLE REPORT WAS PROVIDED THEREFORE ALL EASEMENTS MAY NOT BE SHOWN.

LEGEND:

WV = WATER VALVE
FH = FIRE HYDRANT
PP = POWER POLE
GA = GUY ANCHOR
WLP = WOOD LIGHT POLE

TOPOGRAPHIC SURVEY

OF A PORTION OF
TAX LOT 1200
SITUATED IN THE
NORTHEAST 1/4 OF SECTION 15, T. 2 S., R. 2 E., W.M.
COUNTY OF CLACKAMAS, STATE OF OREGON

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
JULY 16, 1982
ERIC D. JONES
1996
RENEWS: 6-30-25

FOR YOUR REVIEW ONLY

R.S. GREENLEAF (1885-1915)
MARSHALL BROTHERS (1915-1957)
BOOTH & WRIGHT (1957-1977)
SETON, JOHNSON & ODELL (1977-1983)
CHASE, JONES & ASSOCIATES, INC. (1983-)

CHASE, JONES & ASSOCIATES INC.
3410 SE 20TH AVENUE PORTLAND, OR 97202
PHONE: (503) 228-9844

PROJECT NO.	1/4 SECTION	DATE	SHEET
16652		NOVEMBER 3, 2023	1 OF 1
DRAWN BY: DLW	CHECKED BY: EDJ	SCALE: 1" = 20'	

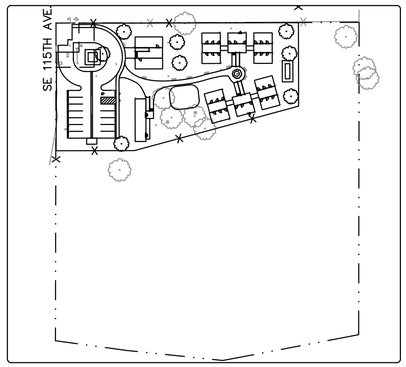
NOV. 10, 2023

1200-CN CLACKAMAS COUNTY EMERGENCY SHELTER

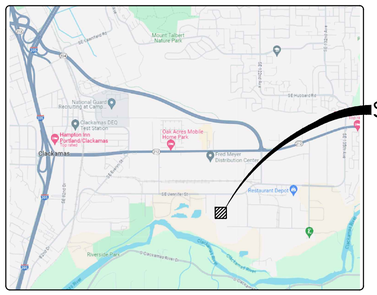
CLACKAMAS COUNTY, OREGON

LOCATED IN THE NORTHEAST 1/4 OF SECTION 15
TOWNSHIP 2 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN

1200-CN (1-5 ACRES) EROSION AND SEDIMENT CONTROL PLANS



SITE MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

PROJECT LOCATION:
16590 SE 114TH AVENUE, CLACKAMAS, OR 97015
CLACKAMAS COUNTY, OREGON.
LATITUDE = 45.401138, LONGITUDE = -122.544417

PROJECT DESCRIPTION:
TAX LOT 1200 (TAX MAP 2S2E15A) LOCATED IN THE NE ¼ OF SECTION 15, TOWNSHIP 2 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CLACKAMAS COUNTY, OREGON

ATTENTION EXCAVATORS:
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 THESE RULES FROM THE CENTER BY CALLING 503-232-1987. IF YOU HAVE ANY QUESTIONS ABOUT THE RULES, YOU MAY CONTACT THE CENTER. YOU MUST NOTIFY THE CENTER AT LEAST TWO BUSINESS DAYS BEFORE COMMENCING AN EXCAVATION. CALL 503-246-6699.

DEVELOPER:
CLACKAMAS COUNTY COMMUNITY DEVELOPMENT
CONTACT: MARK SIROIS
2051 KAEN ROAD, SUITE 245
OREGON CITY, OR 97045
PHONE: 503-655-8591
EMAIL: CDGENERAL@CLACKAMAS.US

CIVIL ENGINEER:
DCI ENGINEERS
CONTACT: KYLE ENGLAND
921 SW WASHINGTON STREET, SUITE 560
PORTLAND, OR 97205
PHONE: 503-242-2448
EMAIL: KENGLAND@DCI-ENGINEERS.COM

SURVEY:
CHASE, JONES & ASSOCIATES INC.
CONTACT:
3410 SE 20TH AVENUE
PORTLAND, OR 97202
PHONE: 503-228-9844
EMAIL: INFO@CHASEJONESINC.COM

GEOTECHNICAL ENGINEER:
CARLSON GEOTECHNICAL
CONTACT:
18270 SW BOONES FERRY ROAD, SUITE 6
DURHAM, OR 97224
PHONE: 503-601-8250
EMAIL: INFO@CARLSONTESTING.COM

NARRATIVE DESCRIPTIONS

EXISTING SITE CONDITIONS
THE EXISTING SITE CONSISTS OF EXISTING GRAVEL, VEGETATION, AND TREES. THE NORTH HALF OF THE SITE IS FLAT, AND A STEEP BANK OCCOPIES THE SOUTHERN HALF.

PROPOSED SITE CONDITIONS
THE PROPOSED SITE CONSISTS OF THIRTEEN (13) SMALL BUILDINGS ON THE NORTH HALF AVOIDING THE STEEP BANK. OTHER FEATURES INCLUDE A PARKING AREA, A VEHICULAR DROP-OFF AREA, SITE SIDEWALKS, COMMON AREAS, AND STORMWATER FACILITIES.

NATURE OF CONSTRUCTION ACTIVITY AND TIME TABLE FOR MAJOR ACTIVITIES:

1. CLEARING AND TREE REMOVAL (FROM 01/22/24 TO 02/16/24)
2. MASS GRADING (FROM 02/19/24 TO 03/01/24)
3. UTILITY INSTALLATION (FROM 03/04/24 TO 04/05/24)
4. FINAL STABILIZATION (FROM 04/08/24 TO 05/03/24)

TOTAL SITE AREA = 3.818 AC
TOTAL DISTURBED AREA (INCLUDING OFFSITE IMPROVEMENTS) = 1.988 AC

SITE SOIL CLASSIFICATION:
1 - CLACKAMAS GRAVELLY LOAM (C/D HSG RATING)
2 - SALEM SILT LOAM (HSG B RATING)
3 - XEROCHREPTS AND HAPLOXEROLLS (HSG B RATING)
4 - SALEM GRAVELLY SILT LOAM (HSG B RATING)
5 - NEWBERG FINE SANDY LOAM (HSG A RATING)

ON-SITE SOILS HAVE A MODERATE TO HIGH EROSION POTENTIAL. ALL FILL MATERIAL SHALL BE GENERATED ON-SITE FROM GRADING EXCAVATION AND UTILITY TRENCH SPOILS.

RECEIVING WATER BODIES:
NEAREST WATER BODY: CLACKAMAS RIVER

WETLAND AND/OR WATERS REMOVAL/FILL PERMIT:
N/A

PERMITTEE'S SITE INSPECTOR: XXXX
COMPANY/AGENCY: XXXX
PHONE: XXX-XXX-XXXX
FAX: N/A
E-MAIL: XXX@XXX.COM
DESCRIPTION OF EXPERIENCE:
CESCL XXX (EXP. XX/XX/XX)

INSPECTION FREQUENCY:

SITE CONDITION	MINIMUM FREQUENCY
1. ACTIVE PERIOD	WEEKLY WHEN STORMWATER RUNOFF, INCLUDING RUNOFF FROM SNOW MELT, IS OCCURRING. AT LEAST ONCE EVERY MONTH, 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 FOURTEEN (14) CONSECUTIVE CALENDAR DAYS.	ONCE EVERY MONTH.
4. PERIODS DURING WHICH THE SITE IS INACCESSIBLE DUE TO INCLEMENT WEATHER.	IF PRACTICAL, INSPECTION MUST OCCUR DAILY AT A RELEVANT AND ACCESSIBLE DISCHARGE POINT OR DOWNSTREAM LOCATION.
5. PERIODS DURING WHICH DISCHARGE IS UNLIKELY DURING FROZEN CONDITIONS.	MONTHLY, RESUME MONITORING IMMEDIATELY UPON MELT, OR WHEN WEATHER CONDITIONS MAKE DISCHARGES LIKELY.

* HOLD A PRE-CON MEETING OF PROJECT CONSTRUCTION PERSONNEL THAT INCLUDES THE INSPECTOR TO DISCUSS EROSION AND SEDIMENT CONTROL MEASURES AND CONSTRUCTION LIMITS.
* ALL INSPECTIONS MUST BE MADE IN ACCORDANCE WITH DEQ 1200-CN PERMIT REQUIREMENTS.
* INSPECTION LOGS MUST BE KEPT IN ACCORDANCE WITH DEQ'S 1200-CN PERMIT REQUIREMENTS.
* RETAIN A COPY OF THE ESCP AND ALL REVISIONS ON SITE AND MAKE IT AVAILABLE ON REQUEST TO DEQ, AGENT, OR THE LOCAL MUNICIPALITY, DURING INACTIVE PERIODS OF GREATER THAN SEVER (7) CONSECUTIVE CALENDAR DAYS, RETAIN THE ESCP AT CONSTRUCTION SITE OR AT ANOTHER LOCATION.

STANDARD EROSION AND SEDIMENT CONTROL PLAN DRAWING NOTES:

1. ALL PERMIT REGISTRANTS MUST IMPLEMENT THE ESCP. FAILURE TO IMPLEMENT ANY OF THE CONTROL MEASURES OR PRACTICES DESCRIBED IN THE ESCP IS A VIOLATION OF THE PERMIT.
2. THE ESCP MEASURES SHOWN ON THIS PLAN ARE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, UPGRADE THESE MEASURES AS NEEDED TO COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL EROSION AND SEDIMENT CONTROL REGULATIONS.
3. SUBMISSION OF ALL ESCP REVISIONS IS NOT REQUIRED. SUBMITTAL OF THE ESCP REVISIONS IS ONLY UNDER SPECIFIC CONDITIONS. SUBMIT ALL NECESSARY REVISION TO DEQ OR AGENT.
4. PHASE CLEARING AND GRADING TO THE MAXIMUM EXTENT PRACTICAL TO PREVENT EXPOSED INACTIVE AREAS FROM BECOMING A SOURCE OF EROSION.
5. IDENTIFY, MARK, AND PROTECT (BY FENCING OFF OR OTHER MEANS) CRITICAL RIPARIAN AREAS AND VEGETATION INCLUDING IMPORTANT TREES AND ASSOCIATED ROOTING ZONES, AND VEGETATION AREAS TO BE PRESERVED. IDENTIFY VEGETATIVE BUFFER ZONES BETWEEN THE SITE AND SENSITIVE AREAS (E.G., WETLANDS), AND OTHER AREAS TO BE PRESERVED, ESPECIALLY IN PERIMETER AREAS.
6. PRESERVE EXISTING VEGETATION WHEN PRACTICAL AND RE-VEGETATE OPEN AREAS. RE-VEGETATE OPEN AREAS WHEN PRACTICABLE BEFORE AND AFTER GRADING OR CONSTRUCTION. IDENTIFY THE TYPE OF VEGETATIVE SEED MIX USED.
7. EROSION AND SEDIMENT CONTROL MEASURES INCLUDING PERIMETER SEDIMENT CONTROL MUST BE IN PLACE BEFORE VEGETATION IS DISTURBED AND MUST REMAIN IN PLACE AND BE MAINTAINED, REPAIRED, AND PROMPTLY IMPLEMENTED FOLLOWING PROCEDURES ESTABLISHED FOR THE DURATION OF CONSTRUCTION, INCLUDING PROTECTION FOR ACTIVE STORM DRAIN INLETS AND CATCH BASINS AND APPROPRIATE NON-STORMWATER POLLUTION CONTROLS.
8. ESTABLISH CONCRETE TRUCK AND OTHER CONCRETE EQUIPMENT WASHOUT AREAS BEFORE BEGINNING CONCRETE WORK. DIRECT ALL WASH WATER INTO A PIT OR LEAK-PROOF CONTAINER. HANDLE WASH WATER AS WASTE, CONCRETE DISCHARGE TO WATERS OF THE STATE IS PROHIBITED.
9. APPLY TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS AS GRADING PROGRESSES AND FOR ALL ROADWAYS INCLUDING GRAVEL ROADWAYS.
10. ESTABLISH MATERIAL AND WASTE STORAGE AREAS, AND OTHER NON-STORMWATER CONTROLS.
11. PREVENT TRACKING OF SEDIMENT ONTO PUBLIC OR PRIVATE ROODS USING BMPS SUCH AS: GRAVELED (OR PAVED) EXITS AND PARKING AREAS, GRAVEL ALL UNPAVED ROADS LOCATED ONSITE, OR USE AN EXIT TIRE WASH. THESE BMPS MUST BE IN PLACE PRIOR TO LAND-DISTURBING ACTIVITIES.
12. WHEN TRUCKING SATURATED SOILS FROM THE SITE, EITHER USE WATER-LIGHT TRUCKS OR DRAIN LOADS ON SITE.
13. USE BMPS TO PREVENT OR MINIMIZE STORMWATER EXPOSURE TO POLLUTANTS FROM SPILLS; VEHICLE AND EQUIPMENT FUELING, MAINTENANCE, AND STORAGE; OTHER CLEANING AND MAINTENANCE ACTIVITIES; AND WASTE HANDLING ACTIVITIES. THESE POLLUTANTS INCLUDE FUEL, HYDRAULIC FLUID, AND OTHER OILS FROM VEHICLES AND MACHINERY, AS WELL AS DEBRIS, LEFTOVER PAINTS, SOLVENTS, AND GLUES FROM CONSTRUCTION OPERATIONS.
14. IMPLEMENT THE FOLLOWING BMPS WHEN APPLICABLE: WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURES, EMPLOYEE TRAINING ON SPILL PREVENTION AND PROPER DISPOSAL PROCEDURES, SPILL KITS IN ALL VEHICLES, REGULAR MAINTENANCE SCHEDULE FOR VEHICLES AND MACHINERY, MATERIAL DELIVERY AND STORAGE CONTROLS, TRAINING AND SIGNAGE, AND COVERED STORAGE AREAS FOR WASTE AND SUPPLIES.
15. USE WATER, SOIL-BINDING AGENT OR OTHER DUST CONTROL TECHNIQUE AS NEEDED TO AVOID WIND-BLOWN SOIL.
16. THE APPLICATION RATE OF FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW MANUFACTURER'S RECOMMENDATIONS TO MINIMIZE NUTRIENT RELEASES TO SURFACE WATERS. EXERCISE CAUTION WHEN USING TIME-RELEASE FERTILIZERS WITHIN ANY WATERWAY RIPARIAN ZONE.
17. IF A STORMWATER TREATMENT SYSTEM (FOR EXAMPLE, ELECTRO-COAGULATION, FLOCCULATION, FILTRATION, ETC.) FOR SEDIMENT OR OTHER POLLUTANT REMOVAL IS EMPLOYED, SUBMIT ON OPERATION AND MAINTENANCE PLAN (INCLUDING SYSTEM SCHEMATIC, LOCATION OF SYSTEM, LOCATION OF INLET, LOCATION OF DISCHARGE, DISCHARGE DISPERSION DEVICE DESIGN, AND A SAMPLING PLAN AND FREQUENCY) BEFORE OPERATING THE TREATMENT SYSTEM. OBTAIN PLAN APPROVAL BEFORE OPERATING THE TREATMENT SYSTEM. OPERATE AND MAINTAIN THE TREATMENT SYSTEM ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
18. AT THE END OF EACH WORKDAY SOIL STOCKPILES MUST BE STABILIZED OR COVERED, OR OTHER BMPS MUST BE IMPLEMENTED TO PREVENT DISCHARGES TO SURFACE WATERS OR CONVEYANCE SYSTEMS LEADING TO SURFACE WATERS.
19. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND CREATION OF BORE GROUND DURING WET WEATHER OCTOBER 01 - MAY 31.
20. SEDIMENT FENCE: REMOVE TRAPPED SEDIMENT BEFORE IT REACHES ONE THIRD OF THE ABOVE GROUND FENCE HEIGHT AND BEFORE FENCE REMOVAL.
21. OTHER SEDIMENT BARRIERS (SUCH AS BIOBOGS): REMOVE SEDIMENT BEFORE IT REACHES TWO INCHES DEPTH ABOVE GROUND HEIGHT, AND BEFORE BMP REMOVAL.
22. CATCH BASINS: CLEAN BEFORE RETENTION CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT. SEDIMENT BASINS AND SEDIMENT TRAPS: REMOVE TRAPPED SEDIMENTS BEFORE DESIGN CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT AND AT COMPLETION OF PROJECT.
23. WITHIN 24 HOURS, SIGNIFICANT SEDIMENT THAT HAS LEFT THE CONSTRUCTION SITE, MUST BE REMEDIATED. INVESTIGATE THE CAUSE OF THE SEDIMENT RELEASE AND IMPLEMENT STEPS TO PREVENT A RECURRENCE OF THE DISCHARGE WITHIN THE SAME 24 HOURS. ANY IN-STREAM CLEAN UP OF SEDIMENT SHALL BE PERFORMED ACCORDING TO THE OREGON DIVISION OF STATE LANDS REQUIRED TIMEFRAME.
24. THE INTENTIONAL WASHING OF SEDIMENT INTO STORM SEWERS OR DRAINAGE WAYS MUST NOT OCCUR. VACUUMING OR DRY SWEEPING AND MATERIAL PICKUP MUST BE USED TO CLEANUP RELEASED SEDIMENTS.
25. PROVIDE PERMANENT EROSION CONTROL MEASURES ON ALL EXPOSED AREAS. DO NOT REMOVE TEMPORARY SEDIMENT CONTROL PRACTICES UNTIL PERMANENT VEGETATION OR OTHER COVER OF EXPOSED AREAS IS ESTABLISHED. HOWEVER, DO REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AS EXPOSED AREAS BECOME STABILIZED, UNLESS DOING SO CONFLICTS WITH LOCAL REQUIREMENTS. PROPERLY DISPOSE OF CONSTRUCTION MATERIALS AND WASTE, INCLUDING SEDIMENT RETAINED BY TEMPORARY BMPS.
26. IF VEGETATIVE SEED MIXES ARE SPECIFIED, SEEDING MUST TAKE PLACE NO LATER THAT SEPTEMBER 1; THE TYPE AND PERCENTAGES OF SEED IN THE MIX MUST BE IDENTIFIED ON THE PLANS.
27. ALL PUMPING OF SEDIMENT LADEN WATER SHALL BE DISCHARGED OVER AN UNDISTURBED, PREFERABLY VEGETATED AREA, AND THROUGH A SEDIMENT CONTROL BMP I.E. (FILTER BAG).
28. ALL EXPOSED SOILS MUST BE COVERED DURING THE WET WEATHER PERIOD, OCTOBER 01 - MAY 31.
29. IF WATER OF THE STATE IS WITHIN THE PROJECT SITE OR WITHIN 50 FEET OF THE PROJECT BOUNDARY, MAINTAIN THE EXISTING NATURAL BUFFER WITHIN THE 50-FOOT ZONE FOR THE DURATION OF THE PERMIT COVERAGE, OR MAINTAIN LESS THAN THE ENTIRE EXISTING NATURAL BUFFER AND PROVIDE ADDITIONAL EROSION AND SEDIMENT CONTROL BMPS.

THE PERMITTEE IS REQUIRED TO MEET ALL THE CONDITIONS OF THE 1200-CN PERMIT. THIS ESCP AND GENERAL CONDITIONS HAVE BEEN DEVELOPED TO FACILITATE COMPLIANCE WITH THE 1200-CN PERMIT REQUIREMENTS. IN CASES OF DISCREPANCIES OR OMISSIONS, THE 1200-CN PERMIT REQUIREMENTS SUPERCEDE REQUIREMENTS OF THIS PLAN.

BMP MATRIX FOR CONSTRUCTION PHASES

REFER TO DEQ GUIDANCE MANUAL FOR A COMPREHENSIVE LIST OF AVAILABLE BMP'S.

	CLEARING	MASS GRADING	UTILITY INSTALLATION	STREET CONSTRUCTION	FINAL STABILIZATION	WET WEATHER (OCT. 1 - MAY 31ST)
EROSION PREVENTION						
PRESERVE NATURAL VEGETATION						
GROUND COVER					X	X
HYDRAULIC APPLICATIONS					X	X
PLASTIC SHEETING						X
MATTING					X	X
DUST CONTROL	X	X	X	X	X	X
TEMPORARY/ PERMANENT SEEDING		X	X	X	X	X
BUFFER ZONE						
OTHER:						
SEDIMENT CONTROL						
SEDIMENT FENCE (PERIMETER)	** X	X	X	X	X	X
SEDIMENT FENCE (INTERIOR)			X	X	X	X
STRAW WATTLES			X	X	X	
FILTER BERM						
INLET PROTECTION	** X	X	X	X	X	X
DEWATERING						
SEDIMENT TRAP						
OTHER:						
NATURAL BUFFER ENCROACHMENT						
50' BUFFER						
SECONDARY PERIMETER CONTROL						
OTHER:						
RUN OFF CONTROL						
CONSTRUCTION ENTRANCE	** X	X	X	X	X	X
PIPE SLOPE DRAIN						
OUTLET PROTECTION (DITCH)	X	X	X	X	X	X
SURFACE ROUGHENING WITH SEEDING					X	
CHECK DAMS (FOR EXISTING DITCHES)						
OTHER:						
POLLUTION PREVENTION						
PROPER SIGNAGE	X	X	X	X	X	X
HAZ WASTE MGMT	X	X	X	X	X	X
SPILL KIT ON-SITE	X	X	X	X	X	X
ACTIVE TREATMENT						
CEMENT TREATED SOILS						
CONCRETE WASHOUT AREA	X	X	X	X	X	X
OTHER:						

* SIGNIFIES ADDITIONAL BMP'S REQUIRED FOR WORK WITHIN 50' OF WATER OF THE STATE (N/A FOR THIS SITE)
** SIGNIFIES BMP THAT WILL BE INSTALLED PRIOR TO ANY GROUND DISTURBING ACTIVITY.

RATIONALE STATEMENT

A COMPREHENSIVE LIST OF AVAILABLE BEST MANAGEMENT PRACTICES (BMP) OPTIONS BASED ON DEQ'S GUIDANCE MANUAL HAS BEEN REVIEWED TO COMPLETE THIS EROSION AND SEDIMENT CONTROL PLAN. SOME OF THE ABOVE LISTED BMP'S WERE NOT CHOSEN BECAUSE THEY WERE DETERMINED TO NOT EFFECTIVELY MANAGE EROSION PREVENTION AND SEDIMENT CONTROL FOR THIS PROJECT BASED ON SPECIFIC SITE CONDITIONS, INCLUDING SOIL CONDITIONS TOPOGRAPHIC CONSTRAINTS, ACCESSIBILITY TO THE SITE, AND OTHER RELATED CONDITIONS, AS THE PROJECT PROGRESSES AND THERE IS A NEED TO REVISE THE ESC PLAN, AN ACTION PLAN WILL BE SUBMITTED.

INITIAL

SHEET INDEX

LOCATES (48 HOURS NOTICE REQUIRED PRIOR TO EXCAVATION)

THE CONTRACTOR MUST COMPLY WITH THE REGULATIONS OF O.R.S. 757.541 TO 757.571 IN LOCATION AND PROTECTION OF UNDERGROUND UTILITIES. 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.

CALL BEFORE YOU DIG 800-332-2344

DCI ENGINEERS
921 SW WASHINGTON ST. • SUITE 560
PORTLAND, OREGON 97205
PHONE: (503) 242-2448 FAX: (503) 382-2449
WEBSITE: WWW.DCI-ENGINEERS.COM
CIVIL / STRUCTURAL

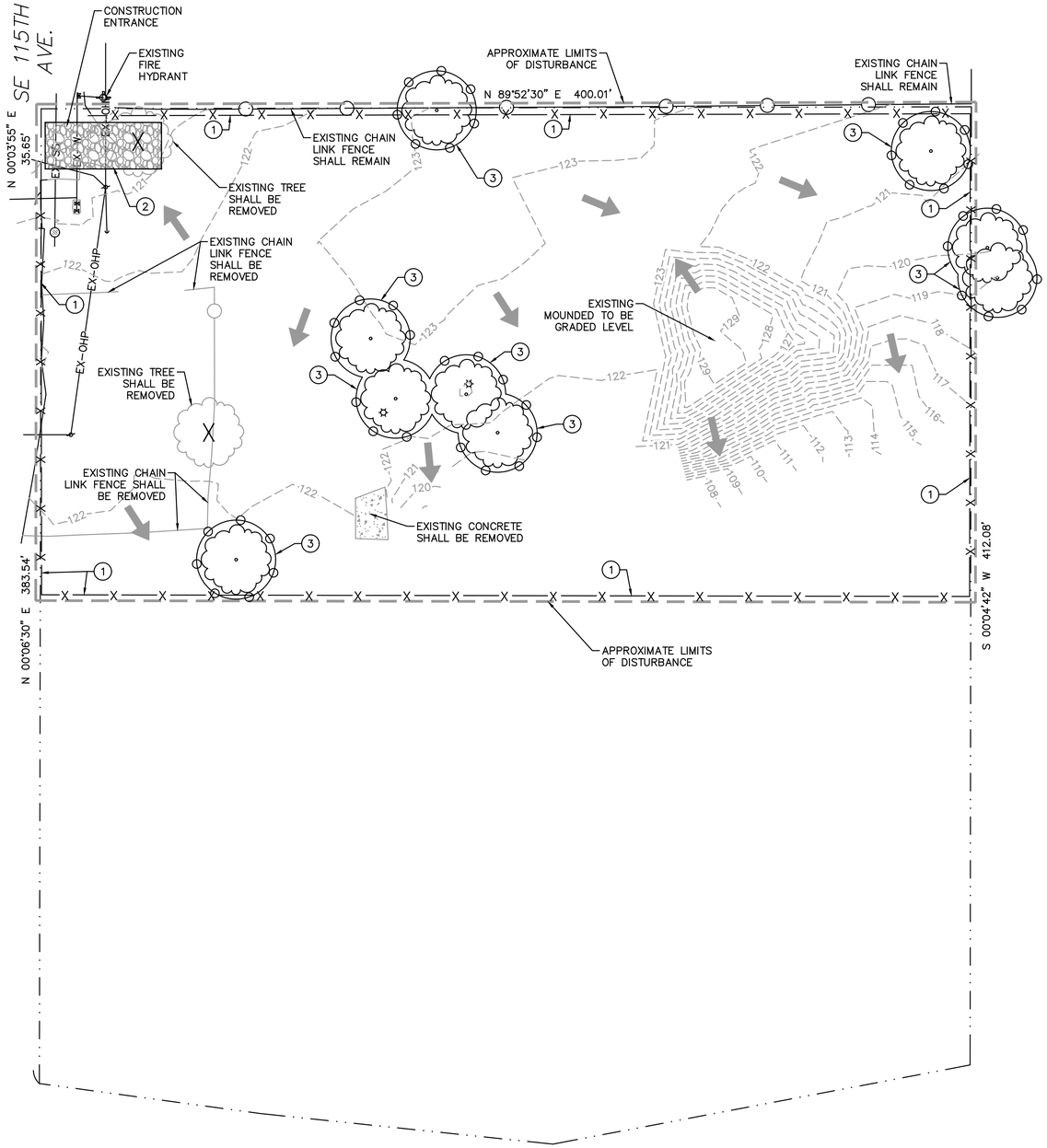
EROSION AND SEDIMENT CONTROL COVER SHEET
CLACKAMAS EMERGENCY SHELTER
BASE DESIGN + ARCHITECTURE, LLC
1300 SE STARK ST. #209, PORTLAND, OR 97214
503-477-8268

REGISTERED PROFESSIONAL ENGINEER
86645
OREGON
MARCH 13, 2012
DAMON A. SMITH
EXPIRES: 6-30-2024

DATE: 12/14/23
DRAWN BY: CJK
PROJ. MGR: KLE
CHECKED BY: KLE
PROJECT NUMBER 23032-0015
CASE FILE NUMBER TBD

SHEET NUMBER
ESC-000
OF 7

PLOT DATE: 12/20/2023 2:05 PM



LEGEND

FINISHED GRADE CONTOUR (1 FT INTERVAL)	102	SEDIMENT MAT	
SEDIMENT BARRIER (PERIMETER)	X	TEMPORARY SLOPE DRAIN	
SEDIMENT BARRIER (INTERIOR)	XX	COMPOST BLANKET	
ORANGE CONSTRUCTION FENCE		SEEDING & MULCHING	
BRUSH BARRIER		CONCRETE WASH AREA	
CHECK DAM		OUTLET PROTECTION	
CONSTRUCTION ENTRANCE		ROCK FILTER BERM	
DIVERSION DIKE		TEMPORARY SLOPE STABILIZATION MEASURES	
DIVERSION SWALE		LONG TERM SLOPE STABILIZATION MEASURES	
DIVERSION DIKE/SWALE		EXISTING CONDITIONS DRAINAGE FLOW DIRECTION	
INLET PROTECTION		TREE TO BE REMOVED	
LIMITS OF DISTURBANCE			

PRE-CONSTRUCTION, CLEARING, AND DEMOLITION NOTES:

1. ALL BASE ESC MEASURES (INLET PROTECTION, PERIMETER SEDIMENT CONTROL, GRAVEL CONSTRUCTION ENTRANCES, ETC.) MUST BE IN PLACE, FUNCTIONAL, AND APPROVED IN AN INITIAL INSPECTION, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
2. SEDIMENT BARRIERS APPROVED FOR USE INCLUDE SEDIMENT FENCE, BERMS CONSTRUCTED OUT OF MULCH, CHIPPINGS, OR OTHER SUITABLE MATERIAL, STRAW WATTLES, OR OTHER APPROVED MATERIALS.
3. SENSITIVE RESOURCES INCLUDING, BUT NOT LIMITED TO, TREES, WETLANDS, AND RIPARIAN PROTECTION AREAS SHALL BE CLEARLY DELINEATED WITH ORANGE CONSTRUCTION FENCING OR CHAIN LINK FENCING IN A MANNER THAT IS CLEARLY VISIBLE TO ANYONE IN THE AREA. NO ACTIVITIES ARE PERMITTED TO OCCUR BEYOND THE CONSTRUCTION BARRIER. ORANGE FENCE MAY BE USED IN SENSITIVE AREAS ONLY.
4. CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES INCLUDING, BUT NOT LIMITED TO, TIRE WASHES, STREET SWEEPING, AND VACUUMING, MAY BE REQUIRED TO INSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
5. RUN-ON AND RUN-OFF CONTROLS SHALL BE IN PLACE AND FUNCTIONING PRIOR TO BEGINNING SUBSTANTIAL CONSTRUCTION ACTIVITIES. RUN-ON AND RUN-OFF CONTROL MEASURES INCLUDE: SLOPE DRAINS (WITH OUTLET PROTECTION), CHECK DAMS, SURFACE ROUGHENING, AND BANK STABILIZATION.

(X) EROSION AND SEDIMENT CONTROL KEYNOTES:

1. INSTALL SEDIMENT FENCE PER DRAWING NO. 4-15/ESC-401.
2. INSTALL AND MAINTAIN 20' X 50' STABILIZED CONSTRUCTION ENTRANCE PER DRAWING NO. 4-11/ESC-400.
3. INSTALL ORANGE CONSTRUCTION TREE PROTECTION FENCING TO PRESERVE AND PROTECT TREE PER DETAIL 1/ESC-400.

GRAPHIC SCALE

30 0 15 30

(IN FEET)
1 INCH = 30 FEET

N

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EXISTING CONDITIONS AND DEMOLITION PLAN

CLACKAMAS EMERGENCY SHELTER

BASE DESIGN + ARCHITECTURE, LLC

1300 SE STARK ST. #209, PORTLAND, OR 97214 503-477-8268

REGISTERED PROFESSIONAL ENGINEER
86615
OREGON
MARCH 13, 2012
DAMON A. SMITH
EXPIRES: 6-30-2024

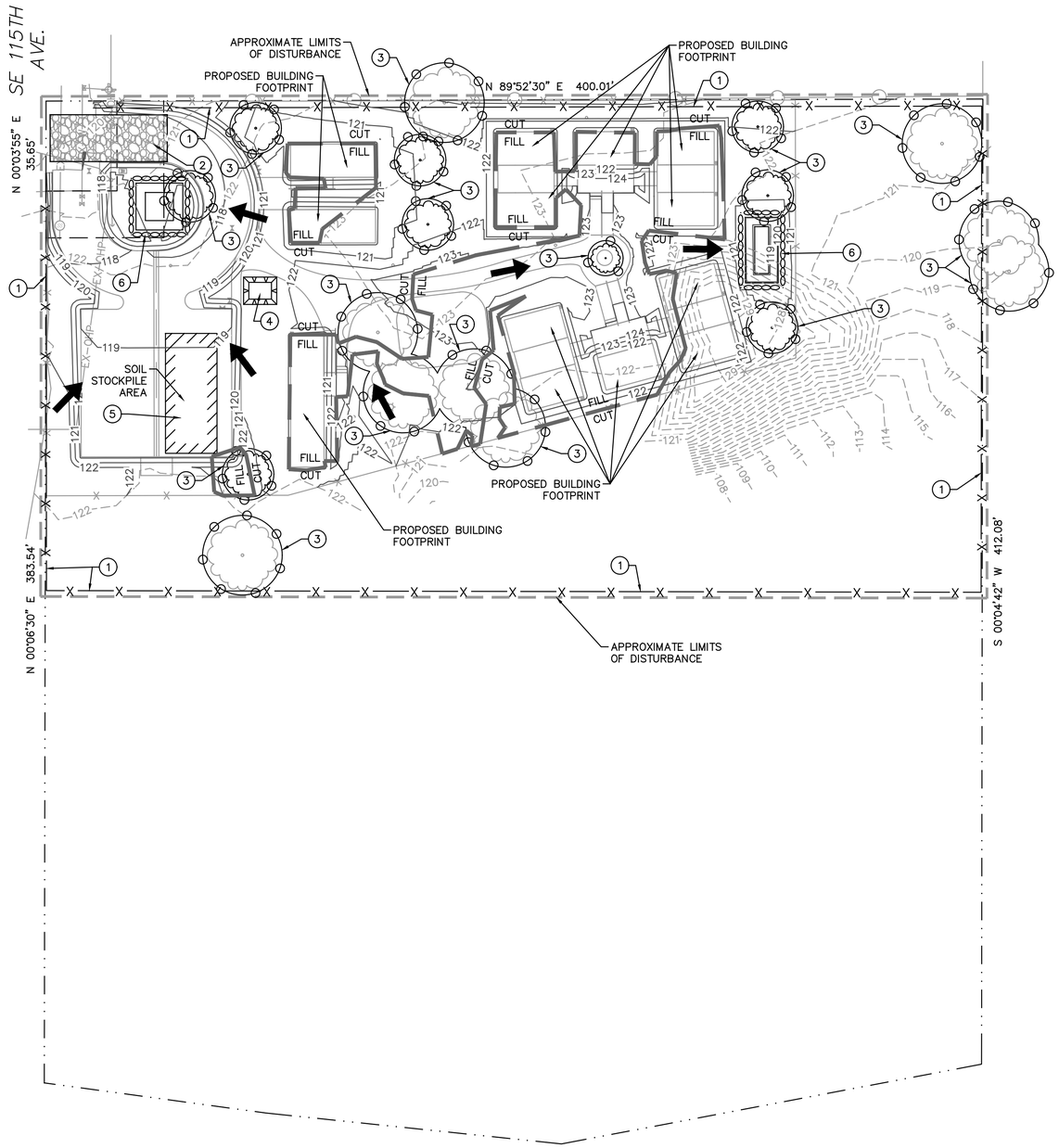
DATE:	12/14/23
DRAWN BY:	CJK
PROJ. MGR:	KLE
CHECKED BY:	KLE
PROJECT NUMBER	23032-0015
CASE FILE NUMBER	TBD

SHEET NUMBER
ESC-100
OF 7

PLOT DATE:12/20/2023 2:06 PM

EROSION CONTROL GENERAL NOTES:

1. SEED USED FOR TEMPORARY OR PERMANENT SEEDING SHALL BE COMPOSED OF ONE OF THE FOLLOWING MIXTURES, UNLESS OTHERWISE AUTHORIZED:
   A. DWARF GRASS MIX (MIN. 100 LB/AC)
      1. DWARF PERENNIAL RYEGRASS (80% BY WEIGHT)
      2. CREEPING RED FESCUE (20% BY WEIGHT)
   B. STANDARD HEIGHT GRASS MIX (MIN. 100LB./AC.)
      1. ANNUAL RYEGRASS (40% BY WEIGHT)
      2. TURF-TYPE FESCUE (60% BY WEIGHT)
2. SLOPE TO RECEIVE TEMPORARY OR PERMANENT SEEDING SHALL HAVE THE SURFACE ROUGHENED BY MEANS OF TRACK-WALKING OR THE USE OF OTHER APPROVED IMPLEMENTS. SURFACE ROUGHENING IMPROVES SEED BEDDING AND REDUCES RUN-OFF VELOCITY.
3. LONG TERM SLOPE STABILIZATION MEASURES SHALL INCLUDE THE ESTABLISHMENT OF PERMANENT VEGETATIVE COVER VIA SEEDING WITH APPROVED MIX AND APPLICATION RATE.
4. TEMPORARY SLOPE STABILIZATION MEASURES SHALL INCLUDE: COVERING EXPOSED SOIL WITH PLASTIC SHEETING, STRAW MULCHING, OR OTHER APPROVED MEASURES.
5. STOCKPILED SOIL OR STRIPPINGS SHALL BE PLACED IN A STABLE LOCATION AND CONFIGURATION. DURING "WET WEATHER" PERIODS, STOCKPILES SHALL BE COVERED WITH PLASTIC SHEETING OR STRAW MULCH. SEDIMENT FENCE IS REQUIRED AROUND THE PERIMETER OF THE STOCKPILE.
6. EXPOSED CUT OR FILL AREAS SHALL BE STABILIZED THROUGH THE USE OF TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS OR MATS, MID-SLOPE SEDIMENT FENCES OR WATTLES, OR OTHER APPROPRIATE MEASURES. SLOPES EXCEEDING 25% MAY REQUIRE ADDITIONAL EROSION CONTROL MEASURES.
7. AREAS SUBJECT TO WIND EROSION SHALL USE APPROPRIATE DUST CONTROL MEASURES INCLUDING THE APPLICATION OF A FINE SPRAY OF WATER, PLASTIC SHEETING, STRAW MULCHING, OR OTHER APPROVED MEASURES.
8. CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES INCLUDING, BUT NOT LIMITED TO, TIRE WASHES, STREET SWEEPING, AND VACUUMING MAY BE BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
9. ACTIVE INLETS TO STORM WATER SYSTEMS SHALL BE PROTECTED THROUGH THE USE OF APPROVED INLET PROTECTION MEASURES. ALL INLET PROTECTION MEASURES ARE TO BE REGULARLY INSPECTED AND MAINTAINED AS NEEDED.
10. SATURATED MATERIALS THAT ARE HAULED OFF-SITE MUST BE TRANSPORTED IN WATER-TIGHT TRUCKS TO ELIMINATE SPILLAGE OF SEDIMENT AND SEDIMENT-LADEN WATER.
11. AN AREA SHALL BE PROVIDED FOR THE WASHING OUT OF CONCRETE TRUCKS IN A LOCATION THAT DOES NOT PROVIDE RUN-OFF THAT CAN ENTER THE STORM WATER SYSTEM. IF THE CONCRETE WASH-OUT AREA CAN NOT BE CONSTRUCTED GREATER THAN 50' FROM ANY DISCHARGE POINT, SECONDARY MEASURES SUCH AS BERMS OR TEMPORARY SEITLING PITS MAY BE REQUIRED. THE WASH-OUT SHALL BE LOCATED WITHIN SIX FEET OF TRUCK ACCESS AND BE CLEANED WHEN IT REACHES 50% OF THE CAPACITY.
12. SWEEPINGS FROM EXPOSED AGGREGATE CONCRETE SHALL NOT BE TRANSFERRED TO THE STORM WATER SYSTEM. SWEEPINGS SHALL BE PICKED UP AND DISPOSED IN THE TRASH.
13. AVOID PAVING IN WET WEATHER WHEN PAVING CHEMICALS CAN RUN-OFF INTO THE STORM WATER SYSTEM.
14. USE BMPS SUCH AS CHECK-DAMS, BERMS, AND INLET PROTECTION TO PREVENT RUN-OFF FROM REACHING DISCHARGE POINTS.
15. COVER CATCH BASINS, MANHOLES, AND OTHER DISCHARGE POINTS WHEN APPLYING SEAL COAT, TACK COAT, ETC. TO PREVENT INTRODUCING THESE MATERIALS TO THE STORM WATER SYSTEM.



GRAPHIC SCALE

30 0 15 30

(IN FEET)
1 INCH = 30 FEET

N

LEGEND

- MASS GRADE CONTOUR (1 FT INTERVAL 2.5' BELOW FINISHED SURFACE IN BUILDING FOOTPRINTS AND ASPHALT PAVEMENT AREAS) — 102
- SEDIMENT BARRIER — X
- ORANGE CONSTRUCTION FENCE
- STRAW WATTLES / FIBER-ROLLS
- CONSTRUCTION ENTRANCE
- INLET PROTECTION
- TEMPORARY SLOPE DRAIN
- SEEDING & MULCHING
- CONCRETE WASH AREA
- OUTLET PROTECTION
- ROCK FILTER BERM
- TEMPORARY SLOPE STABILIZATION MEASURES
- LONG TERM SLOPE STABILIZATION MEASURES
- DEVELOPED CONDITIONS DRAINAGE FLOW DIRECTION
- DIVERSION DIKE/SWALE
- LIMITS OF DISTURBANCE
- CUT / FILL SEPARATION LINE

EROSION AND SEDIMENT CONTROL BMP IMPLEMENTATION:

1. ALL BASE ESC MEASURES (INLET PROTECTION, PERIMETER SEDIMENT CONTROL, GRAVEL CONSTRUCTION ENTRANCES, ETC.) MUST BE IN PLACE, FUNCTIONAL, AND APPROVED IN AN INITIAL INSPECTION, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
2. ALL "SEDIMENT BARRIERS (TO BE INSTALLED AFTER GRADING)" SHALL BE INSTALLED IMMEDIATELY FOLLOWING ESTABLISHMENT OF FINISHED GRADE AS SHOWN ON THESE PLANS.
3. LONG TERM SLOPE STABILIZATION MEASURES "INCLUDING MATTING" SHALL BE IN PLACE OVER ALL EXPOSED SOILS BY OCTOBER 1.
4. INLET PROTECTION SHALL BE IN-PLACE IMMEDIATELY FOLLOWING PAVING ACTIVITIES.
5. THE STORM WATER FACILITY SHALL BE CONSTRUCTED AND LANDSCAPED PRIOR TO THE STORM WATER SYSTEM FUNCTIONING AND SITE PAVING.

(X) EROSION AND SEDIMENT CONTROL NOTES:

1. INSTALL SEDIMENT FENCE PER DRAWING NO. 4-15/ESC-401.
2. INSTALL AND MAINTAIN 20' X 50' STABILIZED CONSTRUCTION ENTRANCE PER DRAWING NO. 4-11/ESC-400.
3. INSTALL ORANGE CONSTRUCTION TREE PROTECTION FENCING TO PRESERVE AND PROTECT TREE PER DETAIL 1/ESC-400.
4. INSTALL CONCRETE WASHOUT PER DRAWING NO. 4-20/ESC-401.
5. PROTECT SOIL STOCKPILE AREA PER DRAWING NO. 4-2/ESC-400.
6. INSTALL WATTLES TO PROTECT STORMWATER TREATMENT FACILITY FROM COMPACTION AND EXTERNAL STORMWATER RUNOFF PER DRAWING NO. 4-16/ESC-401. MATERIAL IN FACILITY SHALL MEET CLACKAMAS COUNTY WATER QUALITY STANDARDS.

SEDIMENT BASIN SIZING:

AN ENGINEERED SEDIMENT BASIN IS NOT DESIGNED FOR THIS SITE. THIS SITE DOES NOT CONTAIN ANY ENGINEERED SOILS.

RUNOFF CONTROL NOTE:

A PHASED MASS GRADING AND RUNOFF CONTROL PLAN IS REQUIRED FOR PROJECTS WHERE CLEARING AND MASS GADING ACTIVITIES ARE PROPOSED DURING THE WET WEATHER PERIOD, OCTOBER 1, THROUGH MAY 31. THE RUNOFF CONTROL PLAN SHALL IDENTIFY BMPS FROM CLACKAMAS COUNTY EROSION PREVENTION PLANNING AND DESIGN MANUAL CHAPTER 4 TABLE 4-1, OR APPROVED ALTERNATIVES, AND BE SUBMITTED WITH, OR AS A REVISION TO, THE EPSC PLAN. ALL BMPS SPECIFIED ON THE RUNOFF CONTROL PLAN SHALL BE IN PLACE AND FUNCTIONAL PRIOR TO COMMENCEMENT OF MASS GRADING.

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MASS GRADING EROSION CONTROL PLAN
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PROJECT NUMBER	23032-0015
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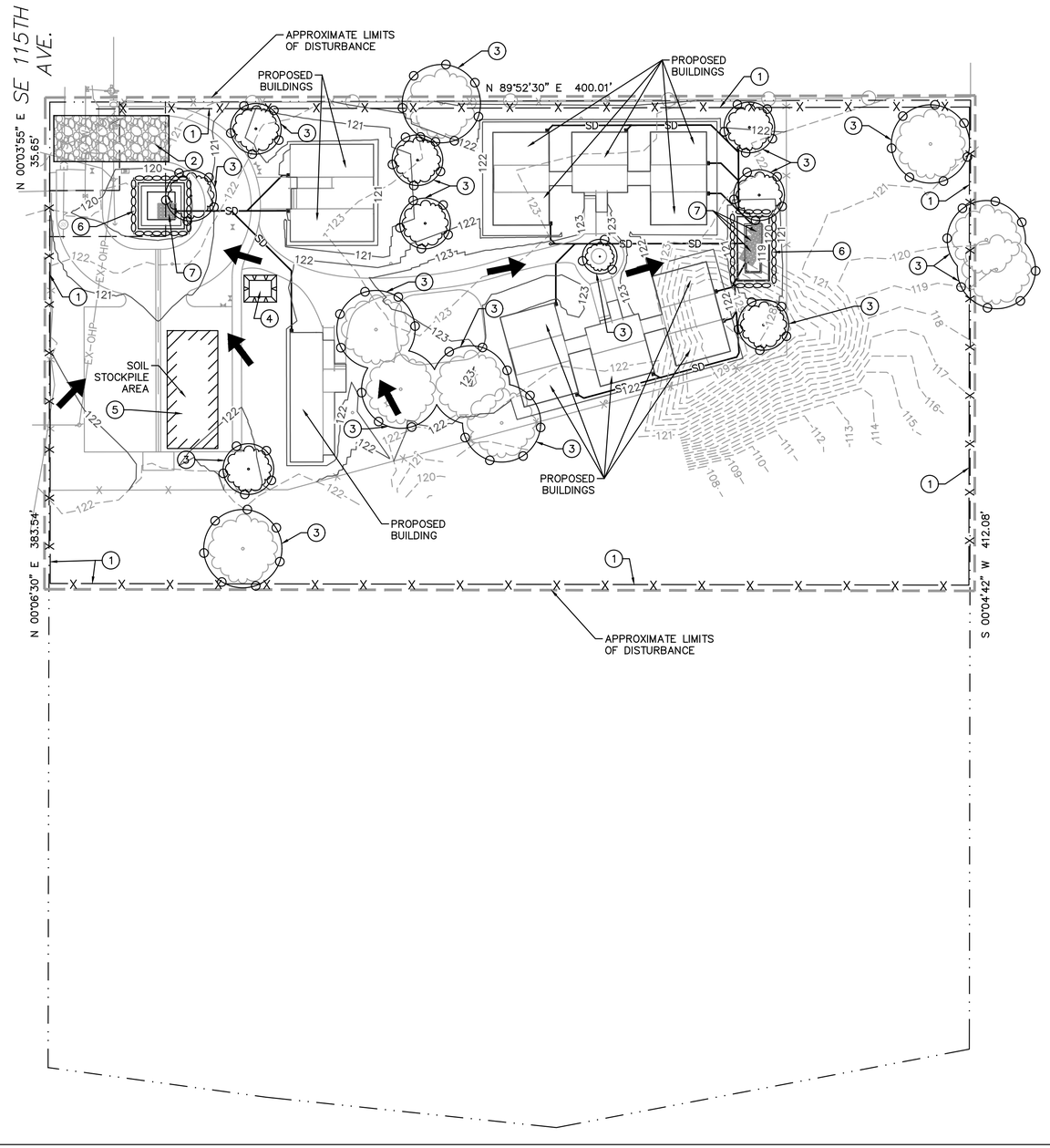

GRAPHIC SCALE

30 0 15 30

(IN FEET)
1 INCH = 30 FEET

N

LEGEND

- FINISHED GRADE CONTOUR (1 FT INTERVAL) — 102
- SEDIMENT BARRIER — X
- ORANGE CONSTRUCTION FENCE
- STRAW WATTLES / FIBER-ROLLS
- CONSTRUCTION ENTRANCE
- INLET PROTECTION
- TEMPORARY SLOPE DRAIN
- SEEDING & MULCHING
- CONCRETE WASH AREA
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- ROCK FILTER BERM
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EROSION AND SEDIMENT CONTROL BMP IMPLEMENTATION:

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(X) EROSION AND SEDIMENT CONTROL NOTES:

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7. INSTALL OUTLET PROTECTION RIP RAP PER DRAWING NO. 4-4/ESC-400.

SEDIMENT BASIN SIZING:

AN ENGINEERED SEDIMENT BASIN IS NOT DESIGNED FOR THIS SITE. THIS SITE DOES NOT CONTAIN ANY ENGINEERED SOILS.

RUNOFF CONTROL NOTE:

A PHASED MASS GRADING AND RUNOFF CONTROL PLAN IS REQUIRED FOR PROJECTS WHERE CLEARING AND MASS GADING ACTIVITIES ARE PROPOSED DURING THE WET WEATHER PERIOD, OCTOBER 1, THROUGH MAY 31. THE RUNOFF CONTROL PLAN SHALL IDENTIFY BMPS FROM CLACKAMAS COUNTY EROSION PREVENTION PLANNING AND DESIGN MANUAL CHAPTER 4 TABLE 4-1, OR APPROVED ALTERNATIVES, AND BE SUBMITTED WITH, OR AS A REVISION TO, THE EPSC PLAN. ALL BMPS SPECIFIED ON THE RUNOFF CONTROL PLAN SHALL BE IN PLACE AND FUNCTIONAL PRIOR TO COMMENCEMENT OF MASS GRADING.

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DAMON A. SMITH
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PROJ. MGR:	KLE
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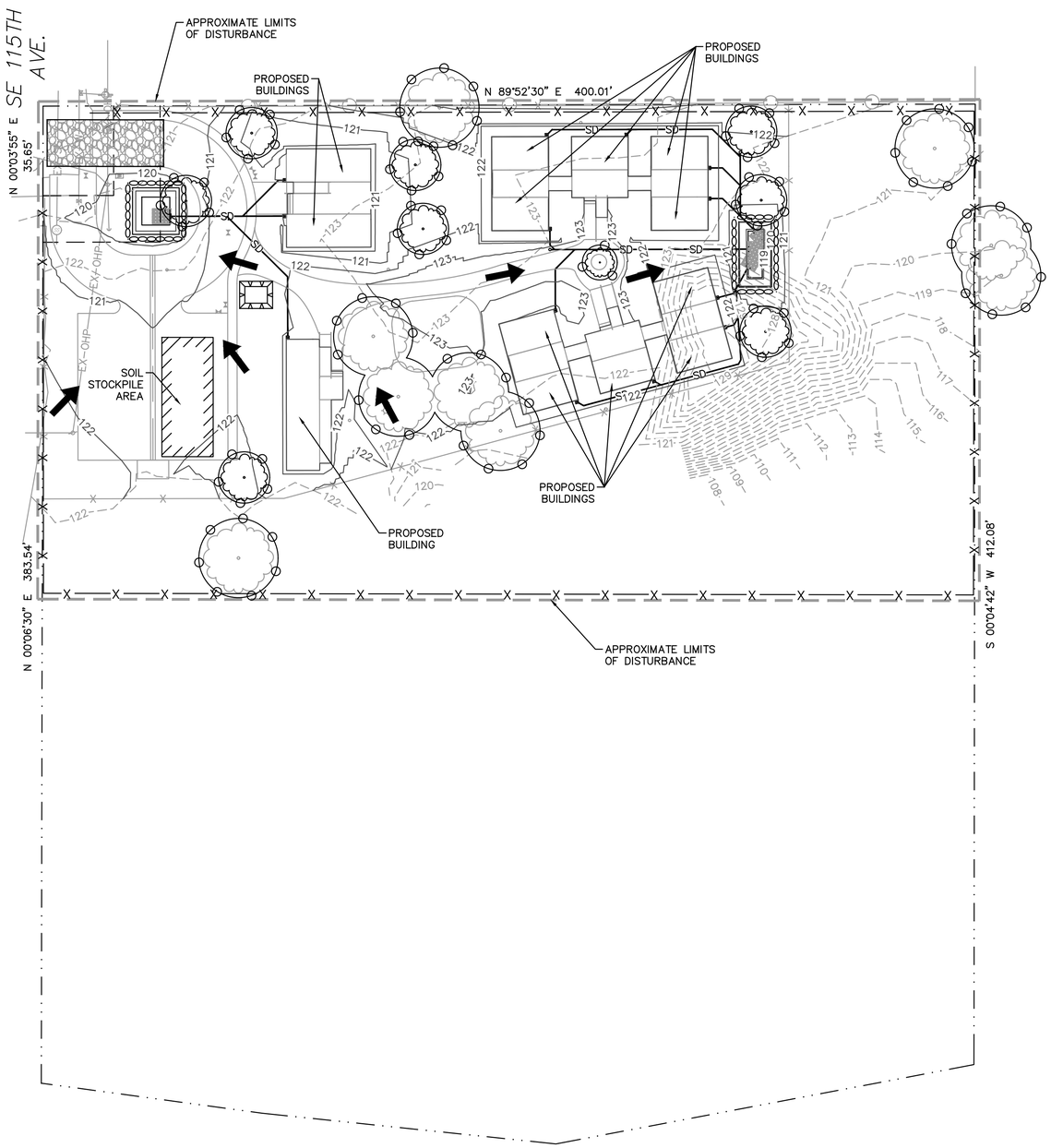
OF 7

PLOT DATE:12/20/2023 2:07 PM



LEGEND

- FINISHED GRADE CONTOUR (1 FT INTERVAL) — 102
- SEDIMENT BARRIER — X
- ORANGE CONSTRUCTION FENCE
- STRAW WATTLES / FIBER-ROLLS
- CONSTRUCTION ENTRANCE
- INLET PROTECTION
- TEMPORARY SLOPE DRAIN
- SEEDING & MULCHING
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- TEMPORARY SLOPE STABILIZATION MEASURES
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GRAPHIC SCALE

30 0 15 30

(IN FEET)
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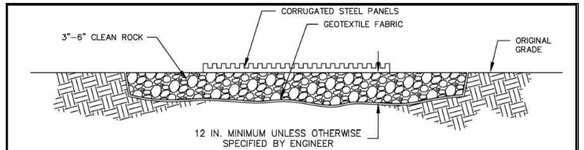
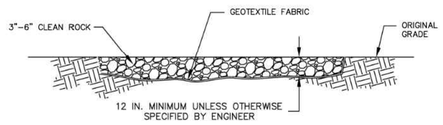


SECTION A–A



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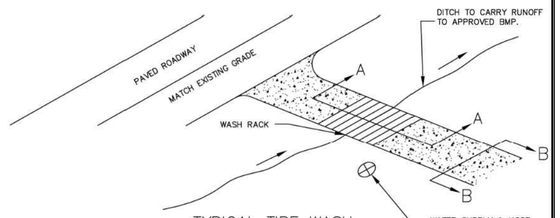


TYPICAL TIRE WASH

NOTE:

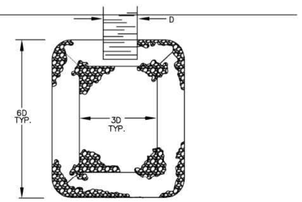
1. MANY DESIGNS CAN BE FIELD FABRICATED OR PRE-FABRICATED UNITS MAY BE USED

FOR FURTHER INFORMATION ON DESIGN CRITERIA SEE CHAPTER 4 OF EROSION PREVENTION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.

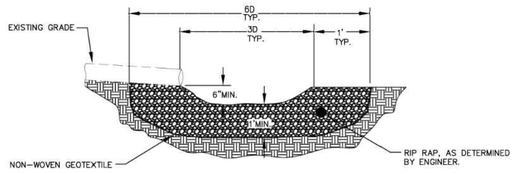
TIRE WASH (MANUAL HOSE WASH)

DRAWING NO. 4-13 REVISED 10-31-19

FOR FURTHER INFORMATION ON DESIGN CRITERIA SEE CHAPTER 4 OF EROSION PREVENTION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.



PLAN VIEW



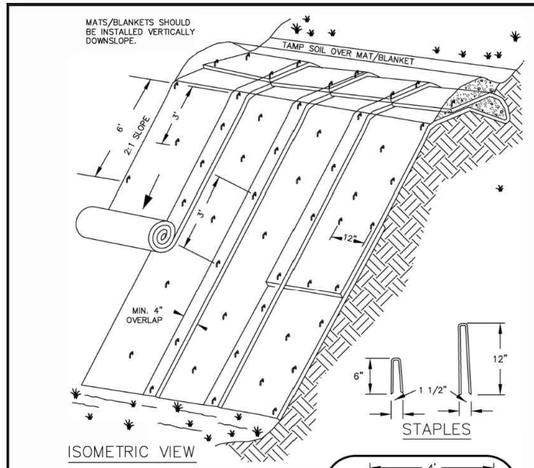
PROFILE

NOTE:

1. ADDITIONAL BMP'S ARE REQUIRED WHEN DISCHARGING SEDIMENT LADEN WATER.

OUTLET PROTECTION RIP RAP

DRAWING NO. 4-4 REVISED 10-31-19



ISOMETRIC VIEW

TYPICAL SLOPE SOIL STABILIZATION

NOT TO SCALE

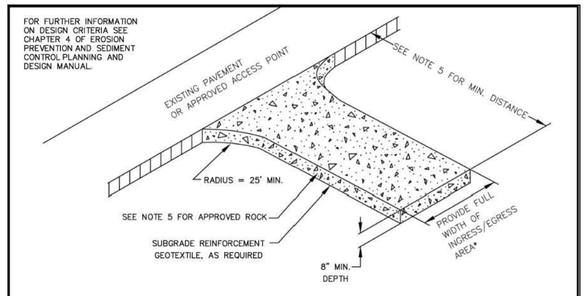
NOTES:

1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
4. STAKING OR STAPLING LAYOUT PER MANUFACTURERS SPECIFICATIONS.

MATTING SLOPE INSTALLATION

DRAWING NO. 4-1 REVISED 10-31-19

FOR FURTHER INFORMATION ON DESIGN CRITERIA SEE CHAPTER 4 OF EROSION PREVENTION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.



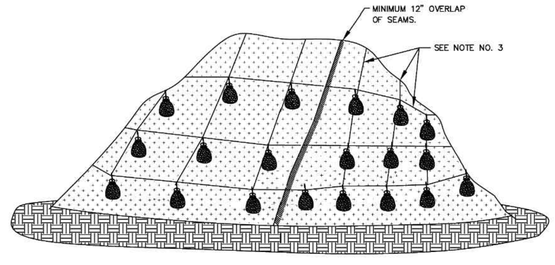
NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF- WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
4. WHERE RUNOFF CONTAINING SEDIMENT LADEN WATER IS LEAVING THE SITE VIA THE CONSTRUCTION ENTRANCE, OTHER MEASURES SHALL BE IMPLEMENTED TO DIVERT RUNOFF THROUGH AN APPROVED FILTERING SYSTEM.
5. DIMENSIONS
   SINGLE FAMILY
   20' LONG BY 20' WIDE 8" DEEP OF ¾" MINUS CLEAN ROCK.
   COMMERCIAL/SITE DEVELOPMENT
   50' LONG BY 20' WIDE 3–6" CLEAN ROCK, GOVERNING AUTHORITY MAY REQUIRE GEOTEXTILE FABRIC TO PREVENT SUB-SOIL PUMPING.

CONSTRUCTION ENTRANCE

DRAWING NO. 4-11 REVISED 10-31-19

FOR FURTHER INFORMATION ON DESIGN CRITERIA SEE CHAPTER 4 OF EROSION PREVENTION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.



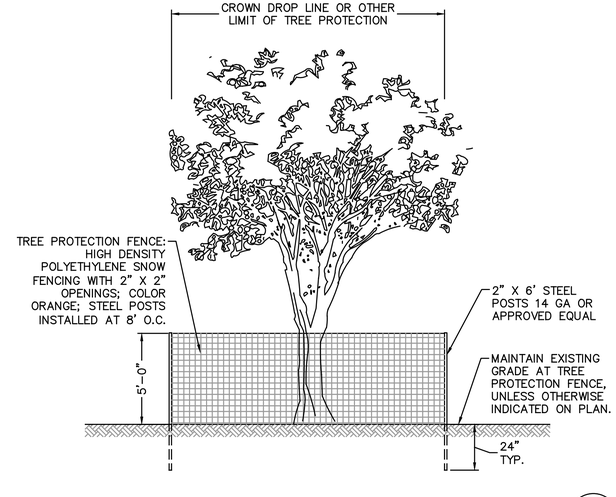
PLASTIC SHEETING

NOTES:

1. MINIMUM 12" OVERLAP OF ALL SEAMS REQUIRED.
2. PERIMETER SEDIMENT CONTROL BMP TO BE INSTALLED A MINIMUM OF 3' FROM TOE OF STOCKPILE.
3. COVERING MAINTAINED TIGHTLY IN PLACE BY USING SANDBAGS OR APPROVED EQUAL ON ROPES WITH A MAXIMUM 10' GRID SPACING IN ALL DIRECTIONS.
4. PLASTIC TO EXTEND MINIMUM 1' BEYOND TOE OF SLOPE.
5. AS APPROPRIATE, BMP'S SHALL BE INSTALLED TO CONVEY WATER DISCHARGE FROM STOCKPILE AREAS.

PLASTIC SHEETING

DRAWING 4-2 REVISED 10-31-19



TREE PROTECTION DETAIL 1

SCALE: N.T.S.

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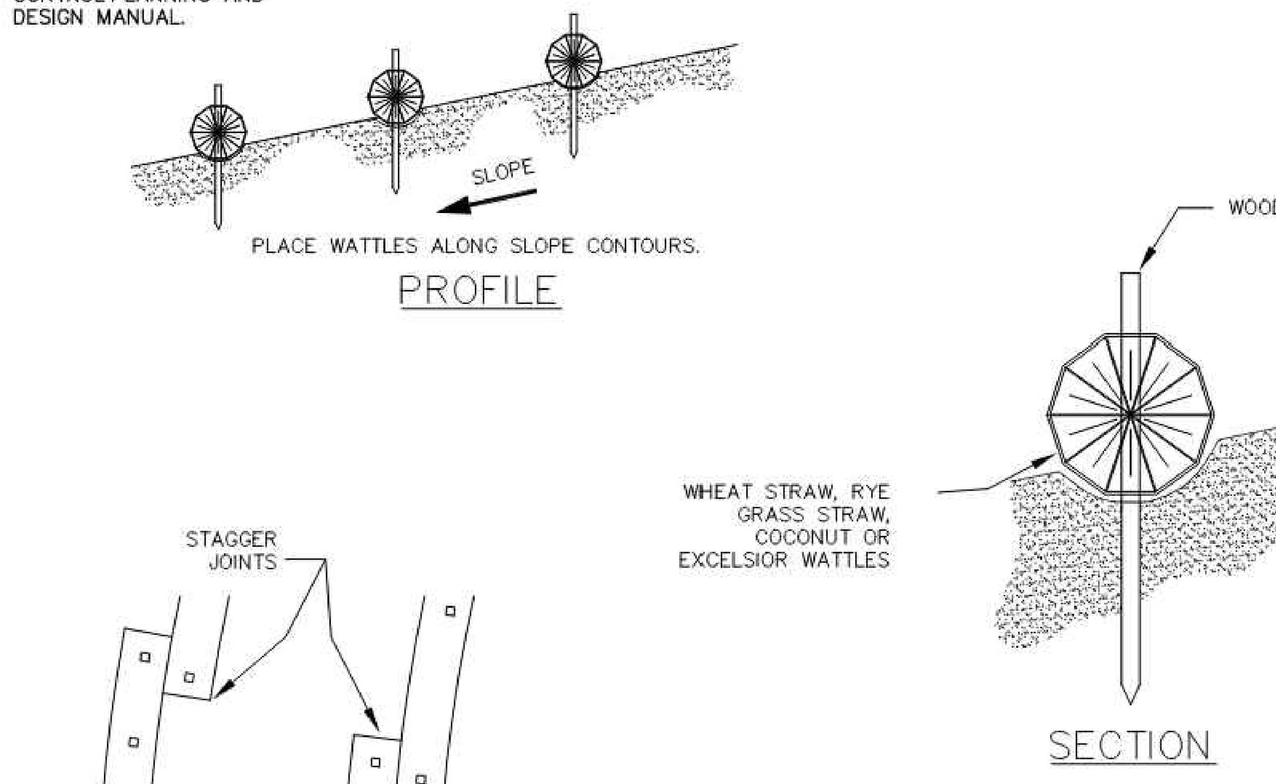
REGISTERED PROFESSIONAL ENGINEER
86615
OREGON
MARCH 13, 2012
DAMON A. SMITH
EXPIRES: 6-30-2024

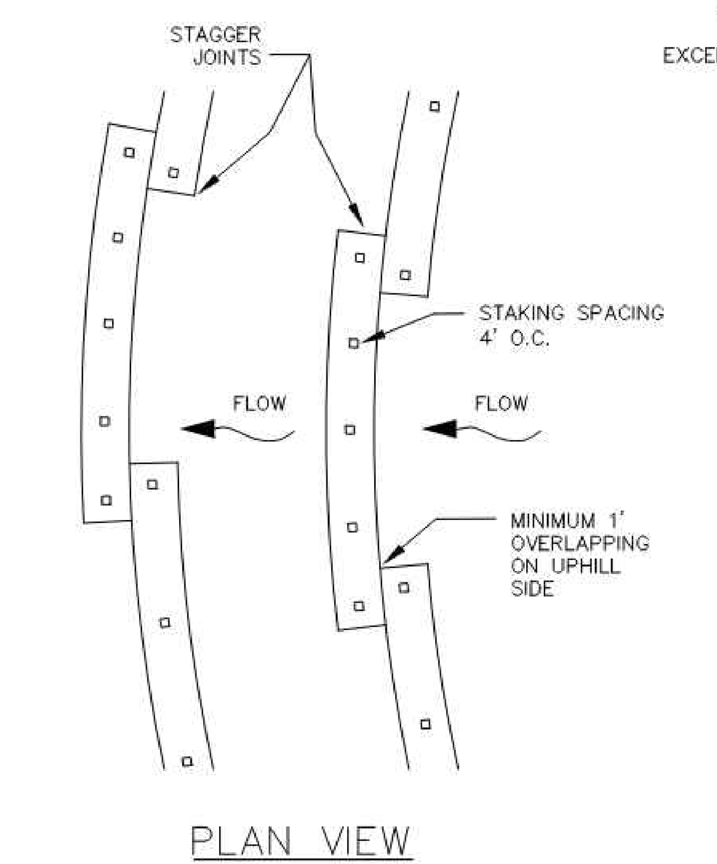
DATE:	12/14/23
DRAWN BY:	CJK
PROJ. MGR:	KLE
CHECKED BY:	KLE
PROJECT NUMBER	23032-0015
CASE FILE NUMBER	TBD

SHEET NUMBER
ESC-400
OF 7

PLOT DATE:12/20/2023 2:08 PM

FOR FURTHER INFORMATION ON DESIGN CRITERIA SEE CHAPTER 4 OF EROSION PREVENTION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.





NOTES:

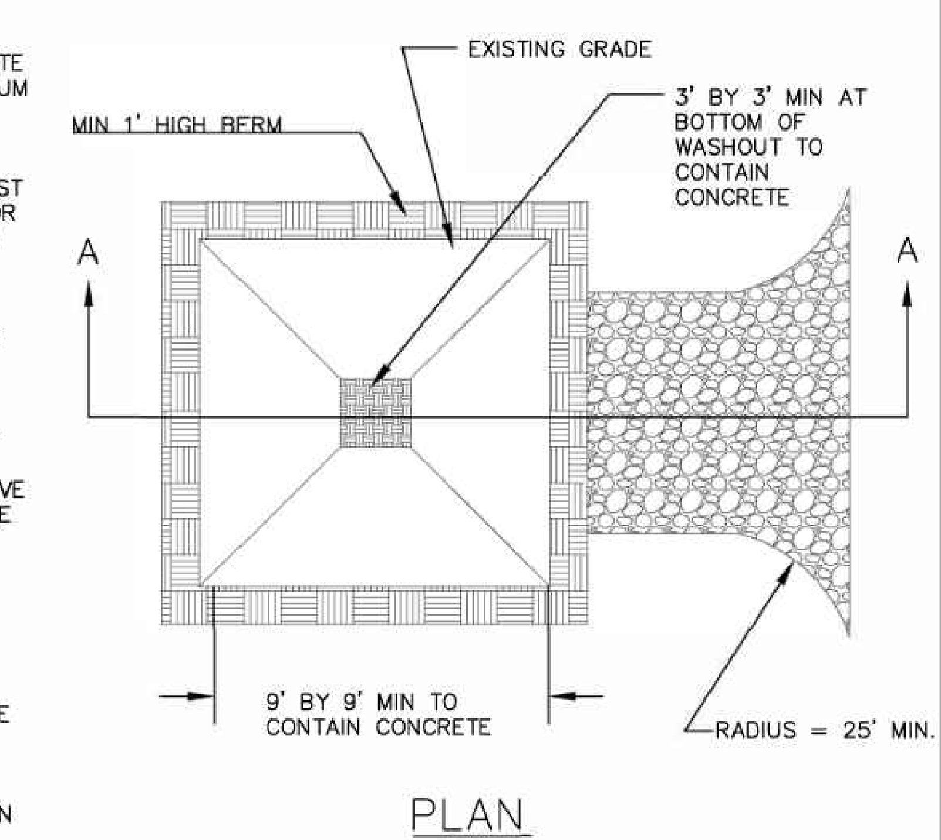
1. STAKING SPECIFICATIONS:
   a. 1"X2" WOODEN STAKES
   b. ADDITIONAL STAKES MAY BE INSTALLED ON DOWNHILL SIDE OF WATTLES, ON STEEP SLOPE OR HIGHLY EROSIVE SOILS.
2. SPACING IN ACCORDANCE WITH DETAIL 4-28
3. REMOVE ALL ROCKS, CLODS, VEGETATION OR OTHER OBSTRUCTIONS SO THAT THE INSTALLED WATTLES WILL HAVE DIRECT CONTACT WITH THE SOIL.
4. INSTALL THE WATTLES IN A 2" DEEP TRENCH, INSURING THAT NO GAPS EXIST BETWEEN THE SOIL AND THE BOTTOM OF THE WATTLE. THE ENDS OF ADJACENT WATTLES SHALL BE OVERLAPPED 1 FT. MINIMUM TO PREVENT SEDIMENT PASSING THROUGH THE FIELD JOINT.

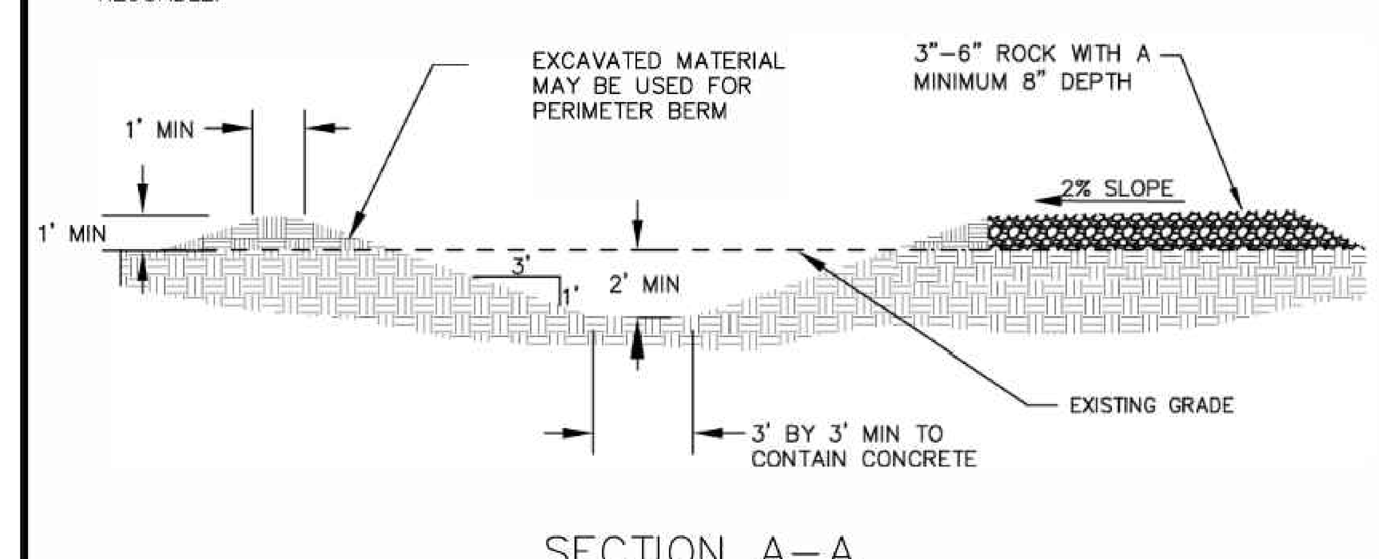
WATTLES

DRAWING NO. 4-16 REVISED 10-31-19

NOTES:

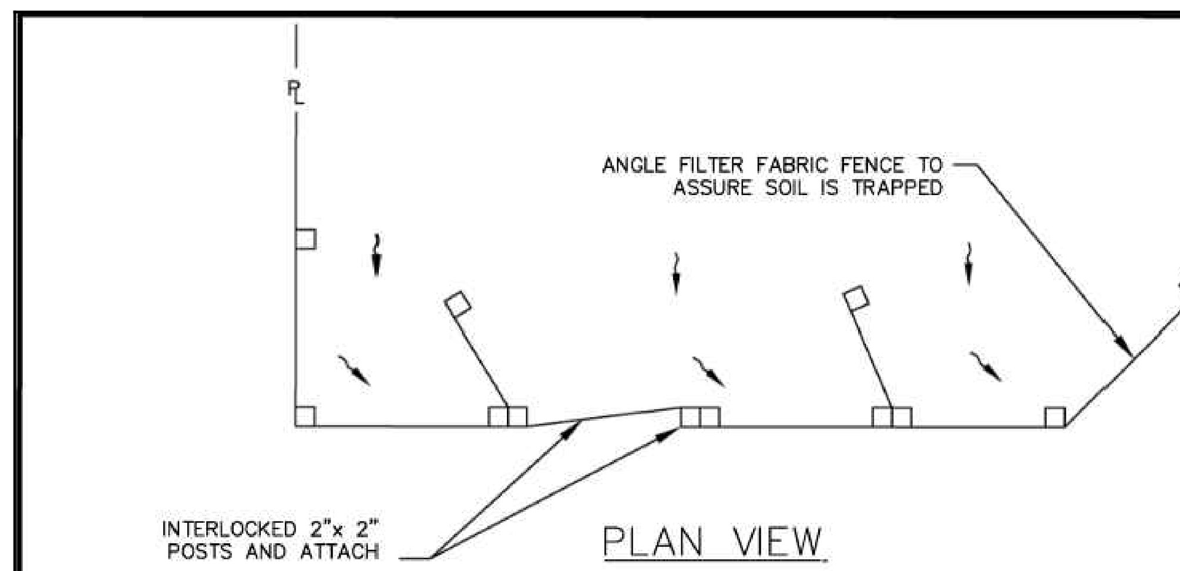
1. WASHOUT FACILITIES SHALL BE MAINTAINED TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM FREEBOARD OF 12 INCHES.
2. WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES MUST BE CONSTRUCTED AND READY FOR USE ONCE THE WASHOUT IS 75% FULL.
3. IF THE WASHOUT IS NEARING CAPACITY, VACUUM AND DISPOSE OF THE WASTE MATERIAL IN AN APPROVED MANNER.
4. TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE LOCATED A MINIMUM OF 50 FT FROM SENSITIVE AREAS INCLUDING OPEN DRAINAGE FACILITIES AND WATER SOURSES.
5. CONCRETE WASHOUT FACILITIES SHALL BE CONSTRUCTED AND MAINTAINED IN SUFFICIENT QUANTITY AND SIZE TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS.
6. INSTALL CONCRETE WASHOUT SIGN WITHIN 30 FEET OF TEMPORARY CONCRETE WASHOUT FACILITY.
7. TEMPORARY CONCRETE WASHOUTS MAY BE A PREFABRICATED CONTAINER THAT IS PORTABLE AND REUSABLE.

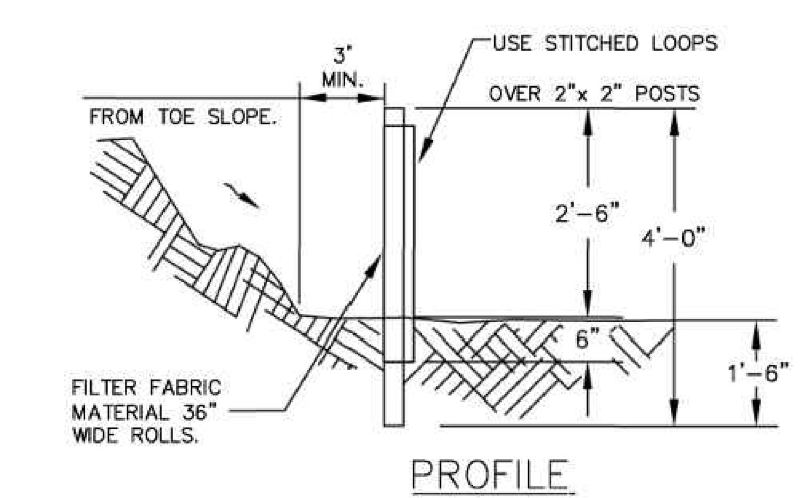




CONCRETE WASHOUT

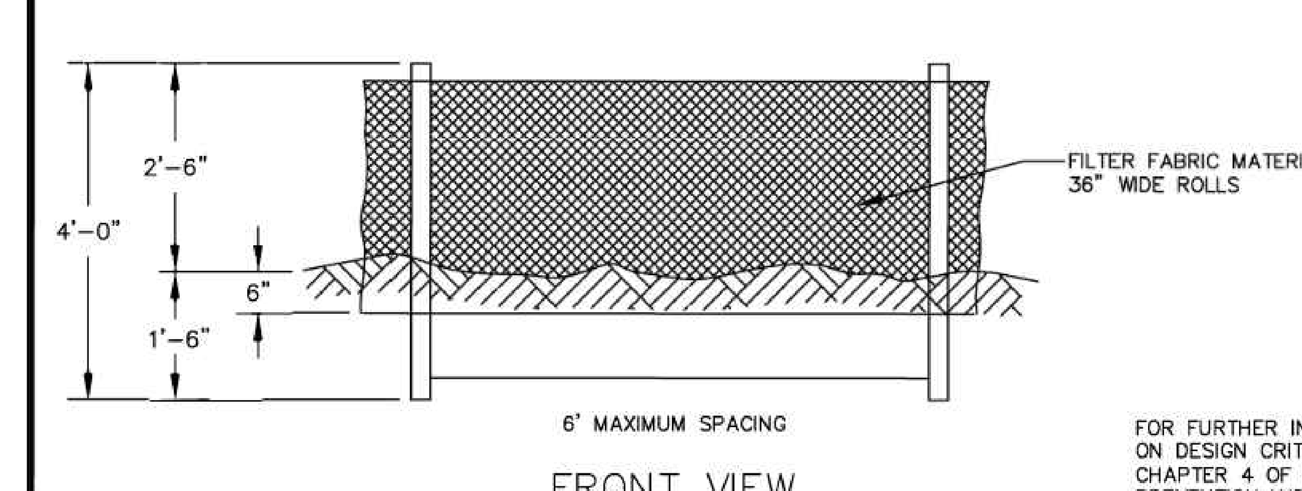
DRAWING NO. 4-20 REVISED 10-31-19





NOTES:

1. SEDIMENT FENCE TO HAVE STITCHED LOOPS AROUND 2" x 2" POSTS.
2. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
3. 2"x 2" FIR, PINE OR STEEL FENCE POSTS.
4. POSTS TO BE INSTALLED ON UPHILL SIDE OF SLOPE.
5. COMPACT BOTH SIDES OF FILTER FABRIC TRENCH.
6. PANELS MUST BE PLACED ACCORDING TO SPACING ON DRAWING NO. 4-28.



FOR FURTHER INFORMATION ON DESIGN CRITERIA SEE CHAPTER 4 OF EROSION PREVENTION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.

SEDIMENT FENCE

DRAWING NO. 4-15 REVISED 10-31-19

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503-477-8268

REGISTERED PROFESSIONAL ENGINEER 86615 OREGON MARCH 13, 2012 DAMON A. SMITH

EXPIRES: 6-30-2024

DATE: 12/14/23
DRAWN BY: CJK
PROJ. MGR: KLE
CHECKED BY: KLE
PROJECT NUMBER 23032-0015
CASE FILE NUMBER TBD

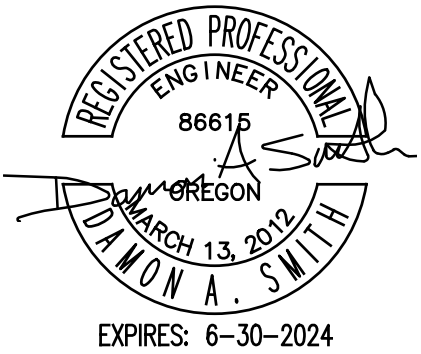
SHEET NUMBER
ESC-401
OF 7

PLOT DATE:12/20/2023 2:08 PM

Stormwater Management Report

Clackamas County Emergency Housing

Clackamas County, OR



DCI Job Number 23032-0015

December 19, 2023

DCI ENGINEERS

Washington | Oregon | California | Texas | Alaska | Colorado | Montana

Table of Contents

Section I: Site Background Information

Section I-1: Project Information

The Clackamas County Emergency Housing site is located in Clackamas County, Oregon and borders SE 115th Avenue to the west, Clackamas County Veterans Village across SE 115th Avenue, Precision Truss & Lumber to the north, and Pepsi Beverages south of the site. This report contains information for the private onsite stormwater quality and quantity control systems for the site.

The existing site conditions are primarily flat with gravel, dirt, and sparse vegetation with a few existing trees scattered. The east side of the site includes a mound, and the south half of the property features a hill sloped southerly. The site is proposing to construct thirteen (13) new buildings, eight (8) of which will be housing. The project proposes sidewalks, landscaping, a gravel common area, paved drop-off and parking areas, and stormwater facilities. The site is designed to treat and infiltrate stormwater runoff.

The proposed site is comprised of approximately 0.466 acres of impervious area. This is divided between the building roofs and decks, sidewalk areas, and paved areas. Building stormwater runoff is proposed to be collected using roof drains and conveyed to the proposed stormwater rain gardens on the east and west ends of the site. The rain gardens will allow infiltration into the native soil and both have 16” of live storage.

The rain gardens for the site have been designed per WES Stormwater Standards. For detention and infiltration analysis, a HydroCAD model has been used.

Section I-2: Stormwater Narrative

The proposed site is designed to be emergency housing with additional administrative buildings. In addition to the proposed buildings, a vehicle drop off area and parking area are designed to be constructed on the northwest side of the site to allow access from SE 115th Ave. and for use by the County. The site has been designed for two drainage basins, one flowing westerly to the western rain garden, and the other flowing easterly to the eastern rain garden. The stormwater facilities used for this site are stormwater rain gardens and are designed to fully infiltrate the 10-year, 24-hour storm event for the area.

The stormwater facilities allow high rates of infiltration and do not typically allow standing water for extended periods of time. The facilities are designed according to WES Standard Drawing SWM-04: 18" of growing medium for the top layer, 3" separation layer containing ¾" to ¼" open graded aggregate, 18" of 1 ½" to ¾" washed drain rock, followed by the existing uncompacted native soils.

The depth of the facility is designed to be 1.33', minimum. Per the HydroCAD model used for this site, the maximum design height of a 10-year, 24-hour storm event for the new west facility, with all impervious and pervious areas contributing, is 0.78' from bottom of rain garden. This means the west facility is designed to have a 0.55' of freeboard above the 10-year, 24-hour storm water retention design surface. Similarly, the maximum design height of the same storm event for the new east facility is 0.80' from bottom of rain garden. The east facility is designed to have 0.53' of freeboard. The rates used for infiltration was fifty inches per hour (50 in/hr), which is a conservative value per recommendations in the Geotechnical Report (see Appendix E).

Stormwater runoff is captured on site through various methods. For the buildings, the roof runoff is collected and conveyed through underground lines connected to roof downspouts. Paved areas are captured by having stormwater runoff sheet flow towards the west rain garden. Sidewalks and landscaped areas are graded to drain generally towards either the east or west rain garden.

As mentioned above, the new stormwater facilities have minimum 0.5' of freeboard above the 10-year, 24-hour stormwater event stormwater level. If an overflow of the facilities were to occur, the runoff of the west rain garden would overflow towards the northwest into SE 115th Ave, and the runoff from the east garden would overflow

towards the southeast down the hill (see Section II-5 for a map showing overflow routes). The buildings are designed to be at a higher elevation than the surrounding grades, so risk of flooding from the facilities is not present.

The stormwater pipes onsite have been designed to convey the 10-year peak storm event.

Section II: Onsite Stormwater Design Information

Section II-1
Peak Detention Volume Summary

For the West Rain Garden, the peak volume and elevation of the design storm events are listed below:

Annual Storm Event (years)	Total Precipitation Depth (in/24 hr)	Volume Required (cf)	Peak Ponding Depth (ft)
10	3.20	163	0.78

Bottom of West Rain Garden elevation = 118.13
Model reference elevation = 100.00

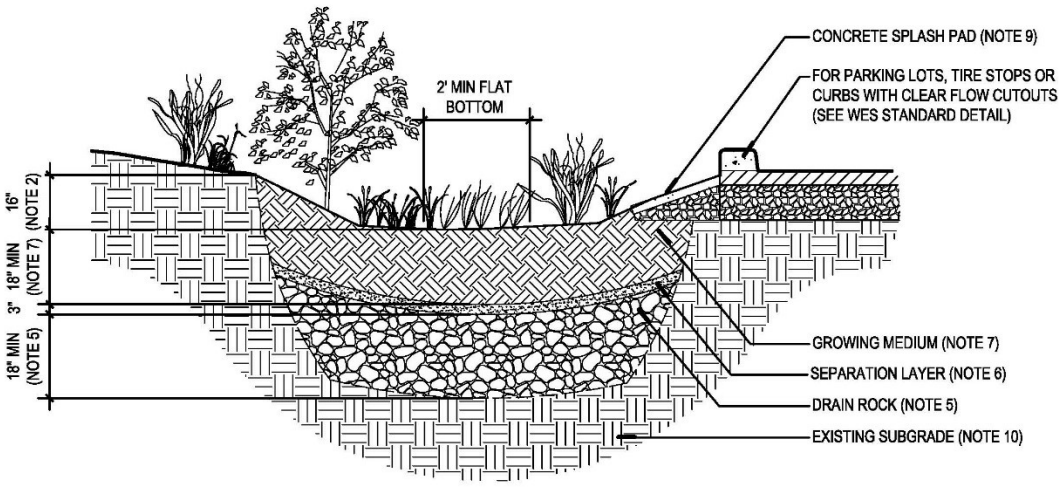
For the East Rain Garden, the peak volume and elevation of the design storm events are listed below:

Annual Storm Event (years)	Total Precipitation Depth (in/24 hr)	Volume Required (cf)	Peak Ponding Depth (ft)
10	3.20	152	0.80

Bottom of East Rain Garden elevation = Varies – 118.73 to 118.81
Model reference elevation = 100.00

Total precipitation depths are determined from Table 26 of the WES Stormwater Standards. See Appendix B of these calculations for a copy of the referenced table.

Rain gardens have been designed with a minimum of 6” of freeboard above the 10-year, 24-hour storm event peak.



GENERAL NOTES:

1. PROVIDE PROTECTION FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC IN PROPOSED INFILTRATION AREAS PRIOR TO, DURING AND AFTER CONSTRUCTION.
2. DIMENSIONS:
   - DEPTH OF BASIN (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 16"
   - FLAT BOTTOM WIDTH: 2' MINIMUM
   - SIDE SLOPES OF BASIN: 3:1 MAXIMUM
   - SLOPE OF RAIN GARDEN: 0.5% OR LESS
3. SETBACKS:
   - INFILTRATION RAIN GARDEN MUST BE 10' FROM FOUNDATIONS AND 5' FROM PROPERTY LINES.
4. OVERFLOW:
   - EMERGENCY OVERFLOW PATH FOR THE 100 YEAR DESIGN STORM SHALL BE IDENTIFIED IN THE STORMWATER MANAGEMENT PLAN.
5. DRAIN ROCK:
   - SIZE: 1 1/2" TO 3/4"- WASHED
   - DEPTH: 18"
6. SEPARATION BETWEEN DRAIN ROCK AND GROWING MEDIUM: SHALL BE A 3" LAYER OF 3/4" - 1/4" OPEN GRADED AGGREGATE.
7. GROWING MEDIUM:
   - DEPTH: 18" MINIMUM
   - FACILITY SURFACE AREA MAY BE REDUCED BY 20% WHEN GROWING MEDIA DEPTH IS INCREASED TO 30" OR MORE.
8. VEGETATION: FOLLOW LANDSCAPE PLANS OR REFER TO PLANTING REQUIREMENTS IN APPENDIX A.
9. SPLASH PAD TO TRANSITION FROM INLETS TO GROWING MEDIUM.
10. SEASONAL HIGH GROUNDWATER SEPARATION:
    - SEPARATION DISTANCE AS REQUIRED BY WES.
11. SEE WES STANDARD DRAWINGS FOR LOCATING RAIN GARDENS IN THE PUBLIC RIGHT-OF-WAY.

CLACKAMAS WATER ENVIRONMENT SERVICES	CLACKAMAS WES 150 BEAVERCREEK ROAD OREGON CITY, OR 97045	DATE: July, 2022 SCALE: NTS RAIN GARDEN INFILTRATION	STANDARD DRAWING SWM -04

SECTION II-2

Section II-3
Conveyance Calculations

Conveyance calculations for typical pipes on site are below, sized using the manning's equation.

Mannings equation:

$$Q = \frac{1.486}{n} * A * R^{2/3} * S^{1/2}$$

Where:
Q = Flow capacity of the pipe
n = Mannings coefficient
A = Cross sectional area of a pipe (sf)
R = Hydraulic Radius of a pipe
S = Slope of the pipe (ft/ft)

Typical Pipes on Site:

1) 6" line @ 1.00% slope

   n = 0.013 for a PVC pipe
   A = 0.196 sf for 6" pipe
   R = 0.125 for a full 6" pipe
   S = 0.0100 ft/ft

   $$Q = \frac{1.486}{0.013} * 0.196\ sf * 0.125^{2/3} * 0.0100^{1/2}$$

   $$Q\ (6"\ @\ 1.00\%) = 0.56\ cfs$$

Determining the Maximum Design Flow Rate

To determine the maximum expected flow rate, the rational method was used for a 10-year storm event.

Rational Method:

$Q = C * i * A$

Where:
Q = Flow capacity of the pipe
C = Area coefficient
i = Rainfall intensity of area
A = Land area contributing to flow (Acres)

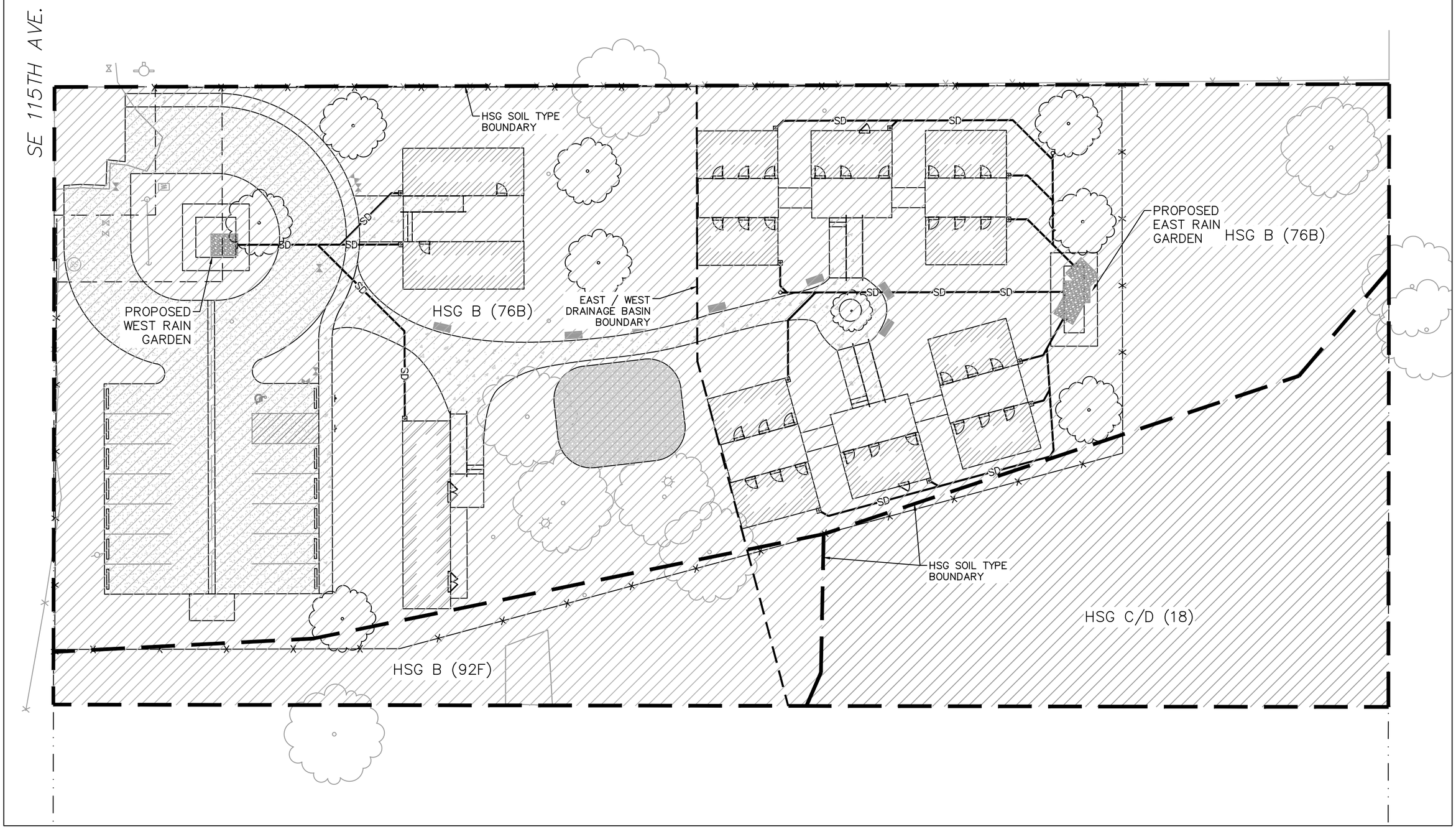
C = 0.90 for impervious area
i = See below.
A = Maximum contributing area = Approx. 3,500 sf of roof area = 0.080 acres

Intensity
$i = 0.64$ in/hr (Refer to Appendix D)

Maximum Design Flow Rate

$$Q = 0.90 * 0.64 \frac{in}{hr} * 0.080\ acres = 0.046\ cfs$$

Conclusion
Based on the calculations above, we can determine that the pipes on site will have sufficient capacity to handle the stormwater events in the Clackamas County area. The calculations shown above are for a 10-year storm event.



PROPOSED TRIBUTARY DRAINAGE AREAS			
AREA TYPE	WEST BASIN	EAST BASIN	TOTAL DRAINAGE AREA
LANDSCAPING (HSG B)	23,196 SF	16,950 SF	40,146 SF
LANDSCAPING (HSG C/D)	0 SF	13,869 SF	13,869 SF
GRAVEL (HSG B)	1,083 SF	0 SF	1,083 SF
ASPHALT PAVEMENT	8,400 SF	0 SF	8,400 SF
CONCRETE SIDEWALK & DECKS	3,351 SF	2,910 SF	6,261 SF
BUILDING ROOFS	1,114 SF	3,456 SF	4,570 SF
TOTAL	37,144 SF	37,185 SF	74,329 SF

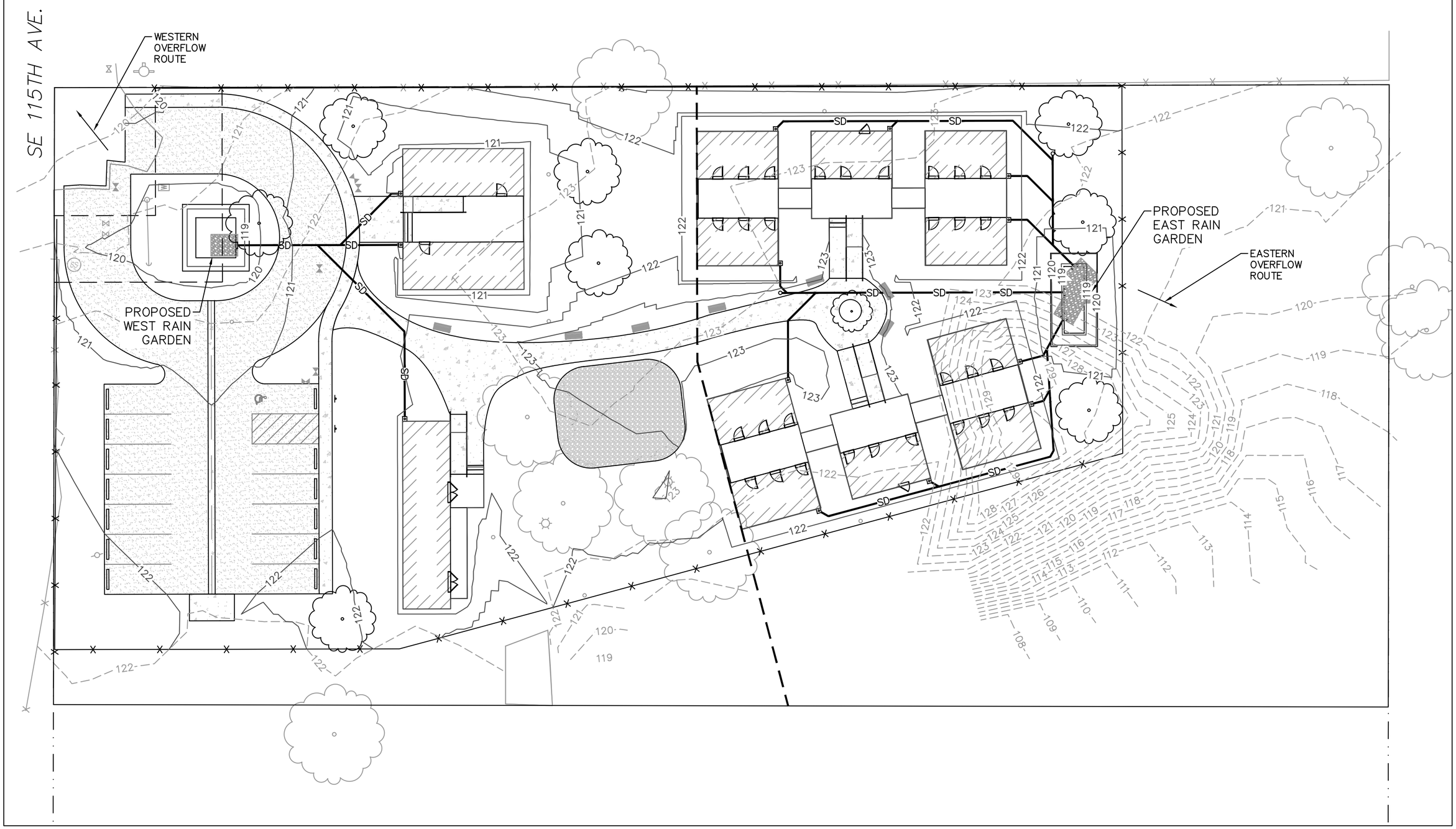
SECTION II–4
EXHIBIT: SITE DRAINAGE AREA MAP

GRAPHIC SCALE

20 0 10 20

(IN FEET)
1 INCH = 20 FEET

N



SECTION II–5:
EXHIBIT: SITE OVERFLOW ROUTES MAP

GRAPHIC SCALE

20 0 10 20

(IN FEET)
1 INCH = 20 FEET

N

Appendix

APPENDIX A1

Soil Map—Clackamas County Area, Oregon

Map Scale: 1:1,080 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clackamas County Area, Oregon
Survey Area Data: Version 20, Sep 7, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 26, 2022—Oct 11, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
18	Clackamas gravelly loam	2.3	47.3%
67	Newberg fine sandy loam	0.1	2.5%
76B	Salem silt loam, 0 to 7 percent slopes	1.3	25.4%
77B	Salem gravelly silt loam, 0 to 7 percent slopes	0.3	5.9%
92F	Xerochrepts and Haploxerolls, very steep	0.9	18.8%
Totals for Area of Interest		**5.0**	**100.0%**

The curve numbers presented in **Table 28** are for wet antecedent moisture conditions. Wet conditions assume previous rainstorms have reduced the capacity of soil to absorb water. Given the frequency of storms in Clackamas County, wet conditions are most likely, and result in conservative hydrographic values.

Design Storm

The SBUH method also requires a design storm to perform the runoff calculations. For flow control calculations, the District uses an NRCS Type 1A 24-hour storm distribution. The rainfall depths for 2-year through 100-year storm events are shown in **Table 26**.

Table 26. WES Design Storms

Design Storm/Recurrence Interval (years)	24-Hour Rainfall Depth (inches)
Water Quality	1.0
2-year	2.4
5-year	2.85
10-year	3.2
25-year	4.0
50-year	4.13
100-year	4.8

Table 28. Runoff Curve Numbers[2]

Description	Curve Numbers for Hydrological Soil Groups			
	A	B	C	D
Open space (lawns, parks, golf courses, cemeteries)				
Poor condition (< 50% grass coverage)	68	79	86	89
Fair condition (50 to 75% grass coverage)	49	69	79	84
Good condition (>75% grass coverage)	39	61	74	80
Impervious Areas				
Paved areas (parking lots, roofs, driveways)	98	98	98	98
Streets and roads				
Paved with curbs	98	98	98	98
Paved with open ditches	83	89	92	93
Gravel	76	85	89	91
Dirt	72	82	87	89
Urban Districts				
Commercial and business (85% impervious)	89	92	94	95
Industrial (72% impervious)	81	88	91	93
Residential districts by average lot size				
1/8 acre or less (65% impervious)	77	85	90	92
1/4 acre (38% impervious)	61	75	83	87
1/3 acre (30% impervious)	57	72	81	86
1/2 acre (25% impervious)	54	70	80	85
Woods (Good Hydrologic Condition)		70*		

** CN for Predeveloped Forest Condition is assumed to be equivalent to Woods condition with Hydrologic Soil Group C.*

[2] Urban Hydrology for Small Watersheds (TR-55), USDA Soil Conservation Service Engineering Division (1986).

Figure 17. Rainfall Intensity Recurrence Curves (Zone 8)

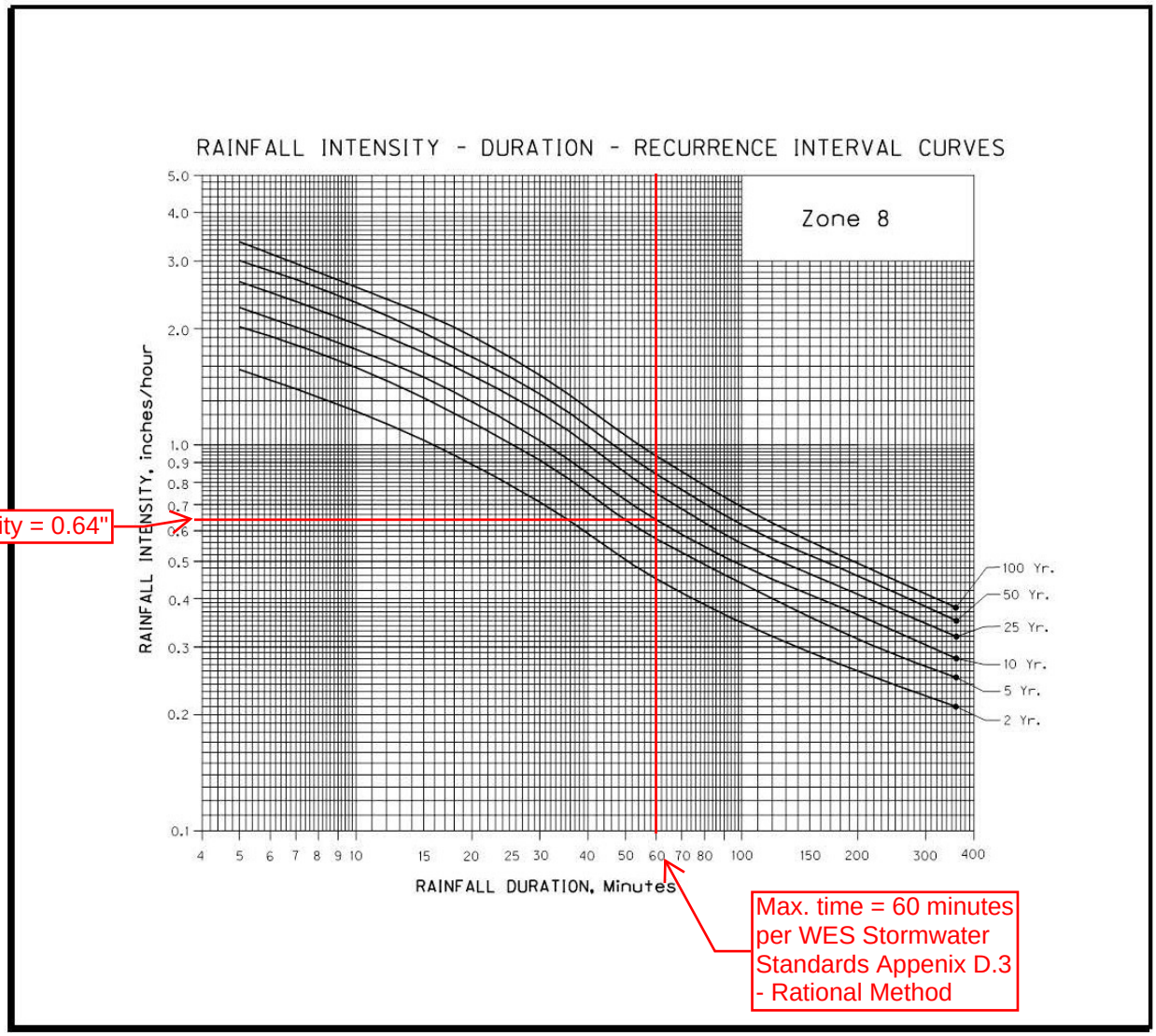
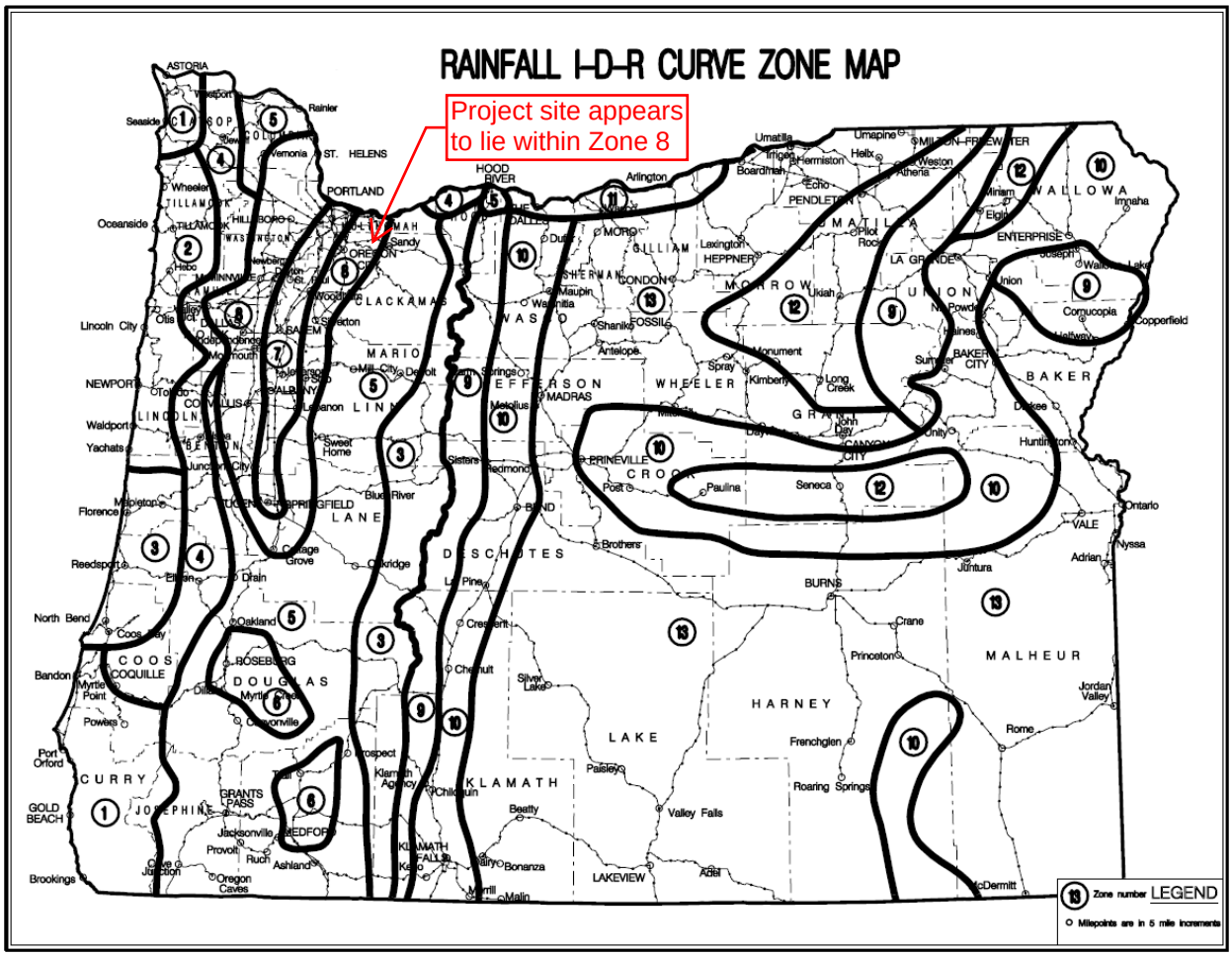
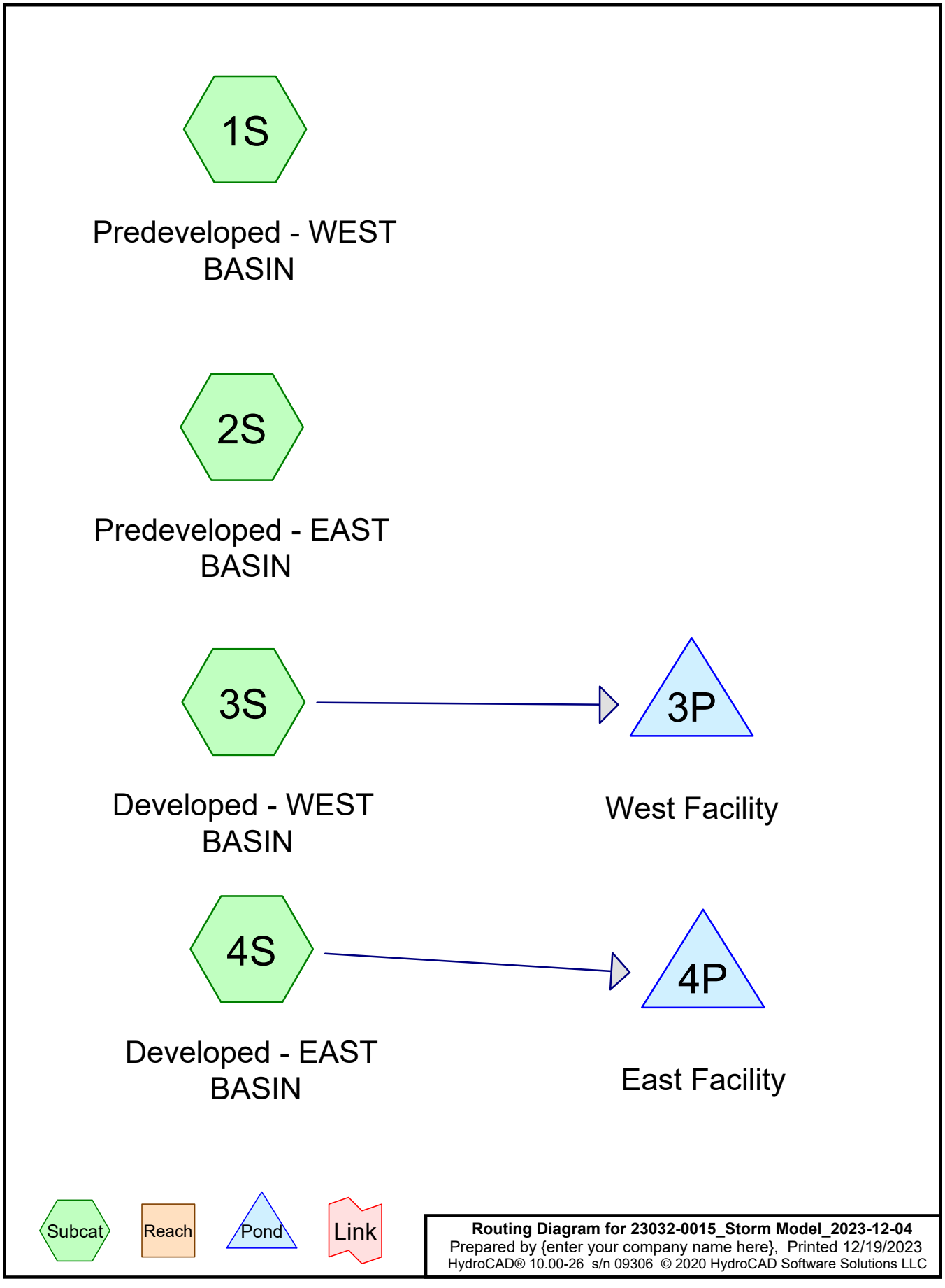


Figure 14. Rainfall I-D-R Curve Zone Map



APPENDIX E


1S
Predeveloped - WEST BASIN
2S
Predeveloped - EAST BASIN
3S
3P
Developed - WEST BASIN
West Facility
4S
4P
Developed - EAST BASIN
East Facility
Subcat
Reach
Pond
Link
Routing Diagram for 23032-0015_Storm Model_2023-12-04
Prepared by {enter your company name here}, Printed 12/19/2023
HydroCAD® 10.00-26 s/n 09306 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.922	79	<50% Grass cover, Poor, HSG B (3S, 4S)
0.318	89	<50% Grass cover, Poor, HSG D (4S)
0.025	85	Gravel roads, HSG B (3S)
0.018	98	Paved parking, HSG B (PVMT) (1S)
0.079	98	Roofs, HSG B (Back Bldgs, Pavilion) (4S)
0.026	98	Roofs, HSG B (Front 3 Bldgs) (3S)
0.006	98	Unconnected pavement, HSG B (CONC) (1S)
0.022	98	Unconnected pavement, HSG B (Conc swlk, stairs, ramps) (4S)
0.063	98	Unconnected pavement, HSG B (Conc swlks, ramps, stairs) (3S)
0.059	98	Unconnected pavement, HSG B (Decks) (3S, 4S)
0.193	98	Unconnected pavement, HSG B (Pvmt) (3S)
1.364	66	Woods, Poor, HSG B (1S, 2S)
0.318	83	Woods, Poor, HSG D (2S)
3.413	**78**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
2.776	HSG B	1S, 2S, 3S, 4S
0.000	HSG C	
0.637	HSG D	2S, 4S
0.000	Other	
3.413		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.922	0.000	0.318	0.000	1.240	<50% Grass cover, Poor	3S, 4S
0.000	0.025	0.000	0.000	0.000	0.025	Gravel roads	3S
0.000	0.018	0.000	0.000	0.000	0.018	Paved parking	1S
0.000	0.105	0.000	0.000	0.000	0.105	Roofs	3S, 4S
0.000	0.343	0.000	0.000	0.000	0.343	Unconnected pavement	1S, 3S, 4S
0.000	1.364	0.000	0.318	0.000	1.683	Woods, Poor	1S, 2S
0.000	**2.776**	**0.000**	**0.637**	**0.000**	**3.413**	**TOTAL AREA**	

Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 points
Runoff by SBUH method, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Predeveloped - WEST Runoff Area=37,144 sf 2.78% Impervious Runoff Depth=0.69"
Tc=0.0 min CN=67 Runoff=0.08 cfs 0.049 af

Subcatchment2S: Predeveloped - EAST Runoff Area=37,185 sf 0.00% Impervious Runoff Depth=0.93"
Tc=0.0 min CN=72 Runoff=0.15 cfs 0.066 af

Pond 3P: West Facility Peak Elev=100.78' Storage=163 cf Inflow=0.39 cfs 0.130 af
Outflow=0.33 cfs 0.130 af

Subcatchment3S: Developed - WEST Runoff Area=37,144 sf 34.64% Impervious Runoff Depth=1.84"
Tc=0.0 min CN=86 Runoff=0.39 cfs 0.130 af

Pond 4P: East Facility Peak Elev=100.80' Storage=152 cf Inflow=0.37 cfs 0.125 af
Outflow=0.32 cfs 0.125 af

Subcatchment4S: Developed - EAST Runoff Area=37,185 sf 17.12% Impervious Runoff Depth=1.76"
Tc=0.0 min UI Adjusted CN=85 Runoff=0.37 cfs 0.125 af

Total Runoff Area = 3.413 ac Runoff Volume = 0.370 af Average Runoff Depth = 1.30"
86.37% Pervious = 2.948 ac 13.63% Impervious = 0.465 ac

Summary for Subcatchment 1S: Predeveloped - WEST BASIN

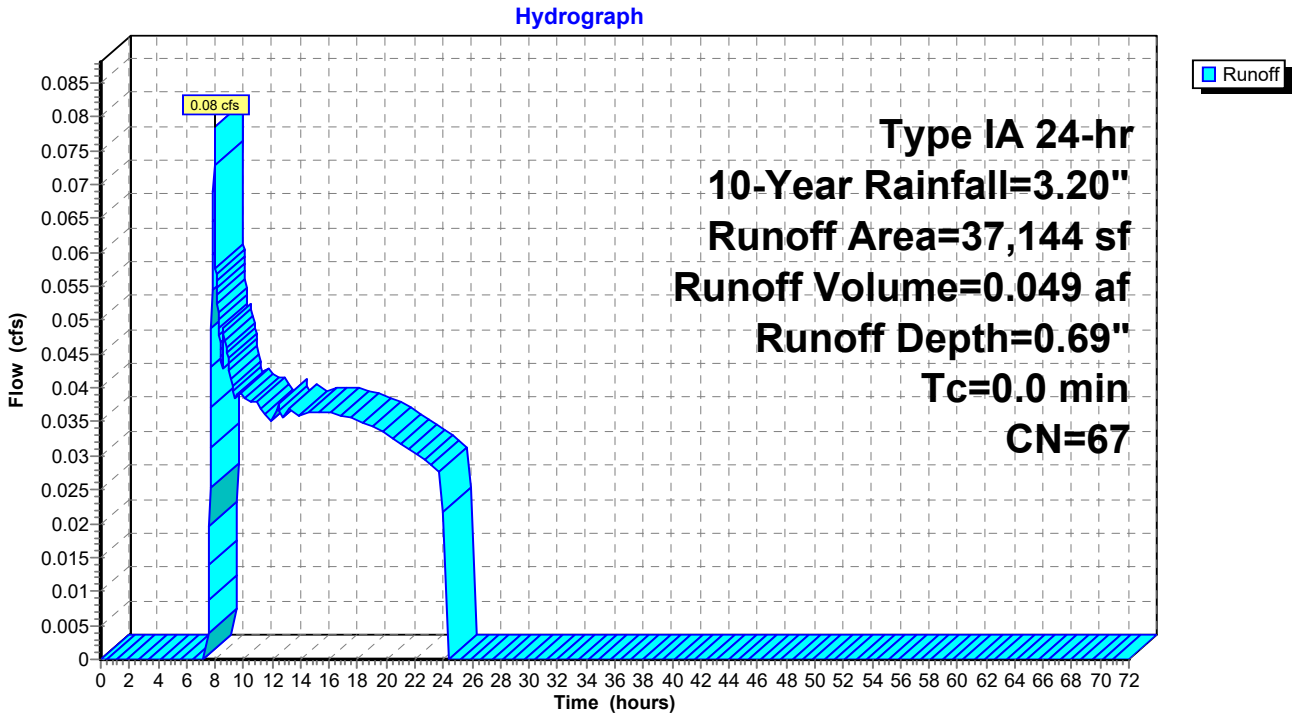
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.08 cfs @ 7.97 hrs, Volume= 0.049 af, Depth= 0.69"

Runoff by SBUH method, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type IA 24-hr 10-Year Rainfall=3.20"

	Area (sf)	CN	Description
*	765	98	Paved parking, HSG B (PVMT)
*	268	98	Unconnected pavement, HSG B (CONC)
	36,111	66	Woods, Poor, HSG B
	37,144	67	Weighted Average
	36,111		97.22% Pervious Area
	1,033		2.78% Impervious Area
	268		25.94% Unconnected

Subcatchment 1S: Predeveloped - WEST BASIN



Summary for Subcatchment 2S: Predeveloped - EAST BASIN

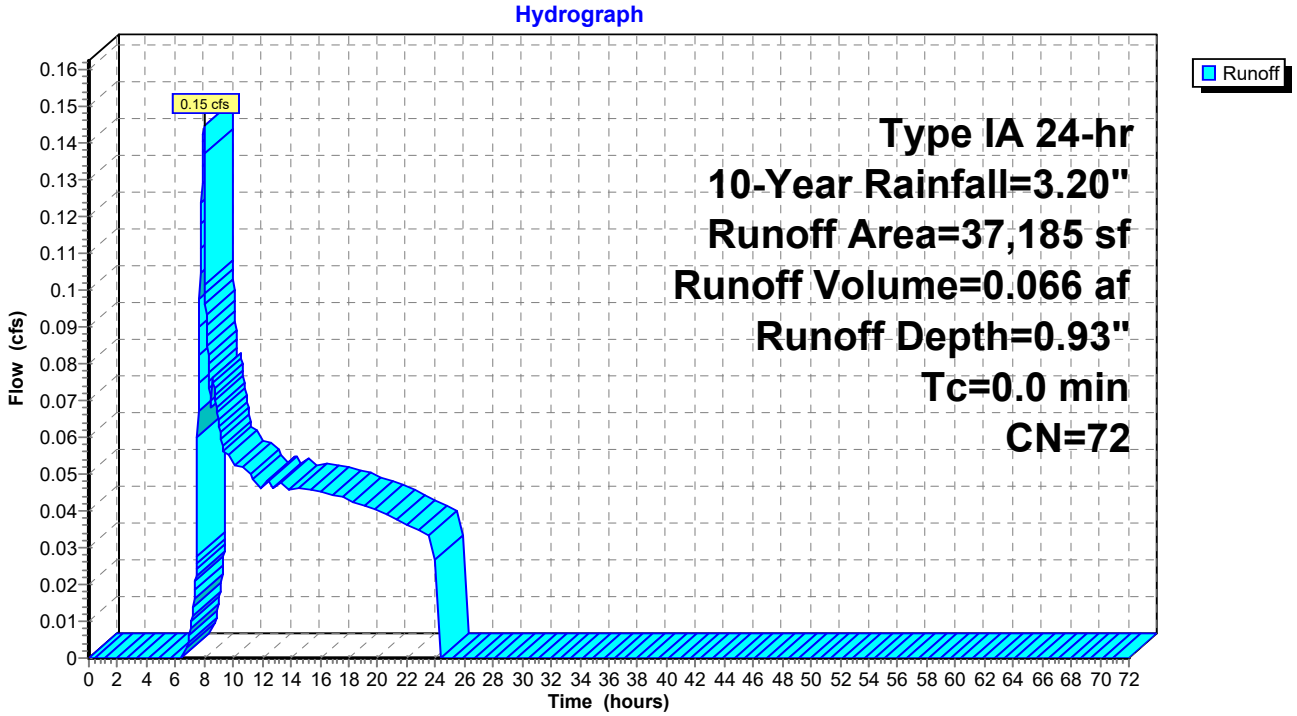
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.15 cfs @ 7.97 hrs, Volume= 0.066 af, Depth= 0.93"

Runoff by SBUH method, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type IA 24-hr 10-Year Rainfall=3.20"

Area (sf)	CN	Description
23,316	66	Woods, Poor, HSG B
13,869	83	Woods, Poor, HSG D
37,185	72	Weighted Average
37,185		100.00% Pervious Area

Subcatchment 2S: Predeveloped - EAST BASIN



Summary for Pond 3P: West Facility

Inflow Area = 0.853 ac, 34.64% Impervious, Inflow Depth = 1.84" for 10-Year event
Inflow = 0.39 cfs @ 7.88 hrs, Volume= 0.130 af
Outflow = 0.33 cfs @ 8.01 hrs, Volume= 0.130 af, Atten= 14%, Lag= 7.7 min
Discarded = 0.33 cfs @ 8.01 hrs, Volume= 0.130 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 100.78' @ 8.01 hrs Surf.Area= 279 sf Storage= 163 cf

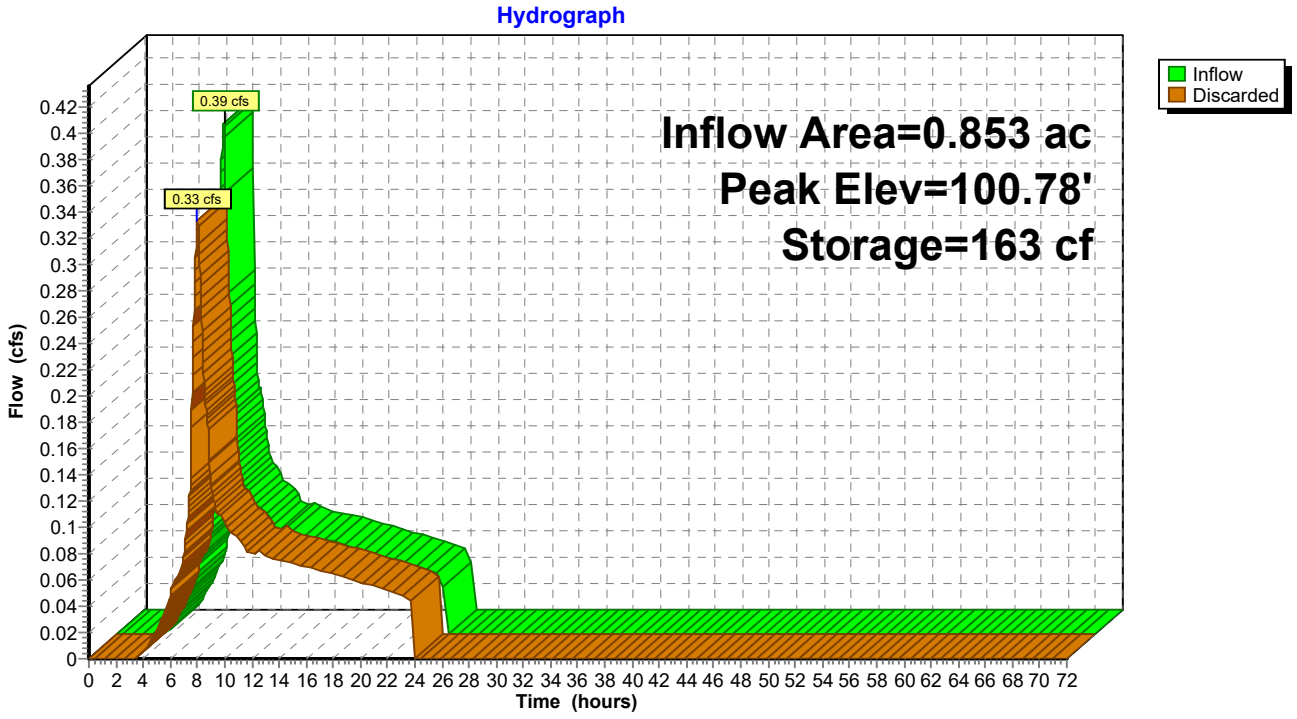
Plug-Flow detention time= 1.2 min calculated for 0.130 af (100% of inflow)
Center-of-Mass det. time= 1.3 min (774.9 - 773.7)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	347 cf	**12.00'W x 12.00'L x 1.33'H Prismatoid Z=3.0**

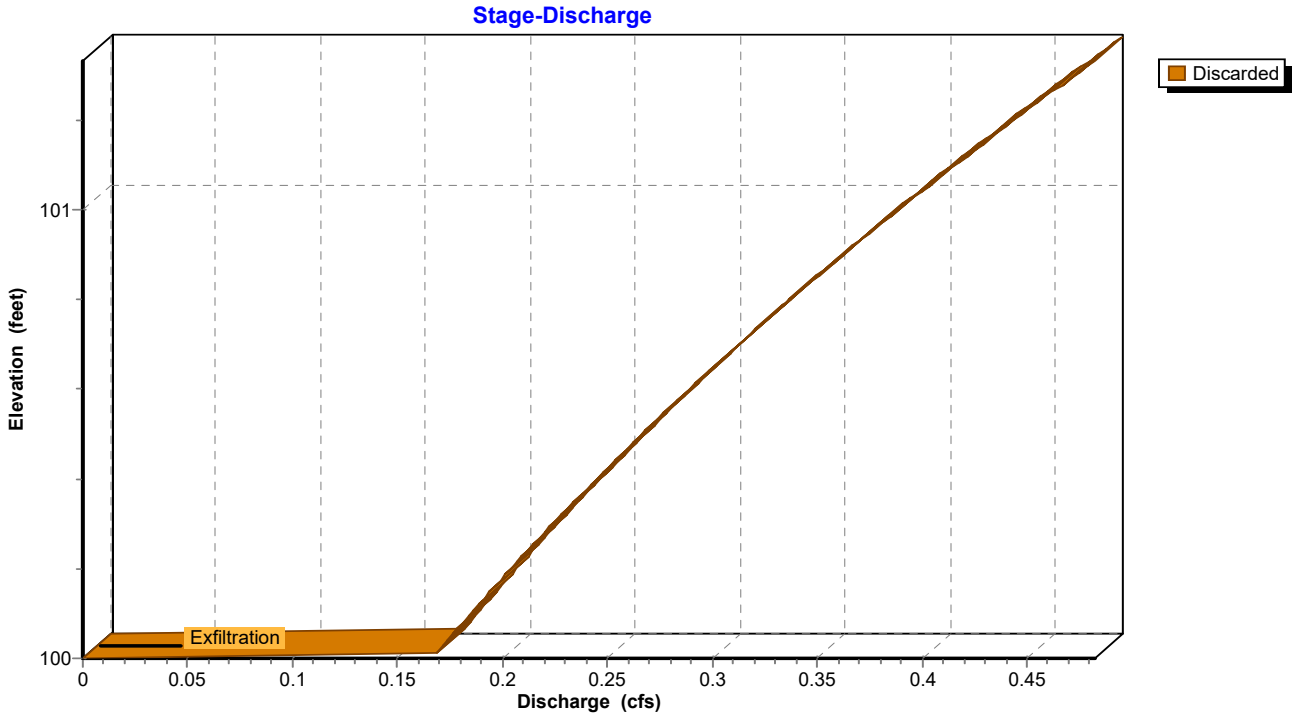
Device	Routing	Invert	Outlet Devices
#1	Discarded	100.00'	**50.000 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 1.00'

Discarded OutFlow Max=0.33 cfs @ 8.01 hrs HW=100.78' (Free Discharge)
1=Exfiltration (Controls 0.33 cfs)

Pond 3P: West Facility



Pond 3P: West Facility



Stage-Discharge for Pond 3P: West Facility

Elevation (feet)	Discarded (cfs)	Elevation (feet)	Discarded (cfs)	Elevation (feet)	Discarded (cfs)
100.00	0.00	100.52	0.27	101.04	0.40
100.01	0.17	100.53	0.27	101.05	0.40
100.02	0.17	100.54	0.28	101.06	0.41
100.03	0.17	100.55	0.28	101.07	0.41
100.04	0.17	100.56	0.28	101.08	0.41
100.05	0.18	100.57	0.28	101.09	0.41
100.06	0.18	100.58	0.28	101.10	0.42
100.07	0.18	100.59	0.29	101.11	0.42
100.08	0.18	100.60	0.29	101.12	0.42
100.09	0.18	100.61	0.29	101.13	0.42
100.10	0.18	100.62	0.29	101.14	0.43
100.11	0.19	100.63	0.30	101.15	0.43
100.12	0.19	100.64	0.30	101.16	0.43
100.13	0.19	100.65	0.30	101.17	0.44
100.14	0.19	100.66	0.30	101.18	0.44
100.15	0.19	100.67	0.31	101.19	0.44
100.16	0.20	100.68	0.31	101.20	0.44
100.17	0.20	100.69	0.31	101.21	0.45
100.18	0.20	100.70	0.31	101.22	0.45
100.19	0.20	100.71	0.32	101.23	0.45
100.20	0.20	100.72	0.32	101.24	0.46
100.21	0.21	100.73	0.32	101.25	0.46
100.22	0.21	100.74	0.32	101.26	0.46
100.23	0.21	100.75	0.32	101.27	0.46
100.24	0.21	100.76	0.33	101.28	0.47
100.25	0.21	100.77	0.33	101.29	0.47
100.26	0.22	100.78	0.33	101.30	0.47
100.27	0.22	100.79	0.33	101.31	0.48
100.28	0.22	100.80	0.34	101.32	0.48
100.29	0.22	100.81	0.34	101.33	**0.48**
100.30	0.22	100.82	0.34		
100.31	0.23	100.83	0.34		
100.32	0.23	100.84	0.35		
100.33	0.23	100.85	0.35		
100.34	0.23	100.86	0.35		
100.35	0.23	100.87	0.35		
100.36	0.24	100.88	0.36		
100.37	0.24	100.89	0.36		
100.38	0.24	100.90	0.36		
100.39	0.24	100.91	0.37		
100.40	0.24	100.92	0.37		
100.41	0.25	100.93	0.37		
100.42	0.25	100.94	0.37		
100.43	0.25	100.95	0.38		
100.44	0.25	100.96	0.38		
100.45	0.26	100.97	0.38		
100.46	0.26	100.98	0.38		
100.47	0.26	100.99	0.39		
100.48	0.26	101.00	0.39		
100.49	0.26	101.01	0.39		
100.50	0.27	101.02	0.39		
100.51	0.27	101.03	0.40		

Stage-Area-Storage for Pond 3P: West Facility

Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)
100.00	144	0
100.02	147	3
100.04	150	6
100.06	153	9
100.08	156	12
100.10	160	15
100.12	163	18
100.14	166	22
100.16	169	25
100.18	173	28
100.20	176	32
100.22	179	35
100.24	183	39
100.26	186	43
100.28	189	46
100.30	193	50
100.32	196	54
100.34	200	58
100.36	204	62
100.38	207	66
100.40	211	70
100.42	214	74
100.44	218	78
100.46	222	83
100.48	226	87
100.50	229	92
100.52	233	96
100.54	237	101
100.56	241	105
100.58	245	110
100.60	249	115
100.62	253	120
100.64	257	125
100.66	261	130
100.68	265	135
100.70	269	140
100.72	273	145
100.74	277	151
100.76	281	156
100.78	285	162
100.80	290	167
100.82	294	173
100.84	298	179
100.86	303	185
100.88	307	191
100.90	311	197
100.92	316	203
100.94	320	209
100.96	325	215
100.98	329	222
101.00	334	228
101.02	338	235
101.04	343	241
101.06	348	248
101.08	352	255
101.10	357	261
101.12	362	268
101.14	366	276
101.16	371	283
101.18	376	290
101.20	381	297
101.22	386	305
101.24	391	312
101.26	395	320
101.28	400	327
101.30	405	335
101.32	**410**	**343**

Summary for Subcatchment 3S: Developed - WEST BASIN

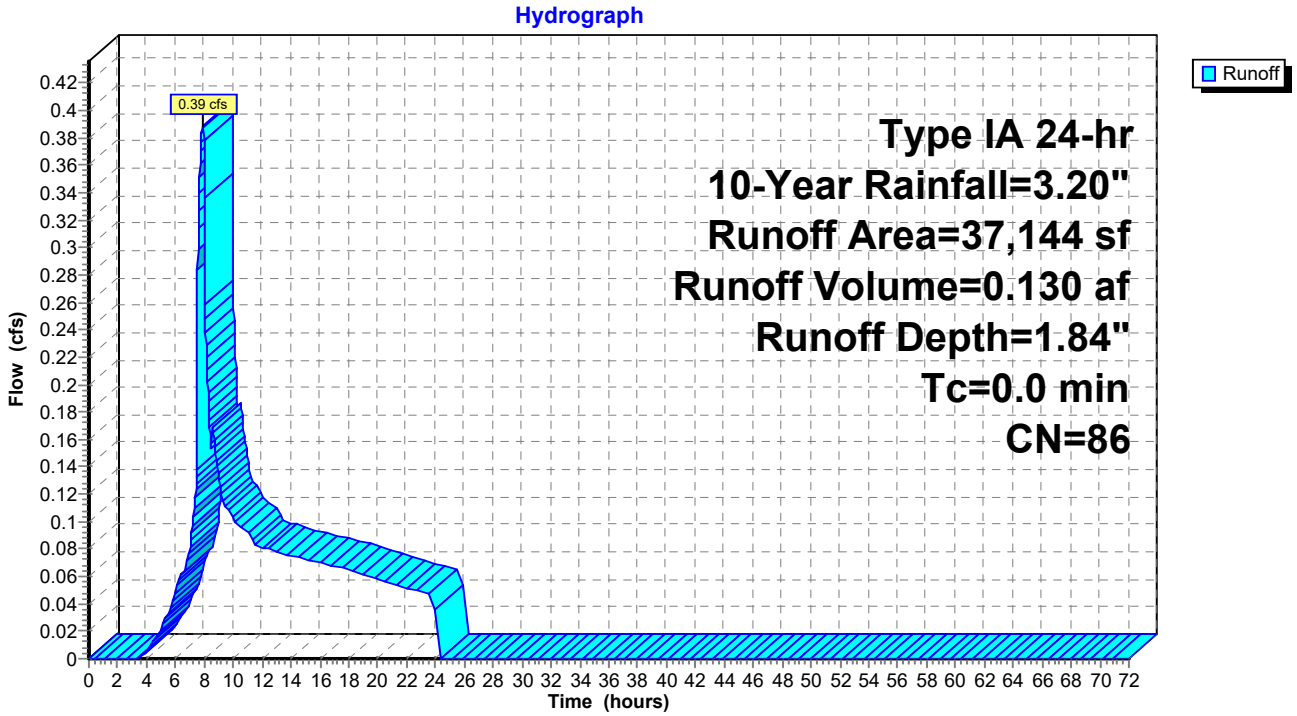
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.39 cfs @ 7.88 hrs, Volume= 0.130 af, Depth= 1.84"

Runoff by SBUH method, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type IA 24-hr 10-Year Rainfall=3.20"

	Area (sf)	CN	Description
*	8,400	98	Unconnected pavement, HSG B (Pvmt)
*	2,731	98	Unconnected pavement, HSG B (Conc swlks, ramps, stairs)
	23,196	79	<50% Grass cover, Poor, HSG B
*	1,114	98	Roofs, HSG B (Front 3 Bldgs)
*	620	98	Unconnected pavement, HSG B (Decks)
	1,083	85	Gravel roads, HSG B
	37,144	86	Weighted Average
	24,279		65.36% Pervious Area
	12,865		34.64% Impervious Area
	11,751		91.34% Unconnected

Subcatchment 3S: Developed - WEST BASIN



Summary for Pond 4P: East Facility

Building Roofs and Decks

Inflow Area = 0.854 ac, 17.12% Impervious, Inflow Depth = 1.76" for 10-Year event
Inflow = 0.37 cfs @ 7.89 hrs, Volume= 0.125 af
Outflow = 0.32 cfs @ 8.01 hrs, Volume= 0.125 af, Atten= 13%, Lag= 7.2 min
Discarded = 0.32 cfs @ 8.01 hrs, Volume= 0.125 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 100.80' @ 8.01 hrs Surf.Area= 268 sf Storage= 152 cf

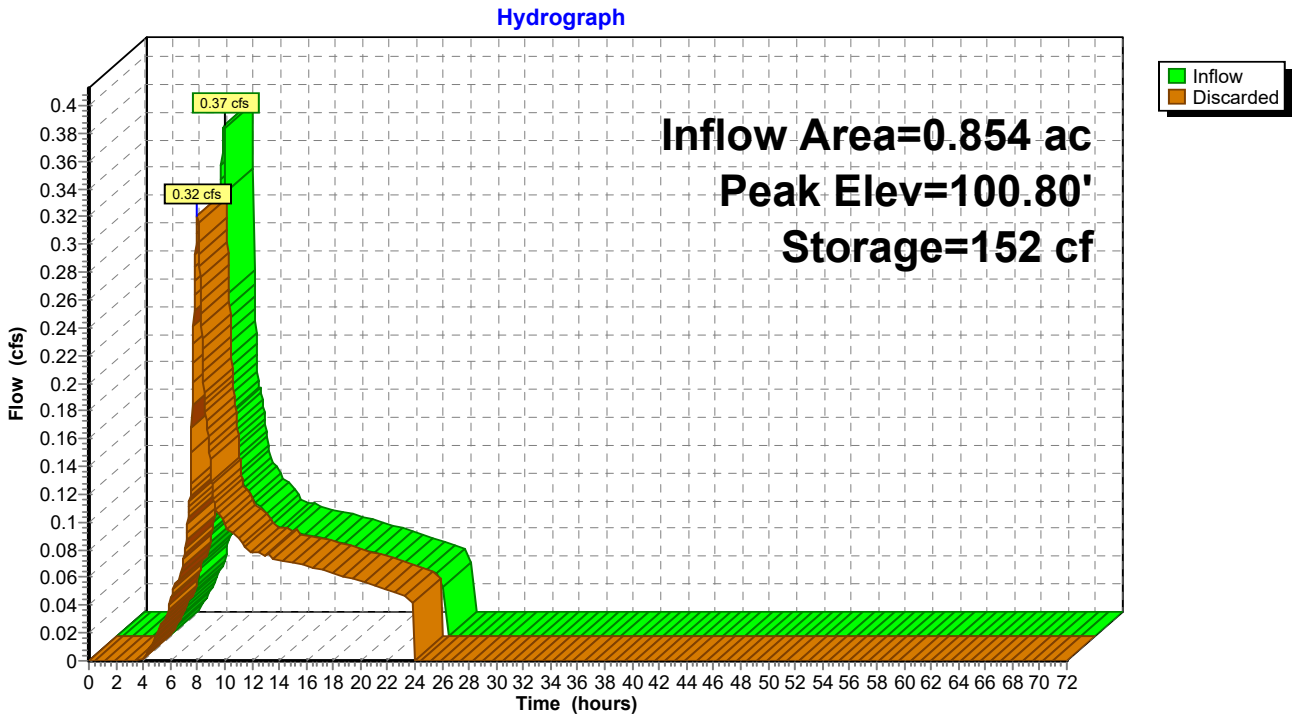
Plug-Flow detention time= 1.2 min calculated for 0.125 af (100% of inflow)
Center-of-Mass det. time= 1.3 min (782.3 - 781.0)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	326 cf	**6.00'W x 20.00'L x 1.33'H Prismatoid Z=3.0**

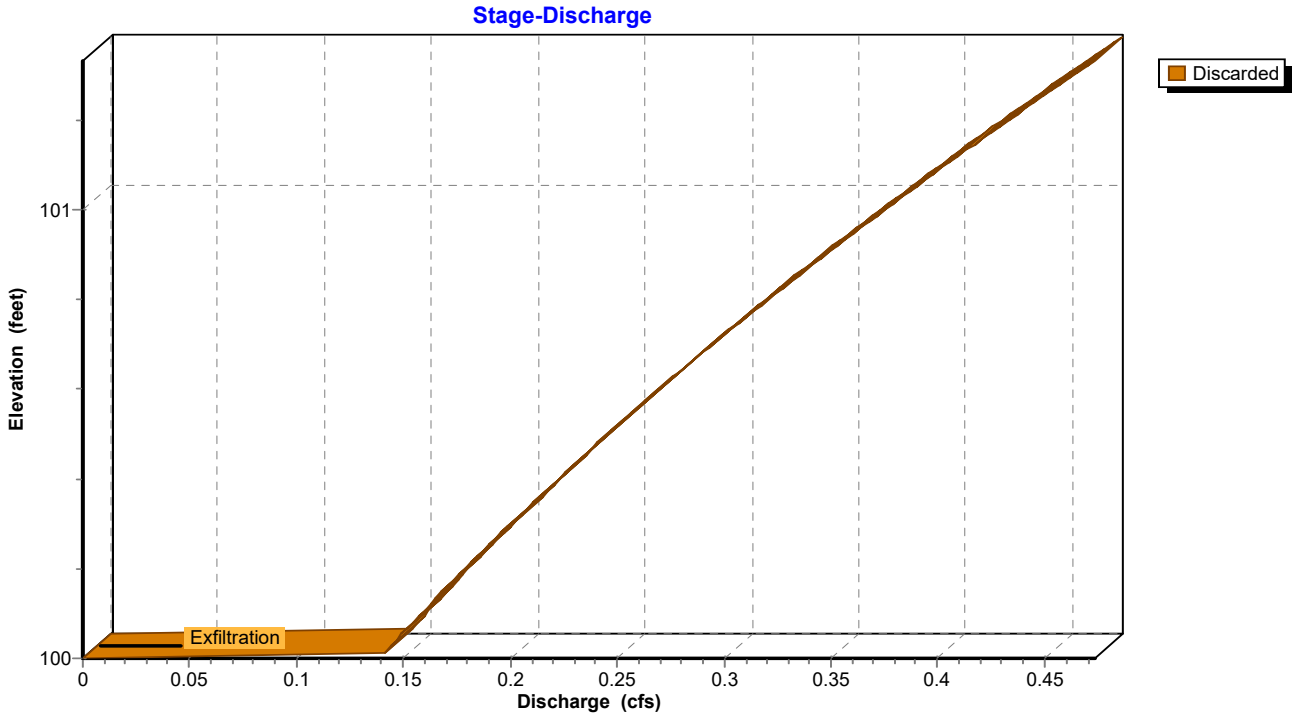
Device	Routing	Invert	Outlet Devices
#1	Discarded	100.00'	**50.000 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 1.00'

Discarded OutFlow Max=0.32 cfs @ 8.01 hrs HW=100.80' (Free Discharge)
└**1=Exfiltration** (Controls 0.32 cfs)

Pond 4P: East Facility



Pond 4P: East Facility



Stage-Discharge for Pond 4P: East Facility

Elevation (feet)	Discarded (cfs)	Elevation (feet)	Discarded (cfs)	Elevation (feet)	Discarded (cfs)
100.00	0.00	100.52	0.25	101.04	0.39
100.01	0.14	100.53	0.25	101.05	0.39
100.02	0.14	100.54	0.26	101.06	0.39
100.03	0.14	100.55	0.26	101.07	0.40
100.04	0.15	100.56	0.26	101.08	0.40
100.05	0.15	100.57	0.26	101.09	0.40
100.06	0.15	100.58	0.27	101.10	0.40
100.07	0.15	100.59	0.27	101.11	0.41
100.08	0.15	100.60	0.27	101.12	0.41
100.09	0.16	100.61	0.27	101.13	0.41
100.10	0.16	100.62	0.28	101.14	0.42
100.11	0.16	100.63	0.28	101.15	0.42
100.12	0.16	100.64	0.28	101.16	0.42
100.13	0.16	100.65	0.28	101.17	0.42
100.14	0.17	100.66	0.29	101.18	0.43
100.15	0.17	100.67	0.29	101.19	0.43
100.16	0.17	100.68	0.29	101.20	0.43
100.17	0.17	100.69	0.29	101.21	0.44
100.18	0.17	100.70	0.30	101.22	0.44
100.19	0.18	100.71	0.30	101.23	0.44
100.20	0.18	100.72	0.30	101.24	0.45
100.21	0.18	100.73	0.30	101.25	0.45
100.22	0.18	100.74	0.31	101.26	0.45
100.23	0.19	100.75	0.31	101.27	0.46
100.24	0.19	100.76	0.31	101.28	0.46
100.25	0.19	100.77	0.31	101.29	0.46
100.26	0.19	100.78	0.32	101.30	0.46
100.27	0.19	100.79	0.32	101.31	0.47
100.28	0.20	100.80	0.32	101.32	0.47
100.29	0.20	100.81	0.32	101.33	**0.47**
100.30	0.20	100.82	0.33		
100.31	0.20	100.83	0.33		
100.32	0.20	100.84	0.33		
100.33	0.21	100.85	0.33		
100.34	0.21	100.86	0.34		
100.35	0.21	100.87	0.34		
100.36	0.21	100.88	0.34		
100.37	0.22	100.89	0.35		
100.38	0.22	100.90	0.35		
100.39	0.22	100.91	0.35		
100.40	0.22	100.92	0.35		
100.41	0.23	100.93	0.36		
100.42	0.23	100.94	0.36		
100.43	0.23	100.95	0.36		
100.44	0.23	100.96	0.36		
100.45	0.23	100.97	0.37		
100.46	0.24	100.98	0.37		
100.47	0.24	100.99	0.37		
100.48	0.24	101.00	0.38		
100.49	0.24	101.01	0.38		
100.50	0.25	101.02	0.38		
100.51	0.25	101.03	0.38		

Stage-Area-Storage for Pond 4P: East Facility

Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)
100.00	120	0
100.02	123	2
100.04	127	5
100.06	130	7
100.08	133	10
100.10	137	13
100.12	140	16
100.14	144	18
100.16	147	21
100.18	151	24
100.20	154	27
100.22	158	30
100.24	162	33
100.26	165	37
100.28	169	40
100.30	173	43
100.32	177	47
100.34	180	50
100.36	184	54
100.38	188	58
100.40	192	61
100.42	196	65
100.44	200	69
100.46	204	73
100.48	208	77
100.50	212	81
100.52	216	85
100.54	220	89
100.56	224	94
100.58	228	98
100.60	232	103
100.62	237	107
100.64	241	112
100.66	245	117
100.68	249	121
100.70	254	126
100.72	258	131
100.74	262	136
100.76	267	142
100.78	271	147
100.80	276	152
100.82	280	157
100.84	285	163
100.86	289	169
100.88	294	174
100.90	299	180
100.92	303	186
100.94	308	192
100.96	313	198
100.98	318	204
101.00	322	210
101.02	327	216
101.04	332	223
101.06	337	229
101.08	342	236
101.10	347	242
101.12	352	249
101.14	357	256
101.16	362	263
101.18	367	270
101.20	372	277
101.22	377	284
101.24	382	292
101.26	387	299
101.28	393	307
101.30	398	314
101.32	**403**	**322**

Summary for Subcatchment 4S: Developed - EAST BASIN

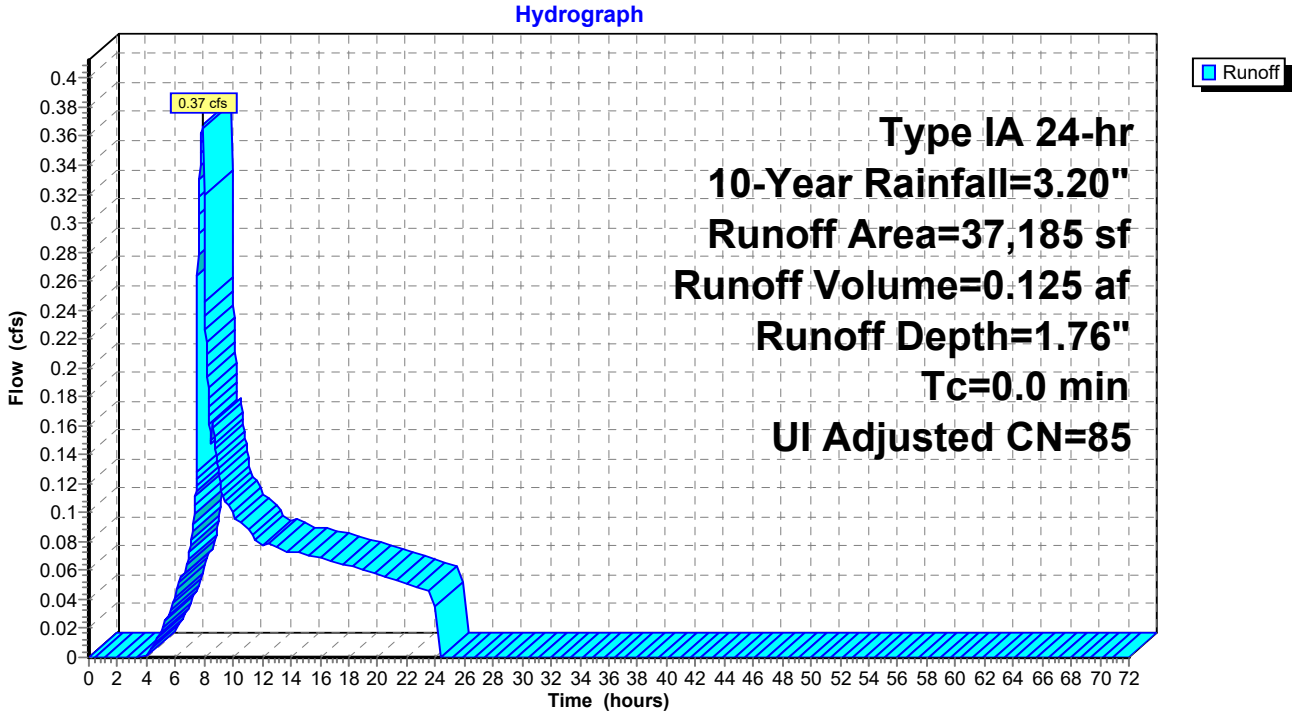
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.37 cfs @ 7.89 hrs, Volume= 0.125 af, Depth= 1.76"

Runoff by SBUH method, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type IA 24-hr 10-Year Rainfall=3.20"

	Area (sf)	CN	Adj	Description
*	3,456	98		Roofs, HSG B (Back Bldgs, Pavilion)
*	1,945	98		Unconnected pavement, HSG B (Decks)
*	965	98		Unconnected pavement, HSG B (Conc swlk, stairs, ramps)
	16,950	79		<50% Grass cover, Poor, HSG B
	13,869	89		<50% Grass cover, Poor, HSG D
	37,185	86	85	Weighted Average, UI Adjusted
	30,819			82.88% Pervious Area
	6,366			17.12% Impervious Area
	2,910			45.71% Unconnected

Subcatchment 4S: Developed - EAST BASIN



Carlson Geotechnical

A Division of Carlson Testing, Inc.
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Bend Office	**(541) 330-9155**
Eugene Office	**(541) 345-0289**
Salem Office	**(503) 589-1252**
Tigard Office	**(503) 684-3460**

APPENDIX F

Report of
Geotechnical Investigation & Infiltration Testing
Clackamas Emergency Housing
16590 SE 114th Avenue
Clackamas County, Oregon

CGT Project Number G2306020

Prepared for

Mark Sirois
Clackamas County Community Development
2051 Kaen Rd # 245
Oregon City, OR 97045

December 1, 2023

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Mark Sirois
Clackamas County Community Development
2051 Kaen Rd # 245
Oregon City, OR 97045

Report of
Geotechnical Investigation & Infiltration Testing
Clackamas Emergency Housing
16590 SE 114th Avenue
Clackamas County, Oregon

CGT Project Number G2306020

Dear Mark Sirois:

Carlson Geotechnical (CGT), a division of Carlson Testing, Inc. (CTI), is pleased to submit this report summarizing the results of our geotechnical investigation and infiltration testing for the proposed Clackamas Emergency Housing project. The site is located at 16590 SE 114th Avenue in Clackamas County, Oregon. We performed our work in general accordance with CGT Proposal GP23-283, dated October 4, 2023. Written authorization for our services was received on October 25, 2023, in the form of Personal Services Contract H3S Contract # 11402

We appreciate the opportunity to work with you on this project. Please contact us at (503) 601-8250 if you have any questions regarding this report.

Respectfully Submitted,
CARLSON GEOTECHNICAL

EXPIRES: 6/30/2024

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ATTACHMENTS

1.0 INTRODUCTION

Carlson Geotechnical (CGT), a division of Carlson Testing, Inc. (CTI), is pleased to submit this report summarizing the results of our geotechnical investigation and infiltration testing for the proposed Clackamas Emergency Housing project. The site is located at 16590 SE 114th Avenue in Clackamas County, Oregon, as shown on the attached Site Location, Figure 1.

1.1 Project Information

CGT developed an understanding of the proposed project based on our correspondence with Base Design + Architecture, LLC, and project documents provided to us on September 22 and 29, 2023. The documents provided included a Schematic Design Site Plan, prepared by BDA, dated July 28, 2023. Based on our review, we understand the project will include:

- Construction of four new, multi dwelling structures as well as an office and facility buildings (bathrooms, kitchen, laundry) to serve the new dwellings. The buildings will be one story, wood-framed, with a slab on grade floor. The multi dwelling structures have an approximate footprint of 960 square feet with a deck. For the purposes of this report, we have assumed maximum column, continuous wall, and uniform floor slab loads will be on the order of 25 kips, 2 kips per lineal foot (klf), and 150 pounds per square foot (psf), respectively.
- Construction of a parking lot and trash enclosure on the western portion of the site and a pathway to access the dwellings. We anticipate the parking lot will be surfaced with asphalt concrete (AC).
- Although no stormwater management plans have been provided, we understand that, if conditions allow, stormwater collected from new impervious areas of the site will be disposed of, at least in part, via onsite infiltration. Design of on-site stormwater facilities will rest with others. Two infiltration tests were requested in the northeastern and northwestern portions of the site as part of this assignment.
- Although no grading plans have been provided, we anticipate permanent grade changes at the site will be minimal, with maximum cuts and fills on the order of about 2 feet relative to existing grades.

1.2 Scope of Services

Our scope of work included the following:

- Contact the Oregon Utilities Notification Center to mark the locations of public utilities within a 20-foot radius of our explorations at the site.
- Explore subsurface conditions at the site by observing the excavation of thirteen test pits to depths of up to about 9½ feet below ground surface (bgs). Details of the subsurface investigation are presented in Appendix A.
- Conduct infiltration testing in two of the test pits. Results of the infiltration testing are presented in Appendix B.
- Classify the soils encountered in the explorations in general accordance with ASTM D2488 (Visual-Manual Procedure).
- Provide a technical narrative describing surface and subsurface deposits, and local geology of the site, based on the results of our explorations and published geologic mapping.
- Provide recommendations for the Seismic Site Class, mapped maximum considered earthquake spectral response accelerations, and site seismic coefficients.

- Provide a qualitative evaluation of seismic hazards at the site, including earthquake-induced liquefaction, landsliding, and surface rupture due to faulting or lateral spread.
- Provide geotechnical recommendations for site preparation and earthwork.
- Provide geotechnical engineering recommendations for use in design and construction of shallow foundations, floor slabs, and pavements.
- Provide this written report summarizing the results of our geotechnical investigation and recommendations for the project.

2.0 SITE DESCRIPTION

2.1 Site Geology

Based on available geologic mapping[1,2] of the area, the site is underlain by younger terrace deposits of the Clackamas River. The terrace deposits were produced by the periodic buildup of fluvial deposits about 10,000 years ago, which flank the current channel and floodplain of the Clackamas River. The terrace deposits typically consist of unconsolidated sand, gravel and cobbles. Based on nearby well logs, this unit extends to depths in excess of 100 feet below ground surface in the vicinity of the site.

2.2 Site Surface Conditions

During our field investigation, the approximate 3¾-acre site was bordered by commercial properties to the north, east and south, and an emergency housing pods facility to the west. Lithgow Creek was observed to cut across the southern portion of the site. The site was terraced; the upper portion (area of proposed site development) was relatively flat and then descended to the south at gradients of up to 1¾ horizontal to 1 vertical (1¾H:1V), to the southern portion which was also relatively flat. Partially buried structures (e.g. foundations and retaining walls) were observed near the crest of the upper terrace. A relatively large soil stockpile was observed in the eastern portion of the upper terrace. Site layout and surface conditions at the time of our field investigation are shown on the attached Site Plan (Figure 2) and Site Photographs (Figure 3).

2.3 Subsurface Conditions

2.3.1 Subsurface Investigation & Laboratory Testing

Our subsurface investigation consisted of thirteen test pits (TP-1 through TP-13) completed on November 10, 2023. While onsite we also observed and logged an additional test pit (TP-14) which had been excavated by others prior to our arrival onsite. The approximate exploration locations are shown on the Site Plan, attached as Figure 2. In summary, the test pits were excavated to depths ranging from about 3 to 9½ feet bgs. Details regarding the subsurface investigation, logs of the explorations, and results of laboratory testing are presented in Appendix A. Subsurface conditions encountered during our investigation are summarized below.

---

1 Wells, R.E., Haugerud, R.A., Niem, A.R., Niem, W.A., Ma, Lina, Evarts, R.C., O'Connor, J.E., Madin, I.P., Sherrod, D.R., Beeson, M.H., Tolan, T.L., Wheeler, K.L., Hanson, W.B., and Sawlan, M.G., 2020. Geologic map of the greater Portland metropolitan area and surrounding region, Oregon and Washington: U.S. Geological Survey, Scientific Investigations Map SIM-3443. scale 1:63,360.

2 Ma, L., Madin, I.P., Duplantis, S., and Williams, K.J., 2012. Lidar-based surficial geologic map and database of the greater Portland, Oregon, area, Clackamas, Columbia, Marion, Multnomah, Washington, and Yamhill Counties, Oregon, and Clark County, Washington: Oregon Department of Geology and Mineral Industries, Open-File Report 0-2012-02, scale 1:8,000.

2.3.2 Subsurface Materials

The following describes each of the subsurface materials encountered at the site.

2.3.2.1 Site Soils

Undocumented Poorly Graded Gravel with Sand and Cobbles Fill (GP Fill)

Undocumented poorly graded gravelly fill was encountered at the surface of TP-1 through TP-12. Undocumented fill refers to materials placed without (available) records of subgrade conditions or evaluation of compaction. The poorly graded gravel fill was typically brown to gray, moist, subrounded to subangular, and contained varying amounts of cobbles up to 12-inches in diameter, and varying amounts of sand and silt fines. Varying amounts of debris was also observed within the fill soil, the debris consisted of glass, metal, plastic, concrete, brick and asphalt pieces up to 4 inches in diameter. The fill soil extended to depths of about 1 to 2½ feet bgs in TP-1 through TP-12.

Poorly Graded Gravel with Sand, Cobbles and Boulders (GP-GM)

Underlying the undocumented fill soils in TP-1 through TP-12 was native, poorly graded gravelly soil. This soil was typically dense, dark brown, moist, contained subangular gravel and cobbles up to 12-inches in diameter, a varying amount of boulders up to 18-inches in diameter, and a varying amount of silt and sand. Some caving was observed in this material at depths of about 3 to 9½ feet bgs. This soil extended to the full depth explored in TP-1 through TP-12, about 3 to 9½ feet bgs.

The native soils encountered during our subsurface investigation were consistent with the lower Clackamas River terrace deposits described in Section 2.1.

2.3.2.2 Stockpiled Soils

Exploration TP-13 and TP-14 were excavated into the existing soil stockpile that was observed on the eastern portion of the site. The log for TP-14 was based on the observations made of the sidewalls of the excavation.

Undocumented Poorly Graded Silty Gravel to Gravel with Sand Fill (GM Fill, GP Fill)

Undocumented gravelly fill was observed at the surface of TP-13 and TP-14. This soil was gray/brown to brown, moist to wet, angular to subrounded, up to 2-inches in diameter, and contained varying amounts of sand and silt. Varying amounts of debris consisting of plastic, brick, concrete and asphalt chunks up to 2 feet long. The stockpiled soil extended to a depth of about 2 feet bgs in TP-14. In TP-13, the silty gravel fill extended to the full depth explored, about 6 feet bgs.

Undocumented Silt with Sand Fill (ML Fill)

Underlying the undocumented silty gravel fill in TP-14, we observed undocumented silt with sand fill. This soil was typically gray/brown, wet, and exhibited low plasticity. This soil extended the full depth of the excavation, about 6 feet bgs.

2.3.3 Groundwater

We did not encounter groundwater within the depths explored at the site on November 10, 2023. To determine approximate regional groundwater levels in the area, we researched well logs available on the

Oregon Water Resources Department (OWRD)[3] website for wells located within Section 15, Township 2 South, Range 2 East, Willamette Meridian. Our review indicated that groundwater levels in the area generally ranged from about 45 to 65 feet bgs. It should be noted groundwater levels vary with local topography. In addition, the groundwater levels reported on the OWRD logs often reflect the purpose of the well, so water well logs may only report deeper, confined groundwater, while geotechnical or environmental borings will often report any groundwater encountered, including shallow, unconfined groundwater. Therefore, the levels reported on the OWRD well logs referenced above are considered generally indicative of local water levels and may not reflect actual groundwater levels at the project site. We anticipate that groundwater levels will fluctuate due to seasonal and annual variations in precipitation, changes in site utilization, or other factors.

The depth to groundwater map for the Portland area[4] indicates groundwater is present at depths of 30 feet bgs in the vicinity of the site. It should be noted that the levels reported by the referenced map are average values for a given location and incorporate a degree of uncertainty.

3.0 SEISMIC CONSIDERATIONS

3.1 Seismic Design

Section 1613.2.2 of the 2022 Oregon Structural Specialty Code (2022 OSSC) requires that the determination of the seismic site class be in accordance with Chapter 20 of the American Society of Civil Engineers Minimum Design Loads for Buildings and Other Structures (ASCE 7-16). We have assigned the site as Site Class D ("Stiff Soil") based on geologic mapping and subsurface conditions encountered during our investigation. Earthquake ground motion parameters for the site were obtained in accordance with the 2022 OSSC using the Seismic Hazards by Location calculator on the ATC website[5]. The site Latitude 45.401263° North and Longitude 122.54433° West were input as the site location. The following table shows the recommended seismic design parameters for the site.

Table 1 Seismic Ground Motion Values

Parameter		Value
Mapped Acceleration Parameters	Spectral Acceleration, 0.2 second (S_s)	0.833g
	Spectral Acceleration, 1.0 second (S_1)	0.368g
Coefficients (Site Class D)	Site Coefficient, 0.2 second (F_A)	1.167
	Site Coefficient, 1.0 second (F_V)[1]	1.932
Adjusted MCE Spectral Response Parameters	MCE Spectral Acceleration, 0.2 second (S_{MS})	0.972g
	MCE Spectral Acceleration, 1.0 second (S_{M1})	0.711g
Design Spectral Response Accelerations	Design Spectral Acceleration, 0.2 second (S_{DS})	0.648g
	Design Spectral Acceleration, 1.0 second (S_{D1})	0.474g
Seismic Design Category (Risk Category II)		D

[1] Value determined from 2022 OSSC Table 1613.2.3(2).

[3] Oregon Water Resources Department, 2023. Well Log Records, *accessed November 2023*, from OWRD web site: http://apps.wrd.state.or.us/apps/gw/well_log/.

[4] Snyder, D.T., 2008, Estimated depth to ground water and configuration of the water table in the Portland, Oregon area: U.S. Geological Survey, Scientific Investigations Report SIR-2008-5059, scale 1:60,000.

[5] Applied Technology Council (ATC), 2023. SGS seismic design parameters determined using "Seismic Hazards by Location," *accessed November 2023*, from the ATC website https://hazards.atcouncil.org/.

3.2 Seismic Hazards

3.2.1 Liquefaction

In general, liquefaction occurs when deposits of loose/soft, saturated, cohesionless soils, generally sands and silts, are subjected to strong earthquake shaking. If these deposits cannot drain quickly enough, pore water pressures can increase, approaching the value of the overburden pressure. The shear strength of a cohesionless soil is directly proportional to the effective stress, which is equal to the difference between the overburden pressure and the pore water pressure. When the pore water pressure increases to the value of the overburden pressure, the shear strength of the soil approaches zero, and the soil can liquefy. The liquefied soils can undergo rapid consolidation or, if unconfined, can flow as a liquid. Structures supported by the liquefied soils can experience rapid, excessive settlement, shearing, or even catastrophic failure.

For fine-grained soils, susceptibility to liquefaction is evaluated based on penetration resistance and plasticity, among other characteristics. Criteria for identifying non-liquefiable, fine-grained soils are constantly evolving. Current practice to identify non-liquefiable, fine-grained soils is based on moisture content and plasticity characteristics of the soils[6,7,8]. The susceptibility of sands, gravels, and sand-gravel mixtures to liquefaction is typically assessed based on penetration resistance, as measured using SPTs, CPTs, or Becker Hammer Penetration tests (BPTs).

Based on their dense relative density, lack of saturated conditions, static groundwater, etc., the coarse-grained soils encountered within our explorations are considered non-liquefiable. Based on review of geologic mapping and our previous experience in the area, we do not anticipate liquefiable conditions are present at depths below those explored as part of this assignment.

3.2.2 Slope Instability

We did not observe any obvious signs of past or on-going slope instability at the site. Review of the Statewide Landslide Information Database for Oregon (SLIDO), available at the DOGAMI website[9], shows no historic or prehistoric landslides at or in the immediate vicinity of the site. HazVu shows a *moderate to high* hazard for landslides at the site, however, we anticipate those hazard levels were assigned based on the on-site slope gradients. Given the lack of evidence of previous landslides in the vicinity, and our observations while onsite, the risk of seismically-induced slope instability occurring at the site is considered low. Provided our recommendations for grading and stormwater management, as described below, are followed, the proposed development is not anticipated to increase this risk.

---

6 Seed, R.B. et al., 2003. Recent Advances in Soil Liquefaction Engineering: A Unified and Consistent Framework. Earthquake Engineering Research Center Report No. EERC 2003-06.

7 Bray, Jonathan D., Sancio, Rodolfo B., et al., 2006. Liquefaction Susceptibility of Fine-Grained Soils, Journal of Geotechnical and Geoenvironmental Engineering, Volume 132, Issue 9, September 2006.

8 Idriss, I.M., Boulanger, R.W., 2008. Soil Liquefaction During Earthquakes, Earthquakes Engineering Research Institute Monograph MNO-12.

9 Oregon Department of Geology and Mineral Industries, 2023. Statewide Landslide Information Database for Oregon (SLIDO), *accessed November 2023*, from DOGAMI web site: https://gis.dogami.oregon.gov/maps/slido/.

3.2.3 Surface Rupture

3.2.3.1 Faulting

Although the site is situated in a region of the country with known active faults and historic seismic activity, no known faults exist on or immediately adjacent to the site. Therefore, the risk of surface rupture at the site due to faulting is considered low.

3.2.3.2 Lateral Spread

Surface rupture due to lateral spread can occur on sites underlain by liquefiable soils that are located on or immediately adjacent to slopes steeper than about 3 degrees (20H:1V), and/or adjacent to a free face, such as a stream bank or the shore of an open body of water. During lateral spread, the materials overlying the liquefied soils are subject to lateral movement downslope or toward the free face. Based on the non-liquefiable nature of the soils at the site, the risk of damage associated with lateral spread is negligible.

4.0 CONCLUSIONS

Based on the results of our field explorations and analyses, the site may be developed as described in Section 1.1 of this report, provided the recommendations presented in this report are incorporated into the design and development. Satisfactory subgrade support for planned shallow foundations, floor slabs, and pavements can be achieved by the native, medium dense to dense, gravelly soils (GP, GP-GM), or structural fill that is properly placed and compacted on these materials during construction. These soils were encountered at depths of 1 to 2½ feet bgs within our explorations.

As indicated in Section 2.3.2 of this report, the subsurface explorations indicate the majority of the proposed development site is underlain by undocumented poorly graded gravel fill (GP Fill) containing a varying amount of refuse and construction debris and extending to depths of up to about 2½ feet bgs. Based on the presence of debris, it is evident the existing fills were not placed and compacted in accordance with typical code requirements for structural fill. Due to the risk of excessive, total and differential settlements, we do not recommend relying on the undocumented fill for support of shallow foundations, floor slabs or pavements. Where encountered at design subgrade elevations for those features, the undocumented fill materials should be over-excavated and replaced with structural fill in conformance with section 5.4 of this report.

Based on our explorations, isolated boulders may be encountered at design subgrade elevations for shallow foundations. Structural elements placed directly on boulders can result in uneven ground response. To minimize this potential, CGT recommends that boulders (i.e. particles in excess of 12-inches in diameter) encountered during foundation subgrade preparation be removed in their entirety and replaced with imported granular structural fill.

5.0 RECOMMENDATIONS

The recommendations presented in this report are based on the information provided to us, results of our field investigation and analyses, laboratory data, and professional judgment. CGT has observed only a small portion of the pertinent subsurface conditions. The recommendations are based on the assumptions that the subsurface conditions do not deviate appreciably from those found during the field investigation. CGT should be consulted for further recommendations if the design of the proposed development changes and/or variations or undesirable geotechnical conditions are encountered during site development.

5.1 Site Preparation

5.1.1 Demolition

As shown on Photograph 3 on Figure 3, partially buried remnants of former buildings were observed along the crest of the upper terrace. Demolition of remnants of former buildings and appurtenant structures should include complete removal of all structural elements, including foundations and concrete slabs, where encountered in planned building pads, structural fill areas, and pavement areas. Abandoned buried utilities should similarly be removed or grouted full. Concrete or asphalt concrete debris resulting from demolition activities may be re-used as structural fill, provided it is processed in accordance with the recommendations presented in Section 5.4.1 of this report. Alternatively, demolition debris should be hauled off site for disposal.

5.1.2 Stripping

Existing vegetation, topsoil, rooted soils, and undocumented fill (GM Fill, GP Fill) should be removed from within, and for a minimum 5-foot margin around, proposed building pad, structural fill, and pavement areas. Based on the results of our field explorations, undocumented fill encountered at the site extended to depths of up to about 2½ feet bgs. These materials may be deeper or shallower at locations away from the completed explorations. The geotechnical engineer's representative should provide recommendations for actual stripping depths based on observations during site stripping. Stripped surface vegetation and rooted soils should be transported off-site for disposal, or stockpiled for later use in landscaped areas. Stripped, inorganic fill materials should be transported off-site for disposal, or may be stockpiled for later use as structural fill as described in Section 5.4.1 of this report.

5.1.3 Grubbing

Grubbing of trees should include the removal of the root mass and roots greater than ½ inch in diameter. Grubbed materials should be transported off-site for disposal. Root masses from larger trees may extend greater than 3 feet bgs. Where root masses are removed, the resulting excavation should be properly backfilled with structural fill in conformance with Section 5.4 of this report.

5.1.4 Test Pit Backfills

The test pits conducted at the site by CGT were loosely backfilled during our field investigation. Where test pits are located within finalized building, structural fill, or pavement areas, the loose backfill materials should be re-excavated. The resulting excavations should be backfilled with structural fill in conformance with Section 5.4 of this report.

5.1.5 Existing Utilities & Below-Grade Structures

All existing utilities at the site should be identified prior to excavation. Abandoned utility lines beneath the new buildings, pavements, and hardscaping features should be completely removed or grouted full. Soft, loose, or otherwise unsuitable soils encountered in utility trench excavations should be removed and replaced with structural fill in conformance with Section 5.4 this report. Buried structures (i.e. footings, foundation walls, retaining walls, slabs-on-grade, tanks, etc.), if encountered within, and for a minimum 5-foot margin around, the proposed building pad and pavement areas, should be completely removed and replaced with structural fill in conformance with Section 5.4 of this report.

5.1.6 Subgrade Preparation Building Pads & Pavements

After site preparation as recommended above, but prior to placement of structural fill and/or aggregate base, the geotechnical engineer's representative should observe the exposed subgrade soils in order to identify areas of excessive yielding through either proof rolling or probing. Proof rolling of subgrade soils is typically conducted during dry weather using a fully-loaded, 10- to 12-cubic-yard, tandem-axle, tire-mounted, dump truck or equivalent weighted water truck. Areas of limited access or that appear too soft or wet to support proof rolling equipment should be evaluated by probing. If areas of soft soil or excessive yielding are identified, the affected material should be over-excavated to firm, unyielding subgrade, and replaced with imported granular structural fill in conformance with Section 5.4.3 of this report.

5.1.7 Erosion Control

Erosion and sedimentation control measures should be employed in accordance with applicable County and State regulations.

5.2 Temporary Excavations

5.2.1 Overview

Conventional earthmoving equipment in proper working condition should be capable of making necessary excavations for the anticipated site cuts as described earlier in this report. All excavations should be in accordance with applicable OSHA and state regulations. It is the contractor's responsibility to select the excavation methods, to monitor site excavations for safety, and to provide any shoring required to protect personnel and adjacent improvements. A "competent person," as defined by OR-OSHA, should be on-site during construction in accordance with regulations presented by OR-OSHA. CGT's current role on the project does not include review or oversight of excavation safety.

5.2.2 OSHA Soil Type

For use in the planning and construction of temporary excavations up to 10 feet in depth, an OSHA soil type "C" should be used for the granular soils (GP) encountered within our explorations.

5.2.3 Utility Trenches

As evidenced during excavation of the test pits, caving of the native gravelly soils may be encountered in excavations extending more than a few feet below the ground surface. If groundwater seepage undermines the stability of the trench, or if sidewall caving is observed during excavation, the sidewalls should be flattened or shored. Depending on the time of year trench excavations occur, trench dewatering may be required in order to maintain dry working conditions. Although not anticipated, if groundwater is encountered, we recommend placing trench stabilization material at the base of the excavations. Trench stabilization material should be in conformance with Section 5.4.4.

5.2.4 Excavations Near Foundations

Excavations near footings should not extend within a 1 horizontal to 1 vertical (1H:1V) plane projected out and down from the outside, bottom edge of the footings. In the event excavation needs to extend below the referenced plane, temporary shoring of the excavation and/or underpinning of the subject footing may be required. The geotechnical engineer should be consulted to review proposed excavation plans for this design case to provide specific recommendations.

5.3 Wet Weather Considerations

For planning purposes, the wet season should be considered to extend from late September to late June. It is our experience that dry weather working conditions should prevail between early July and mid-September.

Due to their coarse-grained nature and the relative lack of fines, the native gravelly soils (GP, GP-GM) are not considered susceptible to disturbance during wet weather. The gravelly soils are anticipated to perform well under repeated construction traffic during wet weather conditions.

Surface water should not be allowed to collect in footing excavations. The excavations should be draped and/or provided with sumps to preclude water accumulation during inclement weather.

5.4 Structural Fill

The geotechnical engineer should be provided the opportunity to review all materials considered for use as structural fill (prior to placement). Samples of the proposed fill materials should be submitted to the geotechnical engineer a minimum of 5 business days prior their use on site[10]. The geotechnical engineer's representative should be contacted to evaluate compaction of structural fill as the material is being placed. Evaluation of compaction may take the form of in-place density tests and/or proof roll tests with suitable equipment. Structural fill should be evaluated at intervals not exceeding every 2 vertical feet as the fill is being placed.

5.4.1 On-Site Soils

5.4.1.1 Concrete Debris

Concrete debris resulting from the demolition of existing buried structures and other features (foundations, retaining walls.) can be re-used as structural fill if processed/crushed into material that is fairly well-graded between coarse and fine. The processed/crushed concrete should contain no organic matter, debris, or particles larger than 4 inches in diameter. Moisture conditioning (wetting) should be expected in order to achieve adequate compaction. When used as structural fill, this material should be placed and compacted in general accordance with Section 5.4.3.

5.4.1.2 Poorly Graded Gravel (GP, GP-GM, GP Fill)

Re-use of the on-site, relatively clean, gravelly soils as structural fill is feasible, provided the materials are kept clean of organics, debris, and particles larger than 4 inches in diameter. Re-use of the on-site gravelly fill soils will likely require processing (removal) of large cobbles, occasional boulders, and debris. If reused as structural fill, these materials should be prepared in general accordance with Section 5.4.3.

5.4.2 Stockpiled Soils (GP Fill, GM Fill, ML Fill)

Re-use of the stockpiled soils (as shown on Figure 2) as structural fill may be very difficult based on the observed refuse and construction debris observed within the stockpiled soil. Re-use of the stockpiled soil will require blending of the soil to reach a homogeneous state, and processing (removal) of trash and construction debris as well as large cobbles. The moisture sensitivity of the silty soils observed in a portion of the stockpile (TP-14) should also be taken into account. These soils are sensitive to small changes in moisture content and are difficult, if not impossible, to adequately compact during wet weather. We anticipate the moisture content of these soils will be higher than the optimum moisture content for satisfactory

[10] Laboratory testing for moisture density relationship (Proctor) is required. Tests for gradation may be required.

compaction. Therefore, moisture conditioning (drying) should be expected in order to achieve adequate compaction. Where properly processed and moisture-conditioned, these materials should be placed in lifts with a maximum thickness of about 12 inches, and compacted to not less than 95 percent of the material's maximum dry density, as determined in general accordance with ASTM D1557 (Modified Proctor).

If the on-site materials cannot be properly processed, we recommend using imported granular material for structural fill.

5.4.3 Imported Granular Structural Fill General Use

Imported granular structural fill should consist of angular pit or quarry run rock, crushed rock, or crushed gravel that is fairly well graded between coarse and fine particle sizes. The granular fill should contain no organic matter, debris, or particles larger than 4 inches, and have less than 5 percent material passing the U.S. Standard No. 200 Sieve. For fine-grading purposes, the maximum particle size should be limited to 1½ inches. The percentage of fines can be increased to 12 percent of the material passing the U.S. Standard No. 200 Sieve if placed during dry weather, and provided the fill material is moisture-conditioned, as necessary, for proper compaction. Imported granular fill material should be placed in lifts with a maximum thickness of about 12 inches, and compacted to not less than 95 percent of the material's maximum dry density, as determined in general accordance with ASTM D1557 (Modified Proctor). Proper moisture conditioning and the use of vibratory equipment will facilitate compaction of these materials.

Granular fill materials with high percentages of particle sizes in excess of 1½ inches are considered non-moisture-density testable materials. As an alternative to conventional density testing, compaction of these materials should be evaluated by proof roll test observation (deflection tests), where accepted by the geotechnical engineer.

5.4.4 Trench Base Stabilization Material

If groundwater is present at the base of utility excavations, trench base stabilization material should be placed. Trench base stabilization material should consist of a minimum of 1 foot of well-graded granular material with a maximum particle size of 4 inches and less than 5 percent material passing the U.S. Standard No. 4 Sieve. The material should be free of organic matter and other deleterious material, placed in one lift, and compacted until well-keyed.

5.4.5 Trench Backfill Material

Trench backfill for the utility pipe base and pipe zone should consist of granular material as recommended by the utility pipe manufacturer. Trench backfill above the pipe zone should consist of well-graded granular material containing no organic matter or debris, have a maximum particle size of ¾ inch, and have less than 8 percent material passing the U.S. Standard No. 200 Sieve. As a guideline, trench backfill should be placed in maximum 12-inch-thick lifts. The earthwork contractor may elect to use alternative lift thicknesses based on their experience with specific equipment and fill material conditions during construction in order to achieve the required compaction. The following table presents recommended relative compaction percentages for utility trench backfill.

Table 2 Utility Trench Backfill Compaction Recommendations

Backfill Zone	Recommended Minimum Relative Compaction	
	Structural Areas[1,2]	Landscaping Areas
Pipe Base and Within Pipe Zone	90% ASTM D1557 or pipe manufacturer's recommendation	85% ASTM D1557 or pipe manufacturer's recommendation
Above Pipe Zone	92% ASTM D1557	88% ASTM D1557
Within 3 Feet of Design Subgrade	95% ASTM D1557	90% ASTM D1557

1 Includes proposed buildings, pavement areas, structural fill areas, exterior hardscaping, etc.
2 Or as specified by the local jurisdiction where located in the public right of way.

5.4.6 Controlled Low-Strength Material (CLSM)

CLSM is a self-compacting, cementitious material that is typically considered when backfilling localized areas. CLSM is sometimes referred to as "controlled density fill" or CDF. Due to its flowable characteristics, CLSM typically can be placed in restricted-access excavations where placing and compacting fill is difficult. If chosen for use at this site, we recommend the CLSM be in conformance with Section 00442 of the most recent, ODOT SSC. The geotechnical engineer's representative should observe placement of the CLSM and obtain samples for compression testing in accordance with ASTM D4832. As a guideline, for each day's placement, two compressive strength specimens from the same CLSM sample should be tested. The results of the two individual compressive strength tests should be averaged to obtain the reported 28-day compressive strength. If CLSM is considered for use on this site, please contact the geotechnical engineer for site-specific and application-specific recommendations.

5.5 Permanent Slopes

Permanent cut slopes constructed at the site should be graded at 2H:1V or flatter. The surface of all slopes should be protected from erosion by seeding, sodding, or other acceptable means. Adjacent on-site and off-site structures should be located at least 5 feet from the top of slopes. Although not anticipated for this project, in the event fill slopes are to be constructed on portions of the site exhibiting gradients steeper than 5H:1V, the geotechnical engineer should be consulted to review the proposed construction and provide specific recommendations for preparation of sloping surfaces.

5.6 Shallow Foundations

5.6.1 Subgrade Preparation

Satisfactory subgrade support for shallow foundations can be obtained from a minimum 4 inches of imported granular structural fill (granular pads) placed on the native, medium dense to dense, gravelly soils (GP, GP-GM), or new structural fill that is properly placed and compacted on these materials during construction. The granular pads are recommended to assist with fine-grading and help achieve a more uniform surface for foundation concrete.

The geotechnical engineer's representative should be contacted to observe subgrade conditions prior to placement of the granular pads. If soft, loose, or otherwise unsuitable soils are encountered, they should be over-excavated as recommended by the geotechnical representative at the time of construction. Boulders encountered within foundation excavations should similarly be removed. The resulting over-excavation(s) should be brought back to grade with imported granular structural fill in conformance with Section 5.4.3. The

maximum particle size of over-excavation backfill should be limited to 1½ inches. All granular pads for footings should be constructed a minimum of 6 inches wider on each side of the footing for every vertical foot of over-excavation.

5.6.2 Minimum Footing Width & Embedment

Minimum footing widths should be in conformance with the current OSSC. As a guideline, CGT recommends individual spread footings have a minimum width of 24 inches. For one- to two-story, light framed structures, we recommend continuous wall footings have a minimum width of 12 inches and 15 inches respectively. All footings should be founded at least 18 inches below the lowest, permanent adjacent grade to develop lateral capacity and for frost protection.

5.6.3 Horizontal Setback from Descending Slopes

Foundations constructed within or near descending slopes should be setback a minimum of 8 feet from the slope surface. This distance should be measured between the face of the slope and the bottom, outside edge of the respective foundation. Organic topsoil and loose surface soils (if present) should not be included when determining this distance. The geotechnical engineer or his representative should be contacted to observe foundation subgrade conditions and confirm this recommended minimum setback is achieved.

5.6.4 Bearing Pressure & Settlement

Footings founded as recommended above should be proportioned for a maximum allowable soil bearing pressure of 2,500 pounds per square foot (psf). This bearing pressure is a net bearing pressure, applies to the total of dead and long-term live loads, and may be increased by one-third when considering seismic or wind loads. For foundations founded as recommended above, total settlement of foundations is anticipated to be less than 1 inch. Differential settlements between adjacent columns and/or bearing walls should not exceed ½ inch. If an increased allowable soil bearing pressure is desired, the geotechnical engineer should be consulted.

5.6.5 Lateral Capacity

A maximum passive (equivalent fluid) earth pressure of 300 pounds per cubic foot (pcf) is recommended for design of footings cast neat into excavations in suitable native soil or confined by granular structural fill that is properly placed and compacted during construction. The recommended earth pressure was computed using a factor of safety of 1½, which is appropriate due to the amount of movement required to develop full passive resistance. In order to develop the above capacity, the following should be understood:

1. Concrete must be poured neat in excavations or the foundations must be backfilled with imported granular structural fill,
2. The adjacent grade must be level,
3. The static ground water level must remain below the base of the footings throughout the year.
4. Adjacent floor slabs, pavements, or the upper 12-inch-depth of adjacent, unpaved areas should not be considered when calculating passive resistance.

An ultimate coefficient of friction equal to 0.45 may be used when calculating resistance to sliding for footings founded as recommended above.

5.7 Floor Slabs

5.7.1 Subgrade Preparation

Satisfactory subgrade support for slabs constructed on grade, supporting up to 150 psf area loading, can be obtained from the native, medium dense to better, poorly graded gravel (GP, GP-GM), or new structural fill that is properly placed and compacted on these materials during construction. The geotechnical engineer's representative should observe floor slab subgrade soils to evaluate surface consistencies. If soft, loose, or otherwise unsuitable soils are encountered, they should be over-excavated as recommended by the CGT geotechnical representative at the time of construction. The resulting over-excavation should be brought back to grade with imported granular structural fill as described in Section 5.4.3.

5.7.2 Crushed Rock Base

Concrete floor slabs should be supported on a minimum 6-inch-thick layer of crushed rock (base rock).

5.7.2.1 Conventional Base Rock

Floor slab base rock should consist of well-graded granular material (crushed rock) containing no organic matter or debris, have a maximum particle size of ¾ inch, and have less than 5 percent material passing the U.S. Standard No. 200 Sieve. Floor slab base rock should be placed in one lift and compacted to not less than 95 percent of the material's maximum dry density as determined in general accordance with ASTM D1557 (Modified Proctor). We recommend "choking" the surface of the base rock with sand just prior to concrete placement. Choking means the voids between the largest aggregate particles are filled with sand, but does not provide a layer of sand above the base rock. Choking the base rock surface reduces the lateral restraint on the bottom of the concrete during curing. Choking the base rock also reduces punctures in vapor retarding membranes due to foot traffic where such membranes are used.

5.7.2.2 Gas Permeable Base Rock

Floor slab base rock in areas where radon gas mitigation is desired should consist of open-graded crushed rock containing no organic matter or debris, with all material passing through a 2-inch sieve and retained on the ¼-inch sieve, in accordance with Section 1812.2.1, Bullet 1, of the 2022 OSSC.

CGT recommends that a minimum 10-mil polyethylene sheeting or equivalent material with equal or greater tensile strength, resistance to puncture, resistance to deterioration, and resistance to water-vapor transmission be placed on top of the gas-permeable base rock to act as a soil-gas-retarder. Placement and installation of this sheeting should be in conformance with that indicated in Section 1812.2.2 of the 2022 OSSC.

The geotechnical engineer or their representative should be contacted to observe gas-permeable base rock conditions prior to placement of the soil-gas-retarder.

5.7.3 Design Considerations

For floor slabs constructed as recommended, an effective modulus of subgrade reaction of 400 pounds per cubic inch (pci) is recommended for the design of the floor slab. A higher effective modulus of subgrade reaction can be obtained by increasing the base rock thickness. Please contact the geotechnical engineer for additional recommendations if a higher modulus is desired. Floor slabs constructed as recommended will likely settle less than ½ inch. For general floor slab construction, slabs should be jointed around columns and walls to permit slabs and foundations to settle differentially.

5.7.4 Subgrade Moisture Considerations

Liquid moisture and moisture vapor should be expected at the subgrade surface. The recommended crushed rock base is anticipated to provide protection against liquid moisture. Where moisture vapor emission through the slab must be minimized, e.g. impervious floor coverings, storage of moisture sensitive materials directly on the slab surface, etc., a vapor retarding membrane or vapor barrier below the slab should be considered. Factors such as cost, special considerations for construction, floor coverings, and end use suggest that the decision regarding a vapor retarding membrane or vapor barrier be made by the architect and owner.

If a vapor retarder or vapor barrier is placed below the slab, its location should be based on current American Concrete Institute (ACI) guidelines, ACI 302 Guide for Concrete Floor and Slab Construction. In some cases, this indicates placement of concrete directly on the vapor retarder or barrier. Please note that the placement of concrete directly on impervious membranes increases the risk of plastic shrinkage cracking and slab curling in the concrete. Construction practices to reduce or eliminate such risk, as described in ACI 302, should be employed during concrete placement.

5.8 Pavements

5.8.1 Subgrade Preparation

Pavement subgrade preparation should be performed in general accordance with the recommendations presented in Section 5.1.6 above. Subgrade surfaces should be crowned (or sloped) for proper drainage in accordance with specifications provided by the project civil engineer.

5.8.2 Pavement Design Sections

Recommendations for pavement design sections were not included as part of this assignment, but could be provided, upon request, for an additional fee.

5.9 Additional Considerations

5.9.1 Drainage

Subsurface drains should be connected to the nearest storm drain, on-site infiltration system (to be designed by others) or other suitable discharge point. Paved surfaces and grading near or adjacent to the buildings should be sloped to drain away from the buildings. Surface water from paved surfaces and open spaces should be collected and routed to a suitable discharge point. Surface water should not be directed into foundation drains, if incorporated, or onto site slopes.

5.9.2 Expansive Potential

The near surface native soils consist of gravelly soils with minimal fines. These soils are not considered to be susceptible to appreciable movements from changes in moisture content. Accordingly, no special considerations are required to mitigate expansive potential of the near surface soils at the site.

6.0 RECOMMENDED ADDITIONAL SERVICES

6.1 Design Review

Geotechnical design review is of paramount importance. We recommend the geotechnical design review take place prior to releasing bid packets to contractors.

6.2 Observation of Construction

Satisfactory earthwork, foundation, floor slab, and pavement performance depends to a large degree on the quality of construction. Sufficient observation of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications. Subsurface conditions observed during construction should be compared with those encountered during subsurface explorations, and recognition of changed conditions often requires experience. We recommend that qualified personnel visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those observed to date and anticipated in this report. We recommend geotechnical engineer's representative attend a pre-construction meeting coordinated by the contractor and/or developer. The project geotechnical engineer's representative should provide observations and/or testing of at least the following earthwork elements during construction:

- Site Stripping and Demolition
- Subgrade Preparation for Shallow Foundations, Structural Fills, Floor Slabs, and Pavements
- Compaction of Structural Fill and Utility Trench Backfill
- Compaction of Base Rock for Floor Slabs and Pavements
- Compaction of Asphalt Concrete for Pavements

It is imperative that the owner and/or contractor request earthwork observations and testing at a frequency sufficient to allow the geotechnical engineer to provide a final letter of compliance for the earthwork activities.

7.0 LIMITATIONS

We have prepared this report for use by the owner/developer and other members of the design and construction team for the proposed development. The opinions and recommendations contained within this report are forwarded to assist in the planning and design process and are not intended to be, nor should they be construed as, a warranty of subsurface conditions.

We have made observations based on our explorations that indicate the soil conditions at only those specific locations and only to the depths penetrated. These observations do not necessarily reflect soil types, strata thickness, or water level variations that may exist between or away from our explorations. If subsurface conditions vary from those encountered in our site explorations, CGT should be alerted to the change in conditions so that we may provide additional geotechnical recommendations, if necessary. Observation by experienced geotechnical personnel should be considered an integral part of the construction process.

The owner/developer is responsible for ensuring that the project designers and contractors implement our recommendations. When the design has been finalized, prior to releasing bid packets to contractors, we recommend that the design drawings and specifications be reviewed by our firm to see that our recommendations have been interpreted and implemented as intended. If design changes are made, we request that we be retained to review our conclusions and recommendations and to provide a written

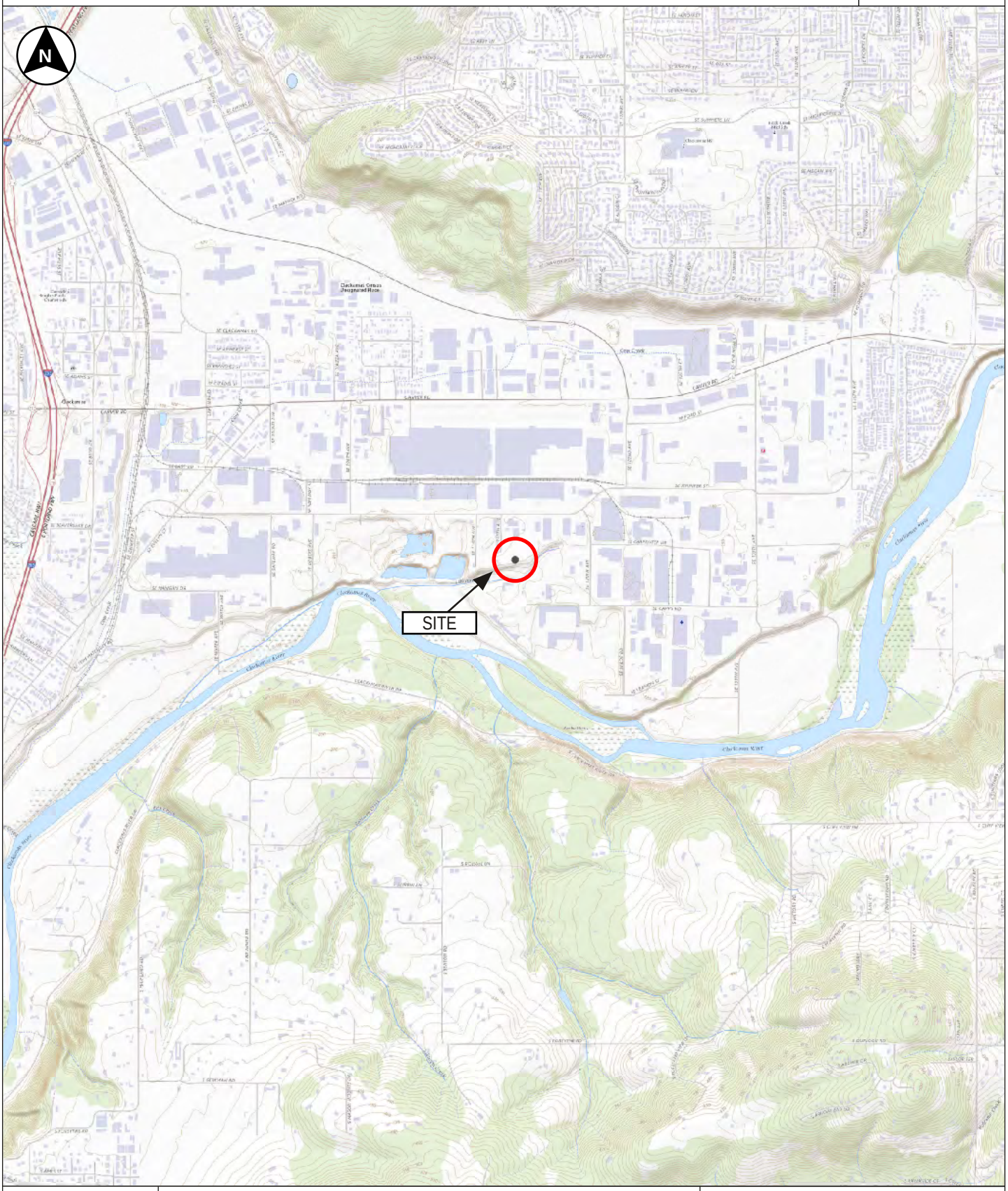
modification or verification. Design review and construction phase testing and observation services are beyond the scope of our current assignment, but will be provided for an additional fee.

The scope of our services does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractor's methods, techniques, sequences, or procedures, except as specifically described in our report for consideration in design.

Geotechnical engineering and the geologic sciences are characterized by a degree of uncertainty. Professional judgments presented in this report are based on our understanding of the proposed construction, familiarity with similar projects in the area, and on general experience. Within the limitations of scope, schedule, and budget, our services have been executed in accordance with the generally accepted practices in this area at the time this report was prepared; no warranty, expressed or implied, is made. This report is subject to review and should not be relied upon after a period of three years.

CLACKAMAS EMERGENCY HOUSING - CLACKAMAS COUNTY, OREGON
Project Number G2306020

FIGURE 1
Site Location



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503-601-8250
Drafted by: AET

USGS Topographic base map created with The National Map, 2023, at https://apps.nationalmap.gov/viewer/

Township 2 South, Range 2 East, Section 15, Willamette Meridian

Latitude: 45.401263° North
Longitude: 122.54433° West

1 Inch = 2,000 feet

0 2000 4000

CLACKAMAS EMERGENCY HOUSING - CLACKAMAS COUNTY, OREGON
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FIGURE 2

Site Plan

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LEGEND

TP-2 (1½') — Test Pit. Depth of fill indicated in ().

TP-1/IT-1 (2') — Infiltration Test. Depth of fill indicated in ().

TP-14 (6'+) — Test pit performed by others, observed on 11/10/23. Depth of fill observed in ().

Approximate boundary of soil stockpile.

1 — Orientation of Site Photographs shown on Figure 3.

1 Inch = 40 Feet

0 40 80

NOTES: 2021 aerial photograph from Clackamas County Mapping System https://cmap.clackamas.us/maps/cmap. Proposed development based on Sheet A0.1, "Site Layout", dated September 28, 2023, produced by Base Design + Architecture. All locations are approximate.

Photograph 1

Photograph 2

Photograph 3

Photograph 4

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Appendix A: Subsurface Investigation and Laboratory Testing

Clackamas Emergency Housing
16590 SE 114th Avenue
Clackamas County, Oregon

CGT Project Number G2306020

December 1, 2023

Prepared For:

Mark Sirois
Clackamas County Community Development
2051 Kaen Rd # 245
Oregon City, OR 97045

Prepared by
Carlson Geotechnical

A.1.0 SUBSURFACE INVESTIGATION

Our field investigation consisted of thirteen test pits completed on November 10, 2023. The exploration locations are shown on the Site Plan, attached to the geotechnical report as Figure 2. The exploration locations shown therein were determined based on measurements from existing site features (trees, etc.) and are approximate. Surface elevations indicated on the logs were estimated based on the topographic contours (by others) shown on the referenced Site Plan and are approximate. The attached figures detail the exploration methods (Figure A1), soil classification criteria (Figure A2), and present detailed logs of the explorations (Figures A3 through A16), as discussed below.

A.1.1 Test Pits

CGT observed the excavation of thirteen test pits (TP-1 through TP-13) at the site to depths of about 3 to 9½ feet bgs. The test pits were excavated using a Bobcat E63 mini excavator provided and operated by our excavation subcontractor, Doug Shepherd's Dirtworks of Keizer, Oregon. The test pits were loosely backfilled with the excavated materials upon completion. CGT also logged the sidewalls of an additional test pit excavation (TP-14) that had been excavated by others and left open prior to CGT's arrival onsite.

A.1.2 In-Situ Testing

A.1.2.1 Infiltration Tests

CGT performed two infiltration tests at the site within two of the test pits (TP-1 and TP-11). Details regarding the test procedure and results of the tests are presented in Appendix B.

A.1.3 Material Classification & Sampling

Representative disturbed (grab) samples of the soils encountered were obtained at select intervals within the test pits. A qualified member of CGT's geological staff collected the samples and logged the soils in general accordance with the Visual-Manual Procedure (ASTM D2488). An explanation of this classification system is attached as Figure A2. The grab samples were stored in sealable plastic bags and transported to our soils laboratory for further examination and testing. Our geotechnical staff visually examined all samples in order to refine the initial field classifications.

A.1.4 Subsurface Conditions

Subsurface conditions are summarized in Section 2.3 of the geotechnical report. Detailed logs of the explorations are presented on the attached exploration logs, Figures A3 through A16.

A.2.0 LABORATORY TESTING

Laboratory testing was performed on samples collected in the field to refine our initial field classifications and determine in-situ parameters. Laboratory testing included the following:

- Nine moisture content determinations (ASTM D2216).
- Three percentages passing the U.S. Standard No. 200 Sieve tests (ASTM D1140).

Results of the laboratory tests are shown on the exploration logs.

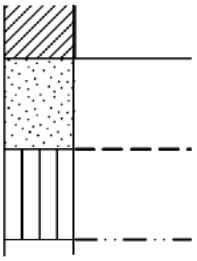
CLACKAMAS EMERGENCY HOUSING - CLACKAMAS COUNTY, OREGON *Project Number G2306020*	**FIGURE A1** **Exploration Key**

PL — LL MC	Atterberg limits (plasticity) test results (ASTM D4318): PL = Plastic Limit, LL = Liquid Limit, and MC= Moisture Content (ASTM D2216)
☐ FINES CONTENT (%)	Percentage passing the U.S. Standard No. 200 Sieve (ASTM D1140)

SAMPLING

GRAB	Grab sample
BULK	Bulk sample
SPT	**Standard Penetration Test** (SPT) consists of driving a 2-inch, outside-diameter, split-spoon sampler into the undisturbed formation with repeated blows of a 140-pound, hammer falling a vertical distance of 30 inches (ASTM D1586). The number of blows (N-value) required to drive the sampler the last 12 inches of an 18-inch sample interval is used to characterize the soil consistency or relative density. The drill rig was equipped with an cat-head or automatic hammer to conduct the SPTs. The observed N-values, hammer efficiency, and N_{60} are noted on the boring logs.
MC	**Modified California** sampling consists of 3-inch, outside-diameter, split-spoon sampler (ASTM G3550) driven similarly to the SPT sampling method described above. A sampler diameter correction factor of 0.44 is applied to calculate the equivalent SPT N_{60} value per Lacroix and Horn, 1973.
CORE	**Rock Coring** interval
SH	**Shelby Tube** is a 3-inch, inner-diameter, thin-walled, steel tube push sampler (ASTM D1587) used to collect relatively undisturbed samples of fine-grained soils.
WDCP	**Wildcat Dynamic Cone Penetrometer** (WDCP) test consists of driving 1.1-inch diameter, steel rods with a 1.4-inch diameter, cone tip into the ground using a 35-pound drop hammer with a 15-inch free-fall height. The number of blows required to drive the steel rods is recorded for each 10 centimeters (3.94 inches) of penetration. The blow count for each interval is then converted to the corresponding SPT N_{60} values.
DCP	**Dynamic Cone Penetrometer** (DCP) test consists of driving a 20-millimeter diameter, hardened steel cone on 16-millimeter diameter steel rods into the ground using a 10-kilogram drop hammer with a 460-millimeter free-fall height. The depth of penetration in millimeters is recorded for each drop of the hammer.
POCKET PEN. (tsf)	**Pocket Penetrometer** test is a hand-held instrument that provides an approximation of the unconfined compressive strength in tons per square foot (tsf) of cohesive, fine-grained soils.

CONTACTS



Observed (measured) contact between soil or rock units.

Inferred (approximate) contact between soil or rock units.

Transitional (gradational) contact between soil or rock units.

ADDITIONAL NOTATIONS

Italics	Notes drilling action or digging effort
{ Braces }	Interpretation of material origin/geologic formation (e.g. { Base Rock } or { Columbia River Basalt })

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All measurements are approximate.

CLACKAMAS EMERGENCY HOUSING - CLACKAMAS COUNTY, OREGON
Project Number G2306020

FIGURE A2
Soil Classification

Classification of Terms and Content

NAME: Group Name and Symbol
Relative Density or Consistency
Color
Moisture Content
Plasticity
Other Constituents
Other: Grain Shape, Approximate Gradation
Organics, Cement, Structure, Odor, etc.
Geologic Name or Formation

Grain Size

		U.S. Standard Sieve
Fines		<#200 (0.075 mm)
Sand	Fine	#200 - #40 (0.425 mm)
	Medium	#40 - #10 (2 mm)
	Coarse	#10 - #4 (4.75 mm)
Gravel	Fine	#4 - 0.75 inch
	Coarse	0.75 inch - 3 inches
Cobbles		3 to 12 inches
Boulders		> 12 inches

Coarse-Grained (Granular) Soils

Relative Density

SPT N_{60}-Value	Density
0 - 4	Very Loose
4 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
>50	Very Dense

Minor Constituents

Percent by Volume	Descriptor	Example
0 - 5%	"Trace" as part of soil description	"trace silt"
5 - 15%	"With" as part of group name	"**POORLY GRADED SAND WITH SILT**"
15 - 49%	Modifier to group name	"**SILTY SAND**"

Fine-Grained (Cohesive) Soils

SPT N_{60}-Value	Torvane tsf Shear Strength	Pocket Pen tsf Unconfined	Consistency	Manual Penetration Test
<2	<0.13	<0.25	Very Soft	Thumb penetrates more than 1 inch
2 - 4	0.13 - 0.25	0.25 - 0.50	Soft	Thumb penetrates about 1 inch
4 - 8	0.25 - 0.50	0.50 - 1.00	Medium Stiff	Thumb penetrates about ¼ inch
8 - 15	0.50 - 1.00	1.00 - 2.00	Stiff	Thumb penetrates less than ¼ inch
15 - 30	1.00 - 2.00	2.00 - 4.00	Very Stiff	Readily indented by thumbnail
>30	>2.00	>4.00	Hard	Difficult to indent by thumbnail

Minor Constituents

Percent by Volume	Descriptor	Example
0 - 5%	"Trace" as part of soil description	"trace fine-grained sand"
5 - 15%	"Some" as part of soil description	"some fine-grained sand"
15 - 30%	"With" as part of group name	"**SILT WITH SAND**"
30 - 49%	Modifier to group name	"**SANDY SILT**"

Moisture Content

Dry: Absence of moisture, dusty, dry to the touch

Moist: Leaves moisture on hand

Wet: Visible free water, likely from below water table

	Plasticity	Dry Strength	Dilatancy	Toughness
ML	Non to Low	Non to Low	Slow to Rapid	Low, can't roll
CL	Low to Medium	Medium to High	None to Slow	Medium
MH	Medium to High	Low to Medium	None to Slow	Low to Medium
CH	Medium to High	High to Very High	None	High

Structure

Stratified: Alternating layers of material or color >6 mm thick

Laminated: Alternating layers < 6 mm thick

Fissured: Breaks along definite fracture planes

Slickensided: Striated, polished, or glossy fracture planes

Blocky: Cohesive soil that can be broken down into small angular lumps which resist further breakdown

Lenses: Has small pockets of different soils, note thickness

Homogeneous: Same color and appearance throughout

Visual-Manual Classification

Major Divisions			Group Symbols	Typical Names
Coarse Grained Soils: More than 50% retained on No. 200 sieve	Gravels: 50% or more *retained* on the No. 4 sieve	Clean Gravels	GW	Well-graded gravels and gravel/sand mixtures, little or no fines
			GP	Poorly-graded gravels and gravel/sand mixtures, little or no fines
		Gravels with Fines	GM	Silty gravels, gravel/sand/silt mixtures
			GC	Clayey gravels, gravel/sand/clay mixtures
	Sands: More than 50% *passing* the No. 4 sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines
			SP	Poorly-graded sands and gravelly sands, little or no fines
		Sands with Fines	SM	Silty sands, sand/silt mixtures
			SC	Clayey sands, sand/clay mixtures
Fine-Grained Soils: 50% or more Passes No. 200 Sieve	Silt and Clays Low Plasticity Fines		ML	Inorganic silts, rock flour, clayey silts
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
			OL	Organic soil of low plasticity
	Silt and Clays High Plasticity Fines		MH	Inorganic silts, clayey silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic soil of medium to high plasticity
Highly Organic Soils			PT	Peat, muck, and other highly organic soils

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References:

ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)
Terzaghi, K., and Peck, R.B., 1948, Soil Mechanics in Engineering Practice, John Wiley & Sons.

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FIGURE A3

Test Pit TP-01

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ / PL LL MC / ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
					0						
118		GP FILL	**POORLY GRADED GRAVEL WITH COBBLES FILL:** Gray, moist, subangular to subrounded gravel up to 1 inch in diameter, some silt fines. Subrounded cobbles up 5 inches in diameter below ½ foot bgs.		2						
116		GP-GM	**POORLY GRADED GRAVEL WITH SAND AND COBBLES:** *Dense,* brown, moist, subrounded gravels to cobbles up to 12 inches in diameter (40% by volume), with fine- to medium- grained sand, trace to some silt fines. {Terrace deposits}.		4						
114					6	GRAB 1	100				8 9
112			• Infiltration test IT-1 performed at 6 feet bgs. Reference Appendix B for test results. •Test pit terminated at 6½ feet bgs. •Some caving encountered at and below approximately 3 feet bgs. •No groundwater encountered. •Test pit loosely backfilled with excavated spoils.								
110											

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FIGURE A4

Test Pit TP-02

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel/Grass **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC; ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
		GP FILL	**POORLY GRADED GRAVEL FILL:** Gray, moist, subangular to subrounded gravel up to 1 inch in diameter, some silt fines. 3 inch thick, light gray, nonplastic silt lens at ½ foot bgs. Processed wood fragments 2 inches in length, copper pipe debris.		0						
118		GP-GM	**POORLY GRADED GRAVEL WITH COBBLES:** *Dense,* brown, moist, subrounded to rounded gravels and cobbles up to 12 inches in diameter (40% by volume), with medium- to coarse- grained sand, some low plasticity silt fines. {Terrace deposits}.		2						
116					4	GRAB 1	100				● 7
114			Increase in coarse-grained sand content below 6½ feet bgs.		6						
112					8	GRAB 2	100				● 6
110			•Test pit terminated at 8½ feet bgs due to caving of coarse particles. •Caving encountered at and below approximately 3 feet bgs. •No groundwater encountered. •Test pit loosely backfilled with excavated spoils.								

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FIGURE A5

Test Pit TP-03

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
					0						
118		GP FILL	**POORLY GRADED GRAVEL WITH COBBLES FILL:** Gray, moist, subangular to subrounded gravel up to ¾ inch in diameter and subrounded cobbles up to 4 inches in diameter, some medium plasticity fines, some rootlets, trace wire debris and glass debris.		2						
116		GP	**POORLY GRADED GRAVEL WITH SAND AND COBBLES:** *Dense,* light brown, moist, subangular to subrounded gravel and cobbles up to 12 inches in diameter (40% by volume), with medium- to coarse- grained sand, trace silt fines. {Terrace deposits}.		4	GRAB 1	100				7
114											
112											
110											

- Test pit terminated at 5 feet bgs.
- Caving encountered at and below approximately 3 feet bgs.
- No groundwater encountered.
- Test pit loosely backfilled with excavated spoils.

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FIGURE A6

Test Pit TP-04

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
		GP FILL	**POORLY GRADED GRAVEL WITH COBBLES FILL:** Gray, moist, subrounded gravels and cobbles up to 6 inches in diameter, some silt fines and rootlets, some concrete, wire and glass fragments up to 3 inches in diameter.		0						
118		GP	**POORLY GRADED GRAVEL WITH SAND AND COBBLES:** *Dense,* light brown, moist, subangular to subrounded cobbles up to 12 inches in diameter (40% by volume), with medium- to coarse- grained sand, trace silt fines. {Terrace deposits}.		2						
116					4						
114			Increase in coarse-grained sand below approximately 6 feet bgs.		6						
112					8	GRAB 1	100				6
110			•Test pit terminated at 8½ feet bgs, due to caving of coarse particles. •Caving encountered at and below approximately 3 feet bgs. •No groundwater encountered. •Test pit loosely backfilled with excavated spoils.								

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FIGURE A7

Test Pit TP-05

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
		GP FILL	**POORLY GRADED GRAVEL AND COBBLES FILL:** Gray, moist, subangular to subrounded gravel and cobbles up to 4 inches in diameter, some medium plasticity fines.		0						
118		GP	**POORLY GRADED GRAVEL WITH SAND, COBBLES, AND BOULDERS:** *Dense,* dark brown, moist, subrounded gravel, cobbles, and boulders up to 18 inches in diameter (40% by volume), some medium- to coarse- grained sand, trace silt fines. {Terrace deposits}.		2						
116					4						
114					6						
112					8	GRAB 1	100				5
110			•Test pit terminated at 8 feet bgs, due to caving of coarse particles. •Severe caving encountered at and below approximately 3 feet bgs. •No groundwater encountered. •Test pit loosely backfilled with excavated spoils.								

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FIGURE A8

Test Pit TP-06

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft
ELEVATION DATUM See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel
LOGGED BY AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks
SEEPAGE ---
EQUIPMENT Bobcat E63 Mini Excavator
GROUNDWATER DURING DRILLING ---
EXCAVATION METHOD 24" Rock Bucket
GROUNDWATER AFTER EXCAVATION ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
		GP FILL	**POORLY GRADED GRAVEL FILL:** Gray, moist, subangular to subrounded gravels up to 1½ inch in diameter, some medium plasticity fines, trace to some rootlets at 1 foot bgs, trace glass debris at 3 inches bgs.		0						
118		GP-GM	**POORLY GRADED GRAVEL WITH SAND, COBBLES, AND BOULDERS:** *Dense,* dark brown, moist, subrounded gravel, cobbles and boulders up to 18 inches in diameter (40% by volume), some medium- to coarse- grained sand, some silt fines. {Terrace deposits}.		2						
						GRAB 1	100				13 ● 8 ☐
116					4						
114											
112											
110											

- Test pit terminated at 4 feet bgs.
- Moderate caving encountered at and below approximately 3 feet bgs.
- No groundwater encountered.
- Test pit loosely backfilled with excavated spoils.

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FIGURE A9

Test Pit TP-07

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ / PL LL MC / ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
					0						
118		GP FILL	**POORLY GRADED GRAVEL FILL:** Gray, moist, subangular to subrounded gravels up to 1 inch in diameter, some medium plasticity fines, trace glass debris at 3 inches bgs, trace to some rootlets below 1 foot bgs.		2						
		GP	**POORLY GRADED GRAVEL WITH SAND, COBBLES, AND BOULDERS:** *Dense,* dark brown, moist, subrounded cobbles and boulders up to 18 inches in diameter (40% by volume), some medium- to coarse- grained sand, trace silt fines. {Terrace deposits}.								
116			•Test pit terminated at 3½ feet bgs. •Moderate caving encountered at and below approximately 3 feet bgs. •No groundwater encountered. •Test pit loosely backfilled with excavated spoils.								
114											
112											
110											

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FIGURE A10

Test Pit TP-08

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Organics/Gravel **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
		GP FILL	**POORLY GRADED GRAVEL FILL:** Gray, moist, rounded to angular gravel up to 3 inches in diameter, wire, plastic, brick, and wood debris at 6 inches bgs, some low plasticity silt fines.		0	GRAB 1	100			
118		GP	**POORLY GRADED GRAVEL WITH SAND AND COBBLES:** Dark brown, moist, subrounded cobbles (40% by volume) up to 12 inches in diameter, some medium- to coarse- grained sand, trace silt fines. {Terrace deposits}.		2					
116					4					
114					6					
			Increase in coarse-grained sand below 7 feet bgs.							
112					8					
						GRAB 2	100			
110			•Test pit terminated at 9½ feet bgs due to caving of coarse particles. •Caving encountered at and below approximately 3 feet bgs. •No groundwater encountered. •Test pit loosely backfilled with excavated spoils.							
108										

▲ WDCP N_{60} VALUE ▲
PL LL MC
☐ FINES CONTENT (%) ☐
0 20 40 60 80 100
13
8

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FIGURE A11

Test Pit TP-09

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
					0						
118		GP FILL	**POORLY GRADED GRAVEL FILL:** Gray to brown, moist, subangular to subrounded gravel up to 2 inches in diameter, some medium plasticity fines, some trash debris (plastic, glass, wood).		2						
116		GP-GM	**POORLY GRADED GRAVEL WITH SAND AND COBBLES:** *Dense,* dark brown, moist, subrounded gravels to cobbles (40% by volume) up to 12 inches in diameter, some medium- to coarse- grained sand, trace to some silt fines. {Terrace deposits}.		4						
114			•Test pit terminated at 4 feet bgs. •Moderate caving encountered at and below approximately 3 feet bgs. •No groundwater encountered. •Test pit loosely backfilled with excavated spoils.								
112											
110											

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FIGURE A12

Test Pit TP-10

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ / PL LL MC / ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
					0						
118		GP FILL	**POORLY GRADED GRAVEL FILL:** Dark brown to gray, moist, subangular to subrounded gravel up to ¾ inch in diameter, some medium plasticity fines, some rootlets and roots up to 1 inch in diameter, some metal fragments observed at 6 inches bgs.								
					2						
		GP-GM	**POORLY GRADED GRAVEL WITH SAND AND COBBLES:** *Dense,* dark brown, moist, subrounded gravels and cobbles (40% by volume) up to 12 inches in diameter, some medium- to coarse- grained sand, trace to some silt fines. {Terrace deposits}.								
116			•Test pit terminated at 3 feet bgs. •Caving encountered at and below approximately 3 feet bgs. •No groundwater encountered. •Test pit loosely backfilled with excavated spoils.								
114											
112											
110											

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FIGURE A13
Test Pit TP-11

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 120 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel/Grass **LOGGED BY** AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks **SEEPAGE** ---
EQUIPMENT Bobcat E63 Mini Excavator **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD 24" Rock Bucket **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
		GP FILL	**POORLY GRADED GRAVEL FILL:** Gray, moist, subangular to subrounded gravel up to 1½ inch in diameter, some medium plasticity fines, trace glass and wood debris, trace rootlets up to ½ inch in diameter.		0						
118		GP	**POORLY GRADED GRAVEL WITH SAND AND COBBLES:** *Dense,* dark brown, moist, subrounded to rounded gravels and cobbles (40% by volume) up to 6 inches in diameter, some fine- to medium- grained sand, trace silt fines. {Terrace deposits}.		2						
116					4						
114					6	GRAB 1	100				3 7
112											
110											

- Infiltration test IT-2 performed at 6 feet bgs. Reference Appendix B for test results.
- Test pit terminated at 6½ feet bgs.
- Moderate caving encountered at and below approximately 3 feet bgs.
- No groundwater encountered.
- Test pit loosely backfilled with excavated spoils.

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FIGURE A14

Test Pit TP-12

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 90 ft
ELEVATION DATUM See Figure 2
WEATHER Overcast 50°F **SURFACE** Gravel
LOGGED BY AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks
SEEPAGE ---
EQUIPMENT Bobcat E63 Mini Excavator
GROUNDWATER DURING DRILLING ---
EXCAVATION METHOD 24" Rock Bucket
GROUNDWATER AFTER EXCAVATION ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC; ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
		GP FILL	**POORLY GRADED GRAVEL FILL:** Gray, moist, subangular to subrounded gravel up to 2½ inches in diameter, asphalt debris up to 4 inches in diameter, dark gray basalt fragments up to 3½ inches in diameter.		0						
88		GP	**POORLY GRADED GRAVEL WITH SAND AND COBBLES:** *Dense,* brown, moist, subrounded gravels and cobbles up to 5 inches in diameter (40% by volume), some fine-to medium-grained sand, trace silt fines. {Terrace deposits}.		2						
86					4						
						GRAB 1	100				8
84			*Very dense* below 6 feet bgs based on digging effort.		6						
82					8						
						GRAB 2	100				11
80			•Test pit terminated at 9½ feet bgs,due to caving of coarse particles. •Caving encountered at and below approximately 3 feet bgs. •No groundwater encountered. •Test pit loosely backfilled with excavated spoils.								
78											

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FIGURE A15

Test Pit TP-13

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 126 ft
ELEVATION DATUM See Figure 2
WEATHER Overcast 50°F **SURFACE** Blackberry Bushes
LOGGED BY AFJ **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Doug Shepherd Dirtworks
SEEPAGE 6.0 ft / El. 120.0 ft
EQUIPMENT Bobcat E63 Mini Excavator
GROUNDWATER DURING DRILLING ---
EXCAVATION METHOD 24" Rock Bucket
GROUNDWATER AFTER EXCAVATION ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
			POORLY GRADED GRAVEL WITH SAND FILL: Brown, moist, subangular to subrounded gravel up to 2 inches in diameter, some medium-to coarse-grained sand, some medium plasticity silt fines.		0						
124					2						
		GP-GM FILL									
122			Some plastic, brick, concrete, asphalt debris up to 2 feet in diameter at about 4 feet bgs		4						
120				≈	6						
118											
116											

- Test pit terminated at 6 feet bgs.
- Test pit performed in soil stockpile.
- Light groundwater seepage at approximately 6 feet bgs.
- No caving encountered.
- Test pit loosely backfilled with excavated spoils.

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FIGURE A16

Test Pit TP-14

CLIENT Clackamas County Community Development
PROJECT NAME Clackamas Emergency Housing
PROJECT NUMBER G2306020
PROJECT LOCATION 16590 SE 114th Avenue, Clackamas, Oregon
DATE STARTED 11/10/23 **GROUND ELEVATION** 128 ft **ELEVATION DATUM** See Figure 2
WEATHER Overcast 50°F **SURFACE** Grass **LOGGED BY** AET **REVIEWED BY** BMW
EXCAVATION CONTRACTOR Unknown **SEEPAGE** ---
EQUIPMENT Unknown **GROUNDWATER DURING DRILLING** ---
EXCAVATION METHOD Unknown **GROUNDWATER AFTER EXCAVATION** ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ PL LL MC ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
126		GM FILL	**SILTY GRAVEL FILL:** Gray/brown, wet, angular up to 1-inch in diameter, with low plasticity silt fines, some rootlets.		0						
124		ML FILL	**SILT WITH SAND FILL** Gray/brown, wet, low plasticity, with fine-grained sand, trace roots up to ½-inch in diameter.		2						
122					4						
120					6						
118											

- TP-14 was excavated by others prior to CGT's presence on site. Soils described above are determined by observations of the test pits sidewalls.
- No caving or groundwater was observed in the excavation.
- Exploration was left open due to inaccessible conditions with our excavation equipment.

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Tigard Office	**(503) 684-3460**

Appendix B: Results of Infiltration Testing

Clackamas Emergency Housing
16590 SE 114th Avenue
Clackamas County, Oregon

CGT Project Number G2306020

December 1, 2023

Prepared For:

Mark Sirois
Clackamas County Community Development
2051 Kaen Rd # 245
Oregon City, OR 97045

Prepared by
Carlson Geotechnical

B.1.0 INTRODUCTION

The project civil engineer Mr. Kyle England, P.E., of DCI Engineers, requested infiltration testing at two locations, indicated on a site plan, provided during a virtual meeting on November 1, 2023. The tests were performed within excavated test pits at a depth of 6 feet below ground surface (bgs), designated TP-1 and TP-11 on the Site Plan, which is attached to the main report as Figure 2.

B.2.0 TEST PROCEDURE

The infiltration tests (IT-1 and IT-2) were performed in general accordance with the Open Pit- Falling Head method as described in Appendix A of the Clackamas County Water Environment Services Stormwater Standards, dated April 2023.

The tests was performed within test pit TP-1 and TP-11 which were advanced to the infiltration test depth with a Bobcat E63 mini track-mounted excavator with a 2-foot wide toothed bucket provided and operated by our subcontractor, Doug Shepherd's Dirtworks of Keizer, Oregon. The test pits were excavated to the infiltration test depths and the base measured approximately 2 feet by 2 feet.

In IT-1, we attempted to soak the subsurface soils by pouring an approximate 10 gallons of water into the test pit. The water infiltrated into the subsurface materials in less than 10 minutes. This was repeated a second time with similar results; therefore, we immediately proceeded with the infiltration test. A steady source of water (hose connected to a nearby spigot) was introduced into the test pit at an inflow rate of 3¾ gallons every minute (measured using a 5-gallon bucket and a stopwatch). Approximately 250 gallons of water[1] was introduced into the base of the test pit over the span of 1 hour and 7 minutes and we were unable to achieve any measurable head of water during that time. The test was then terminated; refer to Table B1 for details of the infiltration test.

In IT-2, we attempted to soak the subsurface soils by pouring an approximate 10 gallons of water into the test pit. The water infiltrated into the subsurface materials in less than 10 minutes. This was repeated a second time with similar results; therefore, we immediately proceeded with the infiltration test. A steady source of water (hose connected to a nearby spigot) was introduced into the test pit at an inflow rate of 2¾ gallons every minute (measured using a 5-gallon bucket and a stopwatch). Approximately 250 gallons of water[1] was introduced into the base of the test pit over the span of 1 hour and 53 minutes with an approximate 3 inch head being maintained during the test. The test was terminated after the infiltration of 250 gallons of water; refer to Table B2 for details of the infiltration test.

[1] This volume of water (250 gallons) was selected for testing in general accordance with a similar testing procedure outlined in the 2020 Portland Stormwater Management Manual where encountering rapidly draining, coarse-grained soils are encountered.

Table B1 Results of Infiltration Test IT-1

Location:	Clackamas Emergency Housing		Date:	11-10-2023	Exploration Number: TP-1
Test Method:	Clackamas County Open Pit Method				Infiltration Test Depth: 6 feet bgs
Length:	2 feet		Width:	2 feet	
Soil at infiltration test depth:	Poorly Graded Gravel with Cobbles and Sand			See exploration log for detail	
Test Start Time:	9:00 AM	Notes:		Water inflow = 3¾ gallons per minute. No head build up during test. Test terminated following introduction of approximately 250 gallons of water.	
Test End Time:	10:07 AM				
Head During Test:	None				

Table B2 Results of Infiltration Test IT-2

Location:	Clackamas Emergency Housing		Date:	11-10-2023	Exploration Number: TP-11
Test Method:	Clackamas County Open Pit Method				Infiltration Test Depth: 6 feet bgs
Length:	2 feet		Width:	2 feet	
Soil at infiltration test depth:	Poorly Graded Gravel with Cobbles and Sand			See exploration log for detail	
Test Start Time:	9:30 AM	Notes:		Water inflow = 2¾ gallons per minute. Approximate 3 inch head build up during test. Test terminated following introduction of approximately 250 gallons of water.	
Test End Time:	11:23 AM				
Head During Test:	3 inches				

B.3.0 DISCUSSION

As indicated above, in IT-1 we were unable to develop a head of water at the base of the prepared test pit in the test area (measuring 2-foot square) using the steady inflow rate (3¾ gallons per minute). In IT-2, we were able to maintain an approximate 3 inch head within the test area using the steady inflow rate (2¾ gallons per minute). Based on the manual, for rapidly draining soils, the raw measured infiltration rate for IT-1 was calculated to be 5,373 inches per hour, and for IT-2 the raw measured infiltration rate was calculated to be 2,609 inches per hour.

We recommend the raw measured infiltration rate for both tested locations be assigned as 100 inches per hour as means to add some conservatism in design. In the event a larger infiltration rate is desired, we recommend an increased scale of testing be performed using a larger volume of water delivered from a higher flow, steady water source (e.g. water truck, fire hydrant, etc.).

Per Table 18 of the referenced manual, a minimum allowable factor of safety (FoS) of 2.0 shall be applied to the field-tested infiltration rate(s) where the open pit test method is used. We recommend this FoS be applied to calculate the design infiltration rate for use in design of the stormwater infiltration system(s) to be constructed at/near the test location(s) and depth(s).

Once the design is completed, we recommend the infiltration system design (provided by others) and location be reviewed by the geotechnical engineer. If the location and/or depth of the system(s) change from what was indicated at the time of our fieldwork, additional testing may be recommended.

B.4.0 SEASONAL HIGH GROUNDWATER LEVEL

As indicated in Appendix A of the referenced stormwater manual, a minimum of 5 feet of separation (measured vertically) is required between the base of the stormwater facility and the "seasonal high groundwater level".

Groundwater was not encountered within depths explored at the site, and no indications (e.g. mottling) of seasonal fluctuations of groundwater were observed in the site soils. Based on our explorations, our experience in the area, review of local water well logs (see Section 2.3.3 of main body of report), and review of the site's geologic setting, we anticipate the groundwater level in the area is at an approximate elevation of 80 feet (mean sea level). Accordingly, the area of proposed site development is situated at an elevation of approximately 120 feet (mean sea level), therefore the groundwater level (phreatic surface) is not anticipated to be a factor for design of infiltration facilities within the planned development area.